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# Chinese Strategy and Military Modernization in 2017: A Comparative Analysis

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WITH

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Final edition: January 12, 2017

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**Anthony H. Cordesman**  
**with Joseph Kendall**

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## Table of Contents

<b>CHAPTER 1: EVOLVING STRATEGIES IN THE CHINA-U.S. MILITARY BALANCE .....</b>	<b>1</b>
CHINESE STRATEGY .....	1
<i>China's Emerging Power and Uncertain Grand Strategy .....</i>	<i>1</i>
<i>China's Declared Public Strategy .....</i>	<i>2</i>
<i>Key Trends in Chinese Military Modernization .....</i>	<i>3</i>
<i>China's View of Its Strategic Position Relative to the United States .....</i>	<i>6</i>
PUTTING CHINA IN PERSPECTIVE: AMERICA'S EVOLVING STRATEGY IN ASIA .....	10
<i>The U.S. Shift to "Rebalancing" to Asia in 2012 .....</i>	<i>12</i>
<i>Secretary of Defense Panetta's Summary of U.S. Views of China at the Shangri-La Dialogue in 2012 .....</i>	<i>13</i>
<i>Secretary of Defense Hagel's Summary at Shangri-La Dialogue in 2013 .....</i>	<i>14</i>
<i>The 2014 U.S. Quadrennial Defense Review .....</i>	<i>16</i>
<i>Secretary Ashton Carter's Speech in May 2015 .....</i>	<i>18</i>
<i>The 2015 Asia-Pacific Maritime Security Strategy .....</i>	<i>19</i>
<i>From Rebalancing to Asia to Global Rebalancing .....</i>	<i>20</i>
<i>Secretary Ashton Carter's Speech at 2016 Shangri-La Dialogue .....</i>	<i>21</i>
THE CHINESE RESPONSE .....	24
ACTIONS SPEAK AS WELL AS WORDS .....	31
COMPETITION AND COOPERATION .....	31
<b>CHAPTER 2: ASSESSING CHINA'S ARMED FORCES .....</b>	<b>34</b>
CHINA'S DEFENSE WHITE PAPERS .....	37
<i>The 2010 White Paper .....</i>	<i>37</i>
<i>The 2013 White Paper .....</i>	<i>38</i>
<i>The 2015 White Paper .....</i>	<i>39</i>
US DEFENSE WHITE PAPERS ON CHINA'S STRATEGY AND FORCES .....	42
<i>The U.S. View of Chinese Strategy .....</i>	<i>42</i>
<i>Strategy, Modernization, and Shifts that Affect the U.S. Role in Asia .....</i>	<i>43</i>
<i>Disputes Over the Senkaku/Diaoyu Islands and South China Sea .....</i>	<i>46</i>
<i>Relations Between China and India .....</i>	<i>48</i>
<i>Counter-Space Strategies .....</i>	<i>48</i>
<i>Building an "Informationized" Military .....</i>	<i>49</i>
THE STRATEGIC FORCES DRIVING CHINESE MILITARY MODERNIZATION .....	51
"DEFENSIVE" FORCE MODERNIZATION AND TRANSFORMATION VERSUS "OFFENSIVE" FORCE MODERNIZATION AND TRANSFORMATION .....	56
<b>CHAPTER 3: UNDERLYING RESOURCES FOR CHINA'S SECURITY CAPABILITIES .....</b>	<b>57</b>
IS BECOMING AN ECONOMIC SUPERPOWER A PRELUDE TO BECOMING A MILITARY SUPERPOWER? .....	57
THE ECONOMIC TRENDS SHAPING MILITARY SPENDING .....	69
<i>Downward Economic Growth Trends but Stable Forecast .....</i>	<i>69</i>
<i>Economic Uncertainties and Risks .....</i>	<i>72</i>
<i>Shorter Term Risks .....</i>	<i>73</i>
<i>Longer-Term Risks .....</i>	<i>78</i>
<i>Chinese Economic Growth Relative to Increases in Military Spending .....</i>	<i>87</i>
FACTORS THAT MAY IMPACT CHINA'S MILITARY SPENDING, STRATEGY AND MODERNIZATION .....	93
<i>Inflation .....</i>	<i>93</i>
<i>FDI and Current Account Balance .....</i>	<i>95</i>
DEMOGRAPHIC TRENDS .....	96

SOCIETAL TRENDS AND ECONOMIC TRANSFORMATION .....	97
<b>CHAPTER 4: ESTIMATES OF CHINESE MILITARY SPENDING .....</b>	<b>104</b>
CHINESE STATEMENTS ON MILITARY SPENDING.....	104
<i>2010 Defense White Paper</i> .....	106
<i>2013 Defense White Paper</i> .....	108
<i>2015 Defense White Paper and Official Statements</i> .....	108
<i>2016 Estimates</i> .....	112
LIMITED TRANSPARENCY AND PROBLEMS IN ESTIMATING CHINESE MILITARY EXPENDITURES .....	112
US ANALYSES OF CHINESE DEFENSE BUDGETS .....	116
OTHER OUTSIDE ASSESSMENTS OF CHINESE MILITARY SPENDING .....	120
<i>SIPRI Estimates</i> .....	120
<i>IISS Estimates</i> .....	124
<i>Erickson and Liff Estimates</i> .....	126
THE CHINESE RESPONSE .....	129
RAMIFICATIONS FOR THE UNITED STATES.....	135
<i>U.S. Budget Caps and Defense Funding Instability</i> .....	139
<i>China-U.S. Defense Spending Convergence</i> .....	141
RAMIFICATIONS FOR ASIA .....	143
<b>CHAPTER 5: CHINESE STRATEGY AND PLA MILITARY DOCTRINE .....</b>	<b>146</b>
CHINESE STRATEGIC DOCTRINE .....	146
<i>Active Defense</i> .....	147
<i>Local War Under Conditions of Informatization</i> .....	148
<i>People's War</i> .....	151
CHINESE CAMPAIGN DOCTRINE.....	152
<i>Integrated Joint Operations</i> .....	153
<i>Information Warfare</i> .....	154
<i>Chinese Cyberwarfare</i> .....	156
<i>US Views on Chinese Cyber Activities</i> .....	159
<i>Integrated Firepower Operations</i> .....	163
<i>Mobility and Comprehensive Support</i> .....	163
SERVICE STRATEGY.....	165
<i>The Nine-Dash Line</i> .....	166
<i>Chinese Actions to Establish Control within the First Island Chain</i> .....	169
THE US VIEW .....	176
<i>Japanese and South Korean Perspectives on the Balance</i> .....	178
PUTTING CHINA'S STRATEGY AND ACTIONS IN PERSPECTIVE.....	181
<b>CHAPTER 6: CHINESE MILITARY ORGANIZATION .....</b>	<b>183</b>
PLA MILITARY ORGANIZATION .....	183
<i>The Reform Plans and Reform Schedule</i> .....	184
<i>Reforming the Middle More than the Top</i> .....	187
ORGANIZATION OF THE PLA.....	189
<i>Reforming Military Regions and Force Groupings for Joint Operations</i> .....	192
<i>PLA Army (PLAA)</i> .....	195
<i>PLA Navy (PLAN)</i> .....	198
<i>PLA Air Force (PLAAF)</i> .....	201
<i>PLA Rocket Force (PLARF)</i> .....	202



<i>Strategic Support Force (SSF)</i> .....	205
THE ORGANIZATION OF THE CHINESE SECURITY AND PARAMILITARY FORCES .....	206
<i>China Coast Guard (CCG)</i> .....	206
<i>Ministry of State Security (MSS)</i> .....	208
<i>Ministry of Public Security (MPS)</i> .....	208
<i>People's Armed Police Force (PAPF)</i> .....	208
FURTHER PLA ORGANIZATIONAL REFORMS .....	209
<i>Continued Importance of Improving Training and Education</i> .....	210
<i>The Broader Anti-Corruption Campaign</i> .....	210
<i>The Chinese View on the Current State of the PLA in Relation to Local Wars and Joint Operations..</i>	211
<b>CHAPTER 7: FORCE CHANGES AND TRENDS IN PEOPLE'S LIBERATION ARMY TOTAL PERSONNEL .....</b>	<b>213</b>
SHIFTS IN TOTAL PERSONNEL .....	213
PERSONNEL SHARE BY SERVICE AND FORCE ELEMENT .....	216
SHIFTS IN THE PLA'S PERSONNEL SYSTEM .....	218
<i>Rebalancing the Personnel System</i> .....	219
<i>Recruiting High-Level Human Capital into the PLA</i> .....	219
<i>Creating Opportunities for Increased Qualification</i> .....	219
<i>Greater Compensation for PLA Personnel</i> .....	220
SHIFTS IN RESERVE AND MILITIA FORCE STRUCTURE.....	220
<i>PLA Reserve Forces</i> .....	221
<i>PLA Militia Forces</i> .....	221
SHIFTS IN THE PERSONNEL OF THE CHINESE SECURITY AND PARAMILITARY FORCES.....	222
<i>China Coast Guard (CCG)</i> .....	223
<i>Ministry of State Security (MSS)</i> .....	224
<i>Ministry of Public Security (MPS)</i> .....	224
<i>People's Armed Police Force (PAPF)</i> .....	224
<b>CHAPTER 8: MODERNIZATION, TRAINING, AND THE ROLE OF ARMS AND TECHNOLOGY IMPORTS AND EXPORTS.....</b>	<b>226</b>
THE US INTELLIGENCE COMMUNITY'S ASSESSMENT .....	226
UNCERTAIN PATTERNS OF CHANGE.....	227
PLA TRAINING PRACTICES: A CRITICAL ASPECT OF MODERNIZATION .....	228
<i>Military Operations Other Than War</i> .....	229
<i>Joint Operations</i> .....	230
<i>Focus on C4ISR and Information Technology</i> .....	230
<i>Amphibious Operations</i> .....	231
ARMS TRADE AND TECHNOLOGY TRANSFER: THE ROLE OF IMPORTS .....	232
<i>Dual Use Imports and Reverse Engineering</i> .....	232
<i>The Cost of China's Arms Imports</i> .....	232
<i>Russia's Impact on Chinese Military Modernization</i> .....	233
ARMS TRADE AND TECHNOLOGY TRANSFER: THE ROLE OF EXPORTS.....	237
<i>Putting China's Arms Exports in Context</i> .....	239
<i>Tracking the Trends in Chinese Arms Transfers</i> .....	240
ARMS TRADE AND TECHNOLOGY TRANSFER: THE ROLE OF ESPIONAGE .....	251
THE SHAPE OF THE MODERNIZATION TO COME .....	253
<b>CHAPTER 9: THE PLA ARMY .....</b>	<b>255</b>
SHIFTS IN FORCE STRUCTURE .....	258

SHIFTS IN PERSONNEL.....	260
TRENDS IN EQUIPMENT .....	262
TRENDS IN MBTs, AIFV/APCs, ARTILLERY, AND MULTIPLE ROCKET LAUNCHERS (MRLs) .....	267
EQUIPMENT MODERNIZATION .....	270
<i>The US Official View of PLAA Modernization</i> .....	272
<i>The Japanese Official View of PLAA Modernization</i> .....	274
SHIFTS IN TRAINING, READINESS, AND THE CAPABILITY TO “FIGHT LOCAL WARS” .....	275
THE PLAA AND POWER PROJECTION .....	276
THE PLAA IN COMPARISON TO REGIONAL MILITARIES AND THE US .....	277
<b>CHAPTER 10: THE PLA NAVY.....</b>	<b>281</b>
PLAN STRATEGY AND DEVELOPMENTS.....	281
<i>The US Official View of PLAN Developments</i> .....	288
<i>The Japanese Official View of PLAN Developments</i> .....	293
SHIFTS IN FORCE STRUCTURE AND EQUIPMENT .....	293
SHIFTS IN FORCE STRUCTURE AND FORCE SIZE .....	294
PLAN MODERNIZATION .....	305
<i>China’s Submarine Modernization</i> .....	305
<i>China’s Surface Vessels and “Blue Water” Modernization</i> .....	309
SHIFTS IN PERSONNEL.....	319
THE PLAN AND POWER PROJECTION .....	321
<i>The Chinese View</i> .....	321
<i>The US View</i> .....	324
<i>The Japanese View</i> .....	326
<i>The Impact on China’s Neighbors</i> .....	328
POSSIBLE SHORTCOMINGS IN THE PLAN.....	328
CHINA’S OTHER MARITIME FORCES .....	329
CHINESE MARITIME MILITIA .....	330
THE US REACTION TO CHINESE NAVAL MODERNIZATION .....	332
<i>U.S Naval Modernization</i> .....	333
<i>U.S. Naval Modernization Concerns</i> .....	338
<i>Figure 10.21: Potential Shortcomings in U.S 30-year Procurement Plan</i> .....	339
<i>Joint Concept for Access and Maneuver in the Global Commons (JAM-GC) (previously AirSea Battle)</i> .....	340
THE U.S.-CHINA STRATEGIC DILEMMA.....	346
<b>CHAPTER 11: PLA AIR FORCE (PLAAF).....</b>	<b>347</b>
PLAAF STRATEGY AND DEVELOPMENTS.....	347
<i>Power Projection</i> .....	348
<i>The Official US View of PLAAF Developments</i> .....	349
<i>Japanese Official Views of PLAAF Developments</i> .....	353
<i>The South Korean Official Views of PLAAF Developments</i> .....	353
SHIFT IN FORCE STRUCTURE .....	353
THE PACE OF MODERNIZATION .....	362
KEY ASPECTS OF EQUIPMENT MODERNIZATION .....	366
<i>Anti-Access/Area Denial (A2/AD)</i> .....	366
<i>Stealth</i> .....	366
<i>Other Advanced Fighters and Carrier Aircraft</i> .....	368
<i>Long-Range Strike Bomber</i> .....	370



<i>UAVs, Drones, and Other Advanced ISR</i> .....	371
IMPROVEMENTS IN REALISTIC TRAINING AND PILOT QUALITY .....	376
SHIFTS IN PERSONNEL .....	377
<b>CHAPTER 12: THE PLA ROCKET FORCE: EVOLVING BEYOND THE SECOND ARTILLERY CORPS (SAC) AND NUCLEAR DIMENSION .....</b>	<b>379</b>
PLARF STRATEGY AND DEVELOPMENTS .....	381
<i>PLARF Strategy</i> .....	383
<i>Power Projection</i> .....	384
<i>The US Official View and the Growth of China's Precision Strike Capability</i> .....	385
<i>Japanese Views</i> .....	389
<i>South Korean Views</i> .....	390
SHIFTS IN FORCE STRUCTURE, EQUIPMENT COMPOSITION, AND PERSONNEL .....	390
SHIFTS IN EQUIPMENT COMPOSITION .....	405
<i>SRBMs</i> .....	405
<i>Cruise Missiles</i> .....	409
<i>MRBMs</i> .....	413
<i>ICBMs and SLBMs</i> .....	416
<i>Chinese Missile Defense Capabilities</i> .....	428
IMPROVED PERSONNEL .....	429
<b>CHAPTER 13: CHINESE SPACE STRATEGY AND DEVELOPMENTS.....</b>	<b>431</b>
CHINESE SPACE STRATEGY .....	432
<i>Value of Space Program for Global and Internal Legitimacy</i> .....	434
<i>Regional Power Projection</i> .....	435
<i>Anti-Access/Area Denial (A2/AD)</i> .....	436
SPACE CAPABILITIES AND DEVELOPMENTS.....	439
<i>Space-based C4ISR</i> .....	440
<i>BeiDou Navigation Satellite System</i> .....	443
<i>Manned Spaceflight</i> .....	447
<i>Launch Vehicles</i> .....	447
CHINESE COUNTERSPACE AND ASAT CAPABILITIES .....	449
<i>Direct-Ascent ASATs</i> .....	450
<i>Co-orbital Anti-satellite Weapons</i> .....	452
<i>Directed-Energy Weapons</i> .....	453
<i>Cyber ASAT Capabilities</i> .....	454
U.S. SPACE CAPABILITIES AND RESPONSE TO CHINA .....	455
<b>CHAPTER 14: CHINA'S NUCLEAR FORCES AND WEAPONS OF MASS DESTRUCTION....</b>	<b>458</b>
<i>The Possible Impact of Chinese Tunnel Facilities</i> .....	465
THE STRATEGIC NUCLEAR BALANCE .....	468
DETAILED ASSESSMENTS OF CHINA'S NUCLEAR FORCES .....	474
<i>The Nuclear Threat Initiative (NTI) Estimate</i> .....	474
<i>The Bulletin of the Atomic Scientists Estimate</i> .....	477
<i>The Global Security Estimate</i> .....	481
<i>The Union of Concerned Scientists (UCS) Estimate</i> .....	484
<i>The Federation of American Scientists (FAS) Estimate</i> .....	486
CHINA AND UNITED STATES NUCLEAR FORCES AND POLICIES.....	487
<i>The United States and Theater Nuclear Weapons</i> .....	487

<i>The U.S. Focus on Russia at a Time of Rising Chinese Capability</i> .....	490
CHINESE REACTIONS AND NORTH AND SOUTH KOREAN DEVELOPMENTS.....	492
<i>North Korean Developments from 2010 to 2013</i> .....	492
<i>The Impact of the 2013 North Korean Test</i> .....	493
<i>The Impact of DPRK, ROK, and U.S. Developments Through 2016</i> .....	495
<i>The Impact of Broader ROK Reactions</i> .....	496
<i>Chinese and Russian Reactions</i> .....	498
CHINESE REACTIONS TO NUCLEAR DEVELOPMENTS IN INDIA AND PAKISTAN .....	500
CHINESE REACTIONS TO RUSSIAN NUCLEAR DEVELOPMENTS.....	502
CHINESE BIOLOGICAL AND CHEMICAL WEAPONS PROGRAMS.....	504
<b>CHAPTER 15: CHINESE MILITARY MODERNIZATION AND THE TAIWAN STRAIT</b>	
<b>MILITARY BALANCE</b> .....	<b>505</b>
THE HISTORICAL CONTEXT .....	505
TAIWAN AND OTHER FLASHPOINTS .....	507
CHINESE MILITARY STRATEGY IN THE TAIWAN STRAIT .....	508
TAIWANESE MILITARY STRATEGY .....	508
<i>2013 National Defense Report</i> .....	510
<i>2015 National Defense Report</i> .....	515
THE US PERSPECTIVE ON THE CHINA-TAIWAN BALANCE.....	523
THE JAPANESE PERSPECTIVE OF THE CHINA-TAIWAN BALANCE .....	528
U.S. DATA ON THE HISTORICAL TRENDS IN THE TAIWAN STRAIT MILITARY BALANCE.....	532
<i>The Naval Balance</i> .....	540
<i>The Air and Missile Balance</i> .....	546
<i>The Ground Force Balance</i> .....	553
<b>CHAPTER 16: U.S. AND CHINA: STRATEGIC COMPETITION OR COOPERATION IN THE</b>	
<b>PACIFIC, IOR, AND SOUTH CHINA SEA</b> .....	<b>559</b>
THE BROADER CONTEXT OF CHINA’S SECURITY AND STRATEGIC INTERESTS.....	559
STRATEGIC RIVALRY VERSUS GRAND STRATEGY .....	560
<i>Clashes and Conflict Will Cost far More than the Potential Benefits to the “Winning” Side</i> .....	561
<i>The Challenges That Drive Competition</i> .....	562
CHINA’S DECLARED STRATEGY AND COMPETITION WITH THE U.S. AFFECTING THE PACIFIC AND THE	
IOR .....	563
<i>Chinese Defense White Paper Views of the Challenges from the U.S.</i> .....	563
<i>The Chinese Defense White Paper View of the Challenges in Asia</i> .....	564
<i>The Strategic Impact of China’s Dependence on Energy Imports</i> .....	565
<i>Gulf Energy Exports are China’s Main Strategic Interest</i> .....	568
<i>China’s Real World Strategic Interests in the South China Sea</i> .....	569
<i>China’s Real World Strategic Interests in the East China Sea</i> .....	571
<i>Chokepoints and Shipments from the Gulf are the Key Strategic Issue</i> .....	572
<i>The Expanding Role of Chinese Forces</i> .....	572
<i>The Impact of China’s Shift to a “Blue Water” Navy</i> .....	574
<i>Chinese Naval Modernization and its Impact on Nearby Waters, the Pacific and the IOR</i> .....	576
<i>Chinese Naval Forces in the IOR</i> .....	579
<i>The Expanding Role of Chinese Air Forces</i> .....	580
<i>Expanding PLAFF Strike and Power Projection Capabilities</i> .....	580
<i>A2/AD and Stealth Capabilities</i> .....	582
<i>Expanding Chinese Naval, Air, and Land-based Missile Forces</i> .....	584



CHINESE CLAIMS TO THE SOUTH CHINA SEA .....	587
<i>Defining the Nine Dash Line and China's Claims</i> .....	588
<i>Land Reclamation Operations and Increasing Tensions in the South China Sea</i> .....	590
<i>China's State Oceanic Administration</i> .....	600
<i>Chinese Actions to Establish Control within the First Island Chain</i> .....	600
<i>The Successor to the Nine Dash Line?</i> .....	608
THE UNCERTAIN FUTURE OF STRATEGIC COMPETITION .....	608
<b>CHAPTER 17: U.S. AND CHINA: U.S. "REBALANCING" AND THE CHINESE REACTION ..</b>	<b>610</b>
U.S. "REBALANCING" TO ASIA .....	610
<i>"Rebalancing" in 2012</i> .....	610
<i>"Rebalancing" in 2013</i> .....	615
<i>Secretary Hagel's Summary in April 2014</i> .....	621
<i>"Rebalancing" in 2015</i> .....	624
<i>The FY2016 Shift to Global Rebalancing and a Focus on Budget and Force Cuts</i> .....	626
<i>The Key Portions of the FY2017 Budget Guidance</i> .....	627
ASIAN "REBALANCING" STILL MATTERS .....	630
<i>U.S. Strategy and India</i> .....	635
<i>U.S. Strategy and Vietnam</i> .....	636
<i>Reversals with the Philippines</i> .....	637
US FORCE STRENGTH IN THE PACIFIC: THE US PACIFIC COMMAND (PACOM) .....	637
<i>Changing U.S. Forces in the Pacific</i> .....	638
<i>U.S. Forces in the Pacific in 2016</i> .....	642
<i>The Regional Challenges Described in the U.S. 2016 PACOM Posture Statement</i> .....	644
THE U.S. EMPHASIS ON AIR RIGHTS AND FREEDOM OF NAVIGATION.....	647
U.S. FORCE STRENGTH IN THE GULF: THE US CENTRAL COMMAND .....	653
<i>Naval Deployments</i> .....	654
<i>Air Deployments</i> .....	654
FUTURE U.S. FORCE SHIFTS IN ASIA.....	655
<i>The U.S. Land Force Challenge</i> .....	655
SHIFTS IN U.S. POWER PROJECTION: THE US AIRSEA BATTLE AND JAM-GC.....	657
<i>Defining the Air-Sea Battle in 2013</i> .....	657
TENSIONS AND THE POTENTIAL FOR CONFLICT IN THE PACIFIC AND IOR .....	659
<i>Tensions between China and Asia States</i> .....	659
<i>Timelines and Incidents</i> .....	661
<i>China's View of Disputes with Japan Involving the Senkaku/Diaoyu Islands</i> .....	666
<i>China's View of Disputes with Japan Involving the East China Sea</i> .....	669
<i>US and Chinese "Incidents"</i> .....	670
THE JAPANESE RESPONSE AND THE ADIZ DEBATE.....	675
THE JAPANESE REINTERPRETATION OF THE ITS CONSTITUTION AND COLLECTIVE SELF DEFENSE .....	679
THE IMPACT OF SHIFTS IN US AND CHINESE STRATEGY AND FORCES IN THE PACIFIC AND IOR .....	681
<i>The Asian States</i> .....	681
THE BROADER STRATEGIC IMPACT OF CHINESE MILITARY MODERNIZATION.....	682
<i>The Key Impact of China's Energy Imports</i> .....	682
<i>Seeking New and More Secure Routes of Energy Supply</i> .....	685
COOPERATION, COMPETITION, OR CONFLICT .....	687

## List of Figures

<i>Figure 2.1: People's Liberation Army: Total Personnel</i> .....	35
<i>Figure 2.2: Selected PLA Army Equipment Holdings</i> .....	35
<i>Figure 2.3: Selected PLA Navy Equipment Holdings</i> .....	36
<i>Figure 2.4: Selected PLA Air Force Equipment Holdings</i> .....	36
<i>Figure 2.5: East China Sea Air Defense Identification Zones</i> .....	51
<i>Figure 3.1: IMF Estimate of Comparative Rise in China's GDP (nominal) – Part One (Billions \$USD in Current Dollars/Prices)</i> .....	60
<i>Figure 3.1: IMF Estimate of Comparative Rise in China's GDP (nominal) - Part Two (Billions \$USD in Current Dollars/Prices)</i> .....	61
<i>Figure 3.2: China's Rise in Per Capita GDP – Part I (Current \$USD)</i> .....	62
<i>Figure 3.2: China's Rise in Per Capita GDP – Part II (Current \$USD)</i> .....	63
<i>Figure 3.3: China's GDP Growth - Part I</i> .....	64
<i>(Percent Change in Constant Prices)</i> .....	64
<i>Figure 3.3: China's GDP Growth - Part II (Percent Change in Constant Prices)</i> .....	65
<i>Figure 3.4: China's Rise in GDP (PPP) – Part I (Billions of Current International Dollars*)</i> .....	66
<i>Figure 3.4: China's Rise in GDP (PPP) – Part II (Billions of Current International Dollars)</i> .....	67
<i>Figure 3.5: China &amp; USA Defense Spending as a Percentage of GDP</i> .....	68
<i>Figure 3.6: 2015 IMF World Economic Outlook – Asia and Pacific Region's Growth Moderation</i> .....	71
<i>Figure 3.7: IMF Assessment of China's Economic Reforms – 2014</i> .....	77
<i>Figure 3.8: July 2013 IMF Assessment of China's Demographic Changes</i> .....	79
<i>Figure 3.9: August 2016 IMF Assessment of China Pt. 1</i> .....	80
<i>Figure 3.9: August 2016 IMF Assessment of China Pt. 2</i> .....	81
<i>Figure 3.10: July 2014 IMF Assessment of China's Financial Sector</i> .....	82
<i>Figure 3.11: August 2016 IMF Assessment of China's Credit</i> .....	83
<i>Figure 3.11: July 2014 IMF Assessment of China's Economic Growth and Inequality</i> .....	84
<i>Figure 3.12: Different Estimates of Chinese GDP Growth Rates (Market Prices): 2000-2020</i> .....	85
<i>Figure 3.13: China's GDP (PPP) (Billions of Current International Dollars)</i> .....	86
<i>Figure 3.14: Comparing Percentage of GDP spent on Military Expenditures – Part One</i> .....	89
<i>Figure 3.14: Comparing Percentage of GDP spent on Military Expenditures – Part Two</i> .....	90
<i>Figure 3.15: Chinese GDP Growth and Defense Spending – Part One</i> .....	91
<i>Figure 3.15: Chinese GDP Growth and Defense Spending – Part Two</i> .....	92
<i>Figure 3.16: Estimates of Chinese Inflation Rates (CPI % increase)</i> .....	94
<i>Figure 3.17: Chinese Population Projection (in millions)</i> .....	98
<i>Figure 3.18: Chinese Population Growth Indicators</i> .....	99
<i>Figure 3.19: Chinese Births vs. Deaths over Time</i> .....	100



<i>Figure 3.20: The Impact of Population, Control, Age and Shifts in Gender on China's Work Force – Part I</i> .....	101
<i>Figure 3.20: The Impact of Population, Control, Age and Shifts in Gender on China's Work Force – Part II</i> .....	102
<i>Figure 3.21: China's Demographics in 1970 and Projection for 2050</i> .....	103
<i>Figure 4.1: Announced Chinese Defense Budget</i> .....	105
<i>Figure 4.2: Official PRC Defense Budget Allocation for 2009 (in RMB billion)</i> .....	108
<i>Figure 4.3: Historical PRC Defense Budget Compared to US Estimates of Total Defense Spending- Part 1</i> .....	117
<i>Figure 4.3: Historical PRC Defense Budget Compared to US Estimates of Total Defense Spending-Part 2</i> .....	117
<i>Figure 4.4: Historical US Defense Expenditures</i> .....	118
<i>Figure 4.5: DoD Comparison of Chinese and Other Regional Defense Budgets</i> .....	119
<i>Figure 4.6: Official Chinese Budget Announcements versus SIPRI Estimates 2003-2015</i> .....	120
<i>Figure 4.7: SIPRI Estimate on Chinese Defense Spending as Percentage of GDP 2000-2015</i> .....	123
<i>Figure 4.8: SIPRI Estimate on China's Defense Expenditure 1990-2015 (Current USD)</i> .....	123
<i>Figure 4.9: Chinese Defense Expenditure as Percentage of Overall Government Spending (2000-2015)</i> .....	124
<i>Figure 4.10: IISS Estimates for China's Budget 2010-2014</i> .....	126
<i>Figure 4.11: PRC Defense Spending-related Comparative Statistics, 1980-2011</i> .....	128
<i>Figure 4.12: PRC Official Defense Budget Annual Data, 2002-2012</i> .....	128
<i>Figure 4.13: Annual GDP Percentage Growth 1991-2015</i> .....	131
<i>Figure 4.14: Defense Spending as Percentage of GDP among SIPRI's 2015 Top 10 Countries in Defense Expenditure from 2000-2015</i> .....	132
<i>Figure 4.15: Defense Spending as Percentage of Government Spending among SIPRI's 2015 Top 10 Countries in Defense Expenditure from 2000-2015</i> .....	133
<i>Figure 4.16: Defense Spending as Percentage of Overall Government Spending in Asia 2008-2015</i> .....	134
<i>Figure 4.17: Defense Spending as % of GDP for Asia 2000-2015</i> .....	135
<i>Figure 4.18: Defense Expenditure from UNSC Countries 2000-2015 (Current USD)</i> .....	136
<i>Figure 4.19: Defense Spending as % of GDP for UNSC 2000-2015</i> .....	137
<i>Figure 4.21: Defense Expenditure from UNSC Countries 1990-2015 (Current USD)</i> .....	139
<i>Figure 4.22: Comparison of Budget Requests and Enacted Budget FY10-FY17</i> .....	140
<i>Figure 4.22: IISS Model on U.S.-China Defense Spending Convergence</i> .....	143
<i>Figure 4.23: Military Expenditure in Asia 1990-2015 (Current USD)</i> .....	144
<i>Figure 4.24: Military Expenditure in Asia 2000-2015 (Current USD)</i> .....	145
<i>Figure 5.1 China's New Map of Greater China: June 2014</i> .....	169
<i>Figure 5.2: DoD Representation of the First and Second Island Chains</i> .....	175
<i>Figure 5.3 Comparison of Forces Strength and Defense Budgets between Southeast Asia, China, Japan, ROK</i> .....	179
<i>Figure 5.4: Japanese Ministry of Defense Summary of the Military Balance</i> .....	180
<i>Figure 5.5: South Korean Ministry of Defense Summary of the Military Strength of the Major Northeast Asian Powers</i> .....	181
<i>Figure 6.1: PLA Reform Schedule: 2015-2020</i> .....	185
<i>Figure 6.2: PLA Structure Pre/Post Reforms</i> .....	186

<i>Figure 6.3: China's Political Structure</i> .....	188
<i>Figure 6.4: Updated CMC Sections and Leadership</i> .....	191
<i>Figure 6.5: Chinese Military Regions</i> .....	194
<i>Figure 6.6: Locations of PLAA Group Armies</i> .....	196
<i>Figure 6.7: PLAN Fleet Headquarters</i> .....	200
<i>Figure 6.8: Locations of PLAAF &amp; PLAN Major Aviation Units</i> .....	202
<i>Figure 7.1: Trends in PLA Personnel</i> .....	215
<i>Figure 7.2: Shifts in Percentage of Total Personnel by Service: 1985-2016</i> .....	217
<i>Figure 7.3: Active and Reserve Personnel by Service in the PLA: 2016</i> .....	218
<i>Figure 7.4: Historical Trends in Absolute PLA and PAPF Personnel</i> .....	225
<i>Figure 8.1: Total Arms Imports to China, 1994 – 2014 (US\$ millions, 1990 prices)</i> .....	235
<i>Figure 8.2: Value of Russian Arms Exports to China, 1994-2014 (US\$ millions, 1990 prices)</i> .....	236
<i>Figure 8.3: Percentage of Overall PRC Arms Imports from Russia, 1994-2014</i> .....	237
<i>Figure 8.4: Top Arms Exporters from 2011-2015 as Percent of Global Share of Exports</i> .....	238
<i>Figure 8.5: Changes in Major Arms Exports Since 2006-2010 by Ten Largest Exporters in 2011-2015</i> .....	238
<i>Figure 8.6: Worldwide Arms Transfer Agreements, 2007-2014 and Suppliers' Share with Developing World (in millions of current 2014 US dollars)</i> .....	242
<i>Figure 8.7: Worldwide Arms Transfer Deliveries, 2007-2014 and Suppliers' Share with Developing World (in millions of current 2014 US dollars)</i> .....	243
<i>Figure 8.8: Arms Transfer Agreements with Developing Nations, by Supplier, 2007-2014 (in millions of constant 2014 US dollars)</i> .....	244
<i>Figure 8.9: Percentage of Each Supplier's Agreements Value by Region, 2007-2014</i> .....	244
<i>Figure 8.10: Percentage of Total Agreements Value by Supplier to Regions, 2007-2014</i> .....	245
<i>Figure 8.11: Arms Deliveries to Developing Nations, by Supplier, 2007-2014 (in millions of current US dollars)</i> ...	245
<i>Figure 8.12: Arms Deliveries to Developing Nations, by Supplier, 2007-2014 (expressed as a percent of total, by year)</i> .....	246
<i>Figure 8.13: Percentage of Supplier Deliveries Value by Region, 2007-2014</i> .....	246
<i>Figure 8.14: Numbers of Weapons Delivered by Suppliers to Developing Nations, 2007-2014</i> .....	247
<i>Figure 8.15: Numbers of Weapons Delivered by Suppliers to Asia and the Pacific</i> .....	248
<i>Figure 8.16: Numbers of Weapons Delivered by Suppliers to Near East</i> .....	249
<i>Figure 8.17: Numbers of Weapons Delivered by Suppliers to Africa</i> .....	250
<i>Figure 9.1: PLAA Force Strength in 2015</i> .....	256
<i>Figure 9.2: Deployment of PLAA Group Armies</i> .....	257
<i>Figure 9.3: PLA Ground Forces Force Structure, 1985-2015</i> .....	259
<i>Figure 9.4: Historical Trends in Total PLAA Personnel, 1985-2015</i> .....	261
<i>Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part One</i> .....	263
<i>Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part Two</i> .....	264
<i>Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part Three</i> .....	265

<i>Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part Four</i> .....	266
<i>Figure 9.6: Summary Trends in PLA Major Weapon System Inventory, 1985-2016</i> .....	268
<i>Figure 9.7: Historical PLAA Equipment Inventory of Major Weapon Systems, 1985-2016</i> .....	269
<i>Figure 9.8: Historical Trends in the PLAA's Modern Major Weapon Inventory, 1985-2016</i> .....	271
<i>Figure 9.9: Pace of PLAA Modernization – Percent of Modern Weapon Systems, 2000-2016</i> .....	272
<i>Figure 9.10: PLA Forces in Comparison to Regional Countries and the US</i> .....	278
<i>Figure 9.11: PLAA Ground Forces Equipment in Comparison to Regional Countries and the US</i> .....	279
<i>Figure 9.12: PLAA Artillery in Comparison to Regional Countries and the US</i> .....	280
<i>Figure 10.1: DoD Estimate on Size of the PLAN</i> .....	283
<i>Figure 10.2: China's First and Second Island Chains</i> .....	284
<i>Figure 10.3: Competing Sovereignty Claims in the South China Sea (2012)</i> .....	285
<i>Figure 10.4: Competing Sovereignty Claims (2015)</i> .....	286
<i>Figure 10.5: China's Dependence on Maritime Lines of Communication and Efforts to Reduce Dependence</i> .....	287
<i>Figure 10.6 DoD Estimates on PLAN Force Structure 2000-2016</i> .....	292
<i>Figure 10.7: Size and Deployments of China's Fleets (as of 2016)</i> .....	295
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part I</i> .....	296
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2015-Part II</i> .....	297
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2015-Part II</i> .....	298
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2014-Part III</i> .....	299
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part III</i> .....	300
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part IV</i> .....	301
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part V</i> .....	302
<i>Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part VI</i> .....	303
<i>Figure 10.9: Trends in PLAN Combatant Ship Holdings</i> .....	304
<i>Figure 10.10: PLAN Progress in Submarine Technology</i> .....	309
<i>Figure 10.11: PLAN Surface-to-Air Missile Ranges</i> .....	314
<i>Figure 10.12: PLAN Anti-Ship Cruise Missile Ranges</i> .....	315
<i>Figure 10.13: PLAN Major Combatant Holdings</i> .....	317
<i>Figure 10.14: Relative PLAN Major Combatant Holdings</i> .....	318
<i>Figure 10.15: Asia-Pacific Naval Combatants</i> .....	319
<i>Figure 10.16: PLAN Personnel Trends</i> .....	320
<i>Figure 10.17: Geographic Expansion in PLAN Military Exercises Locations</i> .....	324
<i>Figure 10.18 FY2017 US Navy Procurement Request</i> .....	335
<i>Figure 10.19: Naval Budget for Acquisition Programs FY2015-FY2030</i> .....	336
<i>Figure 10.20: FY 2017 Navy 30-Year Shipbuilding Plan</i> .....	337
<i>Figure 11.1: Deployment of China's Air Forces</i> .....	351
<i>Figure 11.2: The Size of the PLAAF in 2015</i> .....	352



<i>Figure 11.3: Force Structure of the PLA Air Force, 1985-2016 – Part I</i> .....	355
<i>Figure 11.3: Force Structure of the PLA Air Force, 1985-2016 – Part II</i> .....	356
<i>Figure 11.3: Force Structure of the PLA Air Force, 1985-2016 – Part III</i> .....	357
<i>Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part IV</i> .....	358
<i>Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part V</i> .....	358
<i>Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part VI</i> .....	360
<i>Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part VII</i> .....	361
<i>Figure 11.4: Historical PLAAF Force Structure, 1985-2016</i> .....	363
<i>Figure 11.5: Historical PLAAF Force Structure, 1985-2016</i> .....	363
<i>Figure 11.6: Historical Trend PLAAF Numbers by Key Missions Area, 1985-2016</i> .....	364
<i>Figure 11.7: Historical Relative Trends in the PLAAF's Force Structure by Percent of Total Force</i> .....	365
<i>Figure 11.8: Total Versus Modern Aircraft in the PLAAF</i> .....	373
<i>Figure 11.9: Modern Versus Total PLAAF Aircraft by Major Mission Type</i> .....	374
<i>Figure 11.10: Percentage of Modern PLAAF Aircraft</i> .....	375
<i>Figure 11.11: Historical PLAAF Personnel Trends</i> .....	378
<i>Figure 12.1: List of China's Ballistic Missile Designations</i> .....	392
<i>Figure 12.2: Historical Quantitative Data on the PLARF Missile Launcher Capabilities- Part I</i> .....	394
<i>Figure 12.2: Historical Quantitative Data on the PLARF Missile Launcher Capabilities - Part II</i> .....	395
<i>Figure 12.3: China's 2016 Missile Capabilities</i> .....	396
<i>Figure 12.3: China's 2016 Missile Capabilities by Classification-Part II</i> .....	397
<i>Figure 12.4: Historical Size and Composition of the PLARF Launcher Arsenal</i> .....	398
<i>Figure 12.5: The PLARF's Changing Force Structure, 1985-2016 (Percent)</i> .....	399
<i>Figure 12.6: The Expanding Range of China's Theater Missile Forces – Part I</i> .....	400
<i>Figure 12.6: The Expanding Range of China's Theater Missile Forces – Part II</i> .....	401
<i>Figure 12.7: Year-on-Year Missile Launcher Strength, 2005-2012</i> .....	403
<i>Figure 12.8: Year-on-Year Missile Inventory, 2005-2012</i> .....	404
<i>Figure 12.9: NASIC Estimate of the Regional Balance of Short-range Ballistic Missiles (SRBMs)</i> .....	407
<i>Figure 12.10: RAND Data on PRC SRBMs and the "Notional SRBM" Model (2009)</i> .....	408
<i>Figure 12.11: SRBMs Needed to Obtain Given Probabilities of Neutralizing a Single Runway</i> .....	409
<i>Figure 12.12: NASIC Estimate of the Regional Balance of Land Attack Cruise Missiles</i> .....	412
<i>Figure 12.13: NASIC Estimate of the Regional Balance of MRBMs and IRBMs</i> .....	415
<i>Figure 12.14: Development of Ballistic and Cruise Missile Launchers, 1985-2015</i> .....	416
<i>Figure 12.15: NASIC Estimate of the Regional Balance of ICBMs and SLBMs</i> .....	423
<i>Figure 12.16: Percentage of Modern ICBMs in the PLARF's Arsenal, 1985-2012</i> .....	424
<i>Figure 12.17: The Expanding Range of China's Medium and Intercontinental Ballistic Missile Forces – Part I</i> .....	425
<i>Figure 12.17: China's Conventional Strike Capabilities – Part II</i> .....	426
<i>Figure 12.18: The Expanding Range of China's ICBM and Longer-Range Forces</i> .....	427

<i>Figure 13.1: China's Active Satellite Capability</i> .....	440
<i>Figure 13.2: China's BeiDou Satellite Launches</i> .....	446
<i>Figure 13.3: DoD Assessment of Chinese Space Launch Trends</i> .....	449
<i>Figure 13.4 China's Direct-Ascent ASAT Tests</i> .....	452
<i>Figure 13.5: U.S.-China Space Launches</i> .....	456
<i>Figure 13.6: U.S. Satellites by Classification</i> .....	457
<i>Figure 14.1: China's Nuclear Tunnel Storage System</i> .....	467
<i>Figure 14.2: Chinese, U.S. and Russian Nuclear Forces- Part One</i> .....	469
<i>Figure 14.2: Chinese, U.S. and Russian Nuclear Forces – Part Two</i> .....	470
<i>Figure 14.2: Chinese, U.S. and Russian Nuclear Forces – Part Three</i> .....	471
<i>Figure 14.3: Comparative Estimate of Global Holdings of Nuclear Weapons</i> .....	473
<i>Figure 14.4: Nuclear Competition and Uncertainty</i> .....	474
<i>Figure 15.1: Taiwanese (ROC) Ministry of Defense Summary of the PRC-ROC Military Balance</i> .....	510
<i>Figure 15.2: Taiwan Assessment of PRC's Defense Budget from 2004 to 2013</i> .....	513
<i>Figure 15.3: Taiwan Assessment of PRC's Hidden Defense Budget from 2004 to 2013</i> .....	514
<i>Figure 15.4: Taiwan Assessment of the PRC's People's Armed Police Budget from 2004 to 2013</i> .....	514
<i>Figure 15.5: PRC's Defense Spending from 2015 Taiwan Defense Report</i> .....	520
<i>Figure 15.6: Taiwan's National Defense Spending</i> .....	520
<i>Figure 15.7: The Balance in the Taiwan Straits in 2016: Ground Forces</i> .....	526
<i>Figure 15.8: The Balance in the Taiwan Straits in 2016: Air Forces</i> .....	527
<i>Figure 15.9: The Balance in the Taiwan Straits in 2016: Naval Forces</i> .....	528
<i>Figure 15.10: Japanese Ministry of Defense Summary of the PRC-ROC</i> .....	531
<i>Figure 15.11: 2016 Japanese White Paper on Taiwan's Defense Budget</i> .....	532
<i>Figure 15.12: A Summary of Trends in the PLA: Part One</i> .....	534
<i>Figure 15.12: A Summary of Trends in the PLA: Part Two</i> .....	535
<i>Figure 15.13: Trends in PLA Forces Deployed in the Vicinity of the Taiwan Strait: Part One</i> .....	536
<i>Figure 15.13: Trends in PLA Forces Deployed in the Vicinity of the Taiwan Strait: Part Two</i> .....	537
<i>Figure 15.14: Trends in the ROC Armed Forces: Part One</i> .....	538
<i>Figure 15.14: Trends in the ROC Armed Forces: Part Two</i> .....	539
<i>Figure 15.15: Absolute Trends in PLAN Deployments to the East and South Sea Fleets</i> .....	541
<i>Figure 15.16: Absolute Trends in ROC Naval Forces</i> .....	542
<i>Figure 15.17: Relative Increases in PLAN Deployments to the East and South Sea Fleets since 2005 (percentage increase)</i> .....	544
<i>Figure 15.18: Increases in ROC Naval Deployments since 2005 (percentage increase)</i> .....	545
<i>Figure 15.19: Absolute Trends in PLAAF Forces Deployed Near the Taiwan Strait</i> .....	547
<i>Figure 15.20: Absolute Trends in the ROCAF Aircraft Inventory</i> .....	548
<i>Figure 15.21: Relative Changes in PLAAF Force Deployments to the Taiwan Strait, since 2005 (percentage increase)</i> .....	550

<i>Figure 15.22: Changes in ROCAF Force Numbers, since 2005 (percentage increase)</i> .....	551
<i>Figure 15.23: Japanese Ministry of Defense Summary of the Trends in the Balance of Modern PRC-ROC Fighter Aircraft</i> .....	552
<i>Figure 15.24: Department of Defense Estimate of PLA SAM and SRBM Coverage</i> .....	552
<i>Figure 15.25: A Comparison of Personnel Trends in PLAA and ROC Army in the Taiwan Strait Region</i> .....	554
<i>Figure 15.26: A Comparison of Trends in PLAA and ROC Equipment Holdings in the Taiwan Strait Region</i> .....	555
<i>Figure 15.27: A Comparison of Relative Trends in PRC and ROC Artillery Forces (percentage increase over 2005 levels)</i> .....	556
<i>Figure 15.28: PRC Force Deployment near Taiwan - Part One</i> .....	557
<i>Figure 15.28: PRC Force Deployment near Taiwan – Part Two</i> .....	558
<i>Figure 16.1: China’s Energy Import Dependence</i> .....	567
<i>Figure 16.2: China’s Major Sources of Oil Imports</i> .....	569
<i>Figure 16.4: Illustrative Chinese Anti-ship Missile Designs</i> .....	586
<i>Figure 16.5: China’s Dashed Line Map from 2009</i> .....	590
<i>Figure 16.6: Historical Context of China’s Advances into the South China Sea</i> .....	591
<i>Figure 16.7: South China Sea Conflicts Between China and Vietnam</i> .....	592
<i>Figure 16.8: Chinese Activities in South China Sea since 2010</i> .....	593
<i>Figure 16.9: Chinese Occupations in the South China Sea</i> .....	594
<i>Figure 16.10: China’s Increasing Presence after Spratly’s Militarization</i> .....	595
<i>Figure 16.11: Development Trends of Other Countries in South China Sea</i> .....	596
<i>Figure 16.12: Mischief Reef Outpost in South China Sea</i> .....	597
<i>Figure 16.13: Subi Reef Outpost in South China Sea</i> .....	598
<i>Figure 16.14: Subi Reef Outpost in South China Sea</i> .....	599
<i>Figure 16.15: Chinese Maritime Claims and the Nine Dash Line</i> .....	602
<i>Figure 16.16: DoD Report Map of Chinese Outposts in South China Sea</i> .....	603
<i>Figure 16.17: Chinese Claims and the Nine Dash Line: Key Island Groups involved in Disputes</i> .....	604
<i>Figure 16.18: Chinese Claims and the Nine Dashed Line: EEZs Overlapping the Zone Enclosed by Map of Nine Dashed Line</i> .....	605
<i>Figure 16.19: Chinese Claims and the Nine Dashed Line: EEZs in South China Sea and East China Sea)</i> .....	606
<i>Figure 16.20: Chinese Claims and the Nine Dashed Line: Locations of 2001, 2002, and 2009 U.S.-Chinese Incidents at Sea and in Air)</i> .....	607
<i>Figure 16.21: China’s New Map of Greater China: June 2014</i> .....	609
<i>Figure 17.1: U.S.-China Maritime and Airborne Incidents</i> .....	672
<i>Figure 17.2 Japanese Constitutional Interpretation and Legal Policies</i> .....	679

# CHAPTER 1: EVOLVING STRATEGIES IN THE CHINA-U.S. MILITARY BALANCE

China's emergence as a global economic superpower, and as a major regional military power in Asia and the Pacific, has had a major impact on its relations with the United States and its neighbors. China was the driving factor in the new strategy the United States announced in 2012 that called for the U.S. to "rebalance" its forces to Asia-Pacific region.<sup>1</sup> At the same time, China's actions on its borders, in the East China Sea, and in the South China Sea have shown that China is steadily expanding its geopolitical role in the Pacific, and having a steadily increasing impact on the strategy and military developments in other Asian powers.

As a result, the People's Republic of China (PRC), the United States, and China's neighbors face a critical need to improve their understanding of how each state in the region is developing its military power, and find ways to avoid the kind of military competition that could lead to further tension or conflict.

## *Chinese Strategy*

Chinese strategy sets the stage for all the other aspects of China's military development, but it is important to note that China's unclassified strategy documents are highly political documents that are exercises in strategic communications. As the chapters of this analysis show, they have also become less detailed as China's forces have become stronger, and as China's has emerged as a major military power and become more challenging.

## **China's Emerging Power and Uncertain Grand Strategy**

China is clearly asserting its growing power and status in the Eastern Pacific from the Straits of Malacca to Northeast Asia, and in ways that challenge the U.S. and its neighbors. It is extending its power and influence into the Indian Ocean, and to the edge of the Gulf – its key source of petroleum. It has previously joined the naval anti-piracy campaign off the coasts of Yemen and Somalia, and has acquired limited basing rights in Djibouti. It is creating a network of new "Silk Roads" through Pakistan, Myanmar, and across Central Asia to Europe. It is seeking to make Russia a major strategic partner, and take advantage of what some experts call Russia's "tilt to Asia" – a reaction to Europe's efforts to sanction it for its invasion of the Ukraine.

The U.S., Japan, South Korea, and many of the nations of Southeast Asia that have competing claims in the South China Sea see China's strategy as one of developing the capability to not only defend against outside attack, but to assert its power on a far broader regional level; become the dominant sea, air, and air power in the Eastern Pacific; and be able to secure its key lines of imports and exports. Each country (and a wide range of experts) differs as to China's focus and how aggressive or threatening its action may be.

China's ability to fully modernize its military forces, and its strategic goals and the timing of such efforts remain unclear. So do its intentions. China's declared strategy, like the U.S. strategy in the Pacific, indicates that China is not seeking confrontation or conflict. What may seem aggressive to outside states and experts is seen in China as the natural strategic result of its global economic power and ability to put an end to centuries in which China's status and security were limited by outside power and threats.

China is emerging as a major global power after centuries of outside attack, invasion, and exploitation from the first Opium War in 1839 to Deng Xiaoping's decision to adopt the major economic reforms that have allowed China to develop one of the world largest and most competitive economies. Chinese strategists may see China's growing military power and challenge to the U.S. and neighboring states as both defensive and a reaction to what some call centuries of humiliation. They also see the need for caution, the necessity for China to avoid direct confrontation with the U.S. until its forces are fully ready, to rely on limited advances using asymmetric means like fortifying offshore reefs, and emerge securely as the key power in Asia without any serious conflict.

The problem for China – and all the other states affected by its rise – is that there is no clear way to predict how peaceful China's rise will be, how far China will go, and the end result in changing the balance of power in Asia, the Pacific, and the global economy. These challenges and uncertainties also create a clear need for China to use its declared strategy as a political tool and do so with care. All nations use their declared military strategies and policies as a form of political leverage, but China has even more incentive to do so than most.

### **China's Declared Public Strategy**

The end result is that there are many debates over the degree to which China's public statements of its strategy reflect its real strategy and intentions. The details of such statements have varied in recent years, but China's summary of the Peoples Liberation Army's (PLA) strategic goals in its 2015 defense white paper, *China's Military Strategy*, is largely consistent with China's previous white papers over the last four years, and does provide broad insights into China's publically stated strategic goals:<sup>2</sup>

China's national strategic goal is to complete the building of a moderately prosperous society in all respects by 2021 when the CPC celebrates its centenary; and the building of a modern socialist country that is prosperous, strong, democratic, culturally advanced and harmonious by 2049 when the People's Republic of China (PRC) marks its centenary. It is a Chinese Dream of achieving the great rejuvenation of the Chinese nation. The Chinese Dream is to make the country strong. China's armed forces take their dream of making the military strong as part of the Chinese Dream.

Without a strong military, a country can be neither safe nor strong. In the new historical period, aiming at the CPC's goal of building a strong military in the new situation, China's armed forces will unswervingly adhere to the principle of the CPC's absolute leadership, uphold combat effectiveness as the sole and fundamental standard, carry on their glorious traditions, and work to build themselves into a people's military that follows the CPC's commands, can fight and win, and boasts a fine style of work.

In the new circumstances, the national security issues facing China encompass far more subjects, extend over a greater range, and cover a longer time span than at any time in the country's history. Internally and externally, the factors at play are more complex than ever before. Therefore, it is necessary to uphold a holistic view of national security, balance internal and external security, homeland and citizen security, traditional and non-traditional security, subsistence and development security, and China's own security and the common security of the world.

To realize China's national strategic goal and implement the holistic view of national security, new requirements have been raised for innovative development of China's military strategy and the accomplishment of military missions and tasks. In response to the new requirement of safeguarding national security and development interests, China's armed forces will work harder to create a favorable strategic posture with more emphasis on the employment of military forces and means, and provide a solid security guarantee for the country's peaceful development.

In response to the new requirement arising from the changing security situation, the armed forces will constantly innovate strategic guidance and operational thoughts so as to ensure the capabilities of fighting and winning. In response to the new requirement arising from the worldwide RMA, the armed forces will pay close attention to the challenges in new security domains, and work hard to seize the strategic initiative in military competition.

In response to the new requirement coming from the country's growing strategic interests, the armed forces will actively participate in both regional and international security cooperation and effectively secure China's overseas interests. And in response to the new requirement arising from China's all-round and deepening reform, the armed forces will continue to follow the path of civil-military integration (CMI), actively participate in the country's economic and social construction, and firmly maintain social stability, so as to remain a staunch force for upholding the CPC's ruling position and a reliable force for developing socialism with Chinese characteristics.

China's armed forces will effectively perform their missions in the new historical period, resolutely uphold the leadership of the CPC and the socialist system with Chinese characteristics, safeguard China's sovereignty, security and development interests, safeguard the important period of strategic opportunities for China's development, maintain regional and world peace, and strive to provide a strong guarantee for completing the building of a moderately prosperous society in all respects and achieving the great rejuvenation of the Chinese nation.

China's armed forces mainly shoulder the following strategic tasks:

- To deal with a wide range of emergencies and military threats, and effectively safeguard the sovereignty and security of China's territorial land, air and sea;
- To resolutely safeguard the unification of the motherland;
- To safeguard China's security and interests in new domains;
- To safeguard the security of China's overseas interests;
- To maintain strategic deterrence and carry out nuclear counterattack;
- To participate in regional and international security cooperation and maintain regional and world peace;
- To strengthen efforts in operations against infiltration, separatism and terrorism so as to maintain China's political security and social stability; and
- To perform such tasks as emergency rescue and disaster relief, rights and interest protection, guard duties, and support for national economic and social development.

### **Key Trends in Chinese Military Modernization**

China's 2015 white paper also provides broad insights into the reasons why China is making key changes to its armed forces. The white paper notes that:<sup>3</sup>

In the implementation of the military strategic guideline in the new situation, China's armed forces must closely center around the CPC's goal of building a strong military, respond to the state's core security needs, aim at building an informationized military and winning informationized wars, deepen the reform of national defense and the armed forces in an all-round way, build a modern system of military forces with Chinese characteristics, and constantly enhance their capabilities for addressing various security threats and accomplishing diversified military tasks.

*Development of the Services and Arms of the People's Liberation Army (PLA) and the People's Armed Police Force (PAPF)*

In line with the strategic requirement of mobile operations and multi-dimensional offense and defense, the PLA Army (PLAA) will continue to reorient from theater defense to trans-theater mobility. In the process of building small, multi-functional and modular units, the PLAA will adapt itself to tasks in different regions, develop the capacity of its combat forces for different purposes, and construct a combat force structure for



joint operations. The PLAA will elevate its capabilities for precise, multi-dimensional, trans-theater, multi-functional and sustainable operations.

In line with the strategic requirement of offshore waters defense and open seas protection, the PLA Navy (PLAN) will gradually shift its focus from "offshore waters defense" to the combination of "offshore waters defense" with "open seas protection," and build a combined, multi-functional and efficient marine combat force structure. The PLAN will enhance its capabilities for strategic deterrence and counterattack, maritime maneuvers, joint operations at sea, comprehensive defense and comprehensive support.

In line with the strategic requirement of building air-space capabilities and conducting offensive and defensive operations, the PLA Air Force (PLAAF) will endeavor to shift its focus from territorial air defense to both defense and offense, and build an air-space defense force structure that can meet the requirements of informationized operations. The PLAAF will boost its capabilities for strategic early warning, air strike, air and missile defense, information countermeasures, airborne operations, strategic projection and comprehensive support.

In line with the strategic requirement of being lean and effective and possessing both nuclear and conventional missiles, the PLA Second Artillery Force (PLASAF) will strive to transform itself in the direction of informationization, press forward with independent innovations in weaponry and equipment by reliance on science and technology, enhance the safety, reliability and effectiveness of missile systems, and improve the force structure featuring a combination of both nuclear and conventional capabilities. The PLASAF will strengthen its capabilities for strategic deterrence and nuclear counterattack, and medium- and long-range precision strikes.

In line with the strategic requirement of performing multiple functions and effectively maintaining social stability, the PAPF will continue to develop its forces for guard and security, contingency response, stability maintenance, counter-terrorism operations, emergency rescue and disaster relief, emergency support and air support, and work to improve a force structure which highlights guard duty, contingency response, counter-terrorism and stability maintenance. The PAPF will enhance its capabilities for performing diversified tasks centering on guard duty and contingency response in informationized conditions.

#### *Force Development in Critical Security Domains*

The seas and oceans bear on the enduring peace, lasting stability and sustainable development of China. The traditional mentality that land outweighs sea must be abandoned, and great importance has to be attached to managing the seas and oceans and protecting maritime rights and interests. It is necessary for China to develop a modern maritime military force structure commensurate with its national security and development interests, safeguard its national sovereignty and maritime rights and interests, protect the security of strategic SLOCs and overseas interests, and participate in international maritime cooperation, so as to provide strategic support for building itself into a maritime power.

Outer space has become a commanding height in international strategic competition. Countries concerned are developing their space forces and instruments, and the first signs of weaponization of outer space have appeared. China has all along advocated the peaceful use of outer space, opposed the weaponization of and arms race in outer space, and taken an active part in international space cooperation. China will keep abreast of the dynamics of outer space, deal with security threats and challenges in that domain, and secure its space assets to serve its national economic and social development, and maintain outer space security.

Cyberspace has become a new pillar of economic and social development, and a new domain of national security. As international strategic competition in cyberspace has been turning increasingly fiercer, quite a few countries are developing their cyber military forces. Being one of the major victims of hacker attacks, China is confronted with grave security threats to its cyber infrastructure. As cyberspace weighs more in military security, China will expedite the development of a cyber force, and enhance its capabilities of cyberspace situation awareness, cyber defense, support for the country's endeavors in cyberspace and participation in international cyber cooperation, so as to stem major cyber crises, ensure national network and information security, and maintain national security and social stability.

The nuclear force is a strategic cornerstone for safeguarding national sovereignty and security. China has always pursued the policy of no first use of nuclear weapons and adhered to a self-defensive nuclear strategy that is defensive in nature. China will unconditionally not use or threaten to use nuclear weapons against non-

nuclear-weapon states or in nuclear-weapon-free zones, and will never enter into a nuclear arms race with any other country. China has always kept its nuclear capabilities at the minimum level required for maintaining its national security. China will optimize its nuclear force structure, improve strategic early warning, command and control, missile penetration, rapid reaction, and survivability and protection, and deter other countries from using or threatening to use nuclear weapons against China.

#### *Military Force Building Measures*

Strengthening ideological and political work. China's armed forces always treat ideological and political building as the first priority, and have endeavored to reinforce and improve their political work in the new situation. They will continue to practice and carry forward the Core Socialist Values, cultivate the Core Values of Contemporary Revolutionary Service Personnel, and carry forward their glorious traditions and fine styles. Moreover, the armed forces will uphold a series of fundamental principles for and institutions of the CPC's absolute leadership over the military, enhance the creativity, cohesion and combat effectiveness of their CPC organizations at all levels, make great efforts to cultivate a new generation of revolutionary service personnel of noble soul, competence, courage, uprightness and virtue, and ensure that the armed forces will resolutely follow the commands of the CPC Central Committee and the CMC at all times and under all conditions, and consistently retain the nature and purpose of the people's armed forces.

Pushing ahead with logistics modernization. China's armed forces will deepen logistics reform in relevant policies, institutions and support forces, and optimize strategic logistics deployment. They will innovate the modes of support, develop new support means, augment war reserves, integrate logistics information systems, improve rules and standards, and meticulously organize supply and support, so as to build a logistics system that can provide support for fighting and winning modern wars, serve the modernization of the armed forces, and transform towards informationization.

Developing advanced weaponry and equipment. Persevering in information dominance, systems building, independent innovation, sustainable development, overall planning, and emphasis on priorities, China's armed forces will speed up to upgrade weaponry and equipment, and work to develop a weaponry and equipment system which can effectively respond to informationized warfare and help fulfill the missions and tasks.

Cultivating new-type military personnel. China's armed forces will continue with the strategic project for personnel training and perfect the system for military human resources. They will deepen the reform of military educational institutions and improve the triad training system for new-type military personnel - institutional education, unit training and military professional education, so as to pool more talented people and cultivate more personnel who can meet the demands of informationized warfare.

Intensifying efforts in running the armed forces with strict discipline and in accordance with the law. Aiming at strengthening the revolutionization, modernization and regularization of the armed forces in all respects, China will innovate and develop theories and practice in relation to running the armed forces in accordance with the law, establish a well-knit military law system with Chinese characteristics, so as to elevate the level of rule by law of national defense and armed forces building.

Innovating military theories. Under the guidance of the CPC's innovative theories, China's armed forces will intensify their studies of military operations, probe into the mechanisms of winning modern wars, innovate strategies and tactics featuring mobility and flexibility, and develop theories on military building in the new situation, so as to bring into place a system of advanced military theories commensurate with the requirement of winning future wars.

Improving strategic management. It is necessary to optimize the functions and institutions of the CMC and the general headquarters/departments, improve the leadership and management system of the services and arms, and adhere to demand-based planning and plan-based resource allocation. China's armed forces will set up a system and a working mechanism for overall and coordinated programming and planning. They will also intensify overall supervision and management of strategic resources, strengthen the in-process supervision and risk control of major projects, improve mechanisms for strategic assessment, and set up and improve relevant assessment systems and complementary standards and codes.

#### *In-depth Development of Civil-Military Integration (CMI)*

Following the guiding principle of integrating military with civilian purposes and combining military efforts with civilian support, China will forge further ahead with CMI by constantly bettering the mechanisms, diversifying the forms, expanding the scope and elevating the level of the integration, so as to endeavor to bring into place an all-element, multi-domain and cost-efficient pattern of CMI.

Accelerating CMI in key sectors. With stronger policy support, China will work to establish uniform military and civilian standards for infrastructure, key technological areas and major industries, explore the ways and means for training military personnel in civilian educational institutions, developing weaponry and equipment by national defense industries, and outsourcing logistics support to civilian support systems. China encourages joint building and utilization of military and civilian infrastructure, joint exploration of the sea, outer space and air, and shared use of such resources as surveying and mapping, navigation, meteorology and frequency spectra. Accordingly, military and civilian resources can be more compatible, complementary and mutually accessible.

Building a mechanism for operating CMI. At the state level, it is necessary to establish a mechanism for CMI development, featuring unified leadership, military-civilian coordination, abutment of military and civilian needs, and resource sharing. Furthermore, it is necessary to improve the management responsibilities of relevant military and civilian institutions, improve the general standards for both the military and the civilian sectors, make studies on the establishment of a policy system in which the government makes the investment, offers tax incentives and financial support, and expedites legislation promoting military-civilian coordinated development, so as to form a pattern featuring overall military-civilian planning and coordinated development. It is also necessary to push forward with the shared utilization of military capabilities and those of other sectors, and establish a mechanism for joint civil-military response to major crises and emergencies.

Improving the systems and mechanisms of national defense mobilization. China will enhance education in national defense and boost the awareness of the general public in relation to national defense. It will continue to strengthen the building of the reserve force, optimize its structure, and increase its proportion in the PLAN, PLAAF and PLASAF as well as in combat support forces. The ways to organize and employ reserve forces will be more diversified. China will devote more efforts to science and technology in national defense mobilization, be more readily prepared for the requisition of information resources, and build specialized support forces. China aims to build a national defense mobilization system that can meet the requirements of winning informationized wars and responding to both emergencies and wars.

### **China's View of Its Strategic Position Relative to the United States**

At the same time, the 2015 Chinese White Paper focuses on a key underlying reality that shapes the development of both China's forces and strategic posture. Whether or not China openly declares the motives behind its military development, every aspect of China's strategy, the changes in its forces, and its military modernization is related to China's view that China must pursue its interests in a troubled region, that it must be ready for conflict, and US is both a potential partner in some forms of military cooperation and a major competitor for strategic influence and a potential future threat.

Profound changes are taking place in the international situation, as manifested in the historic changes in the balance of power, global governance structure, Asia-Pacific geostrategic landscape, and international competition in the economic, scientific and technological, and military fields. The forces for world peace are on the rise, so are the factors against war. In the foreseeable future, a world war is unlikely, and the international situation is expected to remain generally peaceful. There are, however, new threats from hegemonism, power politics and neo-interventionism. International competition for the redistribution of power, rights and interests is tending to intensify. Terrorist activities are growing increasingly worrisome. Hotspot issues, such as ethnic, religious, border and territorial disputes, are complex and volatile. Small-scale wars, conflicts and crises are recurrent in some regions. Therefore, the world still faces both immediate and potential threats of local wars.

With a generally favorable external environment, China will remain in an important period of strategic opportunities for its development, a period in which much can be achieved. China's comprehensive national strength, core competitiveness and risk-resistance capacity are notably increasing, and China enjoys growing

international standing and influence. Domestically, the Chinese people's standard of living has remarkably improved, and Chinese society remains stable. China, as a large developing country, still faces multiple and complex security threats, as well as increasing external impediments and challenges. Subsistence and development security concerns, as well as traditional and non-traditional security threats are interwoven. Therefore, China has an arduous task to safeguard its national unification, territorial integrity and development interests.

As the world economic and strategic center of gravity is shifting ever more rapidly to the Asia-Pacific region, the US carries on its "rebalancing" strategy and enhances its military presence and its military alliances in this region. Japan is sparing no effort to dodge the post-war mechanism, overhauling its military and security policies. Such development has caused grave concerns among other countries in the region. On the issues concerning China's territorial sovereignty and maritime rights and interests, some of its offshore neighbors take provocative actions and reinforce their military presence on China's reefs and islands that they have illegally occupied. Some external countries are also busy meddling in South China Sea affairs; a tiny few maintain constant close-in air and sea surveillance and reconnaissance against China. It is thus a long-standing task for China to safeguard its maritime rights and interests. Certain disputes over land territory are still smoldering. The Korean Peninsula and Northeast Asia are shrouded in instability and uncertainty. Regional terrorism, separatism and extremism are rampant. All these have a negative impact on the security and stability along China's periphery.

The Taiwan issue bears on China's reunification and long-term development, and reunification is an inevitable trend in the course of national rejuvenation. In recent years, cross-Taiwan Straits relations have sustained a sound momentum of peaceful development, but the root cause of instability has not yet been removed, and the "Taiwan independence" separatist forces and their activities are still the biggest threat to the peaceful development of cross-Straits relations. Further, China faces a formidable task to maintain political security and social stability. Separatist forces for "East Turkistan independence" and "Tibet independence" have inflicted serious damage, particularly with escalating violent terrorist activities by "East Turkistan independence" forces. Besides, anti-China forces have never given up their attempt to instigate a "color revolution" in this country. Consequently, China faces more challenges in terms of national security and social stability. With the growth of China's national interests, its national security is more vulnerable to international and regional turmoil, terrorism, piracy, serious natural disasters and epidemics, and the security of overseas interests concerning energy and resources, strategic sea lines of communication (SLOCs), as well as institutions, personnel and assets abroad, has become an imminent issue.

The world revolution in military affairs (RMA) is proceeding to a new stage. Long-range, precise, smart, stealthy and unmanned weapons and equipment are becoming increasingly sophisticated. Outer space and cyber space have become new commanding heights in strategic competition among all parties. The form of war is accelerating its evolution to informationization. World major powers are actively adjusting their national security strategies and defense policies, and speeding up their military transformation and force restructuring. The aforementioned revolutionary changes in military technologies and the form of war have not only had a significant impact on the international political and military landscapes, but also posed new and severe challenges to China's military security.

...The strategic concept of active defense is the essence of the CPC's military strategic thought. From the long-term practice of revolutionary wars, the people's armed forces have developed a complete set of strategic concepts of active defense, which boils down to: adherence to the unity of strategic defense and operational and tactical offense; adherence to the principles of defense, self-defense and post-emptive strike; and adherence to the stance that "We will not attack unless we are attacked, but we will surely counterattack if attacked."

Shortly after the founding of the PRC in 1949, the Central Military Commission (CMC) established the military strategic guideline of active defense, and later, in line with the developments and changes in the national security situation, had made a number of major revisions of it. In 1993 the military strategic guideline of the new era was formulated, which took winning local wars in conditions of modern technology, particularly high technology, as the basic point in making preparation for military struggle (PMS). In 2004, the guideline was further substantiated, and the basic point for PMS was modified to winning local wars under conditions of informationization.

China's socialist nature, fundamental national interests and the objective requirement of taking the path of peaceful development all demand that China unswervingly adhere to and enrich the strategic concept of active defense. Guided by national security and development strategies, and required by the situation and their tasks in the new historical period, China's armed forces will continue to implement the military strategic guideline of active defense and enhance military strategic guidance as the times so require. They will further broaden strategic vision, update strategic thinking and make strategic guidance more forward-looking. A holistic approach will be taken to balance war preparation and war prevention, rights protection and stability maintenance, deterrence and warfighting, and operations in wartime and employment of military forces in peacetime. They will lay stress on farsighted planning and management to create a favorable posture, comprehensively manage crises, and resolutely deter and win wars.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will adjust the basic point for PMS. In line with the evolving form of war and national security situation, the basic point for PMS will be placed on winning informationized local wars, highlighting maritime military struggle and maritime PMS. The armed forces will work to effectively control major crises, properly handle possible chain reactions, and firmly safeguard the country's territorial sovereignty, integrity and security.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will innovate basic operational doctrines. In response to security threats from different directions and in line with their current capabilities, the armed forces will adhere to the principles of flexibility, mobility and self-dependence so that "you fight your way and I fight my way." Integrated combat forces will be employed to prevail in system-vs-system operations featuring information dominance, precision strikes and joint operations.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will optimize the military strategic layout. In view of China's geostrategic environment, the security threats it faces and the strategic tasks they shoulder, the armed forces will make overall planning for strategic deployment and military disposition, in order to clearly divide areas of responsibility for their troops, and enable them to support each other and act as an organic whole. Threats from such new security domains as outer space and cyber space will be dealt with to maintain the common security of the world community. China's armed forces will strengthen international security cooperation in areas crucially related to China's overseas interests, to ensure the security of such interests.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will uphold the following principles:

- To be subordinate to and in the service of the national strategic goal, implement the holistic view of national security, strengthen PMS, prevent crises, deter and win wars;
- To foster a strategic posture favorable to China's peaceful development, adhere to the national defense policy that is defensive in nature, persevere in close coordination of political, military, economic and diplomatic work, and positively cope with comprehensive security threats the country possibly encounters;
- To strike a balance between rights protection and stability maintenance, and make overall planning for both, safeguard national territorial sovereignty and maritime rights and interests, and maintain security and stability along China's periphery;
- To endeavor to seize the strategic initiative in military struggle, proactively plan for military struggle in all directions and domains, and grasp the opportunities to accelerate military building, reform and development;
- To employ strategies and tactics featuring flexibility and mobility, give full play to the overall effectiveness of joint operations, concentrate superior forces, and make integrated use of all operational means and methods;
- To make serious preparations to cope with the most complex and difficult scenarios, uphold bottom-line thinking, and do a solid job in all aspects so as to ensure proper responses to such scenarios with ease at any time and in any circumstances;

- To bring into full play the unique political advantages of the people's armed forces, uphold the CPC's absolute leadership over the military, accentuate the cultivation of fighting spirit, enforce strict discipline, improve the professionalism and strength of the troops, build closer relations between the government and the military as well as between the people and the military, and boost the morale of officers and men;
- To give full play to the overall power of the concept of people's war, persist in employing it as an ace weapon to triumph over the enemy, enrich the contents, ways and means of the concept of people's war, and press forward with the shift of the focus of war mobilization from human resources to science and technology; and
- To actively expand military and security cooperation, deepen military relations with major powers, neighboring countries and other developing countries, and promote the establishment of a regional framework for security and cooperation.

...Preparation for military struggle (PMS) is a basic military practice and an important guarantee for safeguarding peace, containing crises and winning wars. To expand and intensify PMS, China's armed forces must meet the requirement of being capable of fighting and winning, focus on solving major problems and difficulties, and do solid work and make relentless efforts in practical preparations, in order to enhance their overall capabilities for deterrence and warfighting.

Enhancing capabilities for system-vs-system operations based on information systems. China's armed forces will quicken their steps to transform the generating mode of combat effectiveness, work to use information systems to integrate a wide range of operational forces, modules and elements into overall operational capacity, and gradually establish an integrated joint operational system in which all elements are seamlessly linked and various operational platforms perform independently and in coordination. China's armed forces will endeavor to address the pressing problems constraining the capabilities for system-vs-system operations. They will make further exploration and more efficient utilization of information resources, strengthen the building of the systems of reconnaissance, early-warning and command and control, develop medium- and long-range precision strike capabilities, and improve the comprehensive support systems. In accordance with the requirement of being authoritative, streamlined, agile and efficient, they will strive to establish and improve the CMC command organ and theater-level command systems for joint operations.

Pushing ahead with PMS in all directions and domains. Due to its complex geostrategic environment, China faces various threats and challenges in all its strategic directions and security domains. Therefore, PMS must be carried out in a well-planned, prioritized, comprehensive and coordinated way, so as to maintain the balance and stability of the overall strategic situation. China's armed forces will make overall planning for PMS in both traditional and new security domains, and get ready to safeguard national sovereignty and security, protect the country's maritime rights and interests, and deal with armed conflicts and emergencies. To adapt to the upgrading of weaponry and equipment as well as changes of operational patterns, China's armed forces will further optimize battlefield disposition and strengthen strategic prepositioning.

Maintaining constant combat readiness. China's armed forces will continue to improve its routine combat readiness, maintain a posture of high alertness, and conscientiously organize border, coastal and air defense patrols and guard duties. The PLAA will improve its combat readiness system with inter-connected strategic directions, combined arms and systematized operational support, so as to ensure agile maneuvers and effective response. The PLAN will continue to organize and perform regular combat readiness patrols and maintain a military presence in relevant sea areas. The PLAAF will continue to observe the principles of applicability in peacetime and wartime, all-dimensional response and full territorial reach, and maintain vigilant and efficient combat readiness. The PLASAF will continue to keep an appropriate level of vigilance in peacetime. By observing the principles of combining peacetime and wartime demands, maintaining all time vigilance and being action-ready, it will perfect the integrated, functional, agile and efficient operational duty system.

Enhancing realistic military training. The PLA will continue to attach strategic importance to combat training in realistic conditions, and strictly temper the troops according to the Outline of Military Training and Evaluation (OMTE). It will constantly innovate operational and training methods, improve military training criteria and regulations, and work to build large-scale comprehensive training bases in an effort to provide real-combat environments for training. The PLA will continue to conduct live-setting training, IT-based



simulated training, and face-on-face confrontation training in line with real-combat criteria, and strengthen command post training and joint and combined training. It will intensify training in complex electro-magnetic environments, complex and unfamiliar terrains, and complex weather conditions. It will also set up a training supervision and inspection system, so as to incorporate real-combat requirements into training.

Pursuing a security concept featuring common, comprehensive, cooperative and sustainable security, China's armed forces will continue to develop military-to-military relations that are non-aligned, non-confrontational and not directed against any third party. They will strive to establish fair and effective collective security mechanisms and military confidence-building measures (CBMs), expand military and security cooperation, and create a security environment favorable to China's peaceful development.

Developing all-round military-to-military relations. China's armed forces will further their exchanges and cooperation with the Russian military within the framework of the comprehensive strategic partnership of coordination between China and Russia, and foster a comprehensive, diverse and sustainable framework to promote military relations in more fields and at more levels.

China's armed forces will continue to foster a new model of military relationship with the US armed forces that conforms to the new model of major-country relations between the two countries, strengthen defense dialogues, exchanges and cooperation, and improve the CBM mechanism for the notification of major military activities as well as the rules of behavior for safety of air and maritime encounters, so as to strengthen mutual trust, prevent risks and manage crises. In the spirit forces will further develop relations with their counterparts in neighboring countries.

Also, they will work to raise the level of military relations with European counterparts, continue the traditional friendly military ties with their African, Latin American and Southern Pacific counterparts. China's armed forces will work to further defense and security cooperation in the Shanghai Cooperation Organization (SCO), and continue to participate in multilateral dialogues and cooperation mechanisms such as the ASEAN Defense Ministers' Meeting Plus (ADMM+), ASEAN Regional Forum (ARF), Shangri-La Dialogue (SLD), Jakarta International Defence Dialogue (JIDD) and Western Pacific Naval Symposium (WPNS). The Chinese military will continue to host multilateral events like the Xiangshan Forum, striving to establish a new framework for security and cooperation conducive to peace, stability and prosperity in the Asia-Pacific region.<sup>4</sup>

Any assessment of China's strategy and forces must recognize that Chinese developments focus on the US as a key strategic competitor, and do so both in terms of the forces the US can deploy and US ties to regional strategic partners.

### ***Putting China in Perspective: America's Evolving Strategy in Asia***

At the same time, China's actions and military modernization efforts have scarcely gone unnoticed by the U.S. and other states. The Executive Summary of the DoD's 2016 Annual Report to Congress on the *Military and Security Developments Involving the People's Republic of China*, the U.S. Department of Defense (DoD) stated that, "Chinese leaders have characterized the modernization of the People's Liberation Army (PLA) as essential to achieving great power status and what Chinese President Xi Jinping calls the 'China Dream' of national rejuvenation."

The U.S. report summarized China's near and long-term strategic goals – and the thrusts behind its military modernization – in very different ways than China did in its declared strategy.<sup>5</sup>

The long-term, comprehensive modernization of the armed forces of the People's Republic of China (PRC) entered a new phase in 2015 as China unveiled sweeping organizational reforms to overhaul the entire military structure. These reforms aim to strengthen the Chinese Communist Party's (CCP) control over the military, enhance the PLA's ability to conduct joint operations, and improve its ability to fight short-duration, high-intensity regional conflicts at greater distances from the Chinese mainland. China's leaders seek ways to leverage China's growing military, diplomatic, and economic clout to advance its ambitions to establish regional preeminence and expand its international influence. Chinese leaders have characterized

modernization of the People's Liberation Army (PLA) as essential to achieving great power status and what Chinese President Xi Jinping calls the "China Dream" of national rejuvenation. They portray a strong military as critical to advancing Chinese interests, preventing other countries from taking steps that would damage those interests, and ensuring that China can defend itself and its sovereignty claims.

Throughout 2015, China continued to assert sovereignty claims over features in the East and South China Seas. In the East China Sea, China continued to use maritime law enforcement ships and aircraft to patrol near the Senkaku (Diaoyu) Islands in order to challenge Japan's claim. In the South China Sea, China paused its land reclamation effort in the Spratly Islands in late 2015 after adding more than 3,200 acres of land to the seven features it occupies in the archipelago. Although these artificial islands do not provide China with any additional territorial or maritime rights within the South China Sea, China will be able to use them as persistent civil-military bases to enhance its long-term presence in the South China Sea significantly.

China demonstrated a willingness to tolerate higher levels of tension in the pursuit of its interests, especially in pursuit of its territorial claims in the East and South China Sea; however, China still seeks to avoid direct and explicit conflict with the United States. China's leaders understand that instability or conflict would jeopardize the peaceful external environment that has enabled China's economic development, which is central to the perpetuation of the CCP's domestic legitimacy. In the near-term, China is using coercive tactics short of armed conflict, such as the use of law enforcement vessels to enforce maritime claims, to advance their interests in ways that are calculated to fall below the threshold of provoking conflict.

In the long term, Chinese leaders are focused on developing the capabilities they deem necessary to deter or defeat adversary power projection and counter third-party—including U.S.—intervention during a crisis or conflict. China's military modernization is producing capabilities that have the potential to reduce core U.S. military technological advantages.

China's officially-disclosed military budget grew at an average of 9.8 percent per year in inflation-adjusted terms from 2006 through 2015, and Chinese leaders seem committed to sustaining defense spending growth for the foreseeable future, even as China's economic growth decelerates.

The PRC continues to focus on preparing for potential conflict in the Taiwan Strait, but additional missions, such as contingencies in the East and South China Seas and on the Korean peninsula, are increasingly important to the PLA. Moreover, as China's global footprint and international interests grow, its military modernization program has become more focused on investments and infrastructure to support a range of missions beyond China's periphery, including power projection, sea lane security, counterpiracy, peacekeeping, and humanitarian assistance/disaster relief (HA/DR). PLA global operations in 2015 included counterpiracy patrols, humanitarian assistance and disaster relief, exercises, and sea lane security operations. China's November 2015 public confirmation of its intention to build its first overseas military support facility in Djibouti likely reflects this more global outlook, as it will be utilized to sustain the PLA Navy's operations at greater distances from China.

During 2015, the PLA continued to improve key capabilities that would be used in theater contingencies, including cruise missiles; short, medium, and intermediate-range ballistic missiles; high performance aircraft; integrated air defense networks; information operations capabilities; and amphibious and airborne assault units. The PLA is developing and testing new intermediate- and medium-range conventional ballistic missiles as well as long-range, land-attack, and anti-ship cruise missiles, which once operational would extend the military's reach and push adversary forces further from potential regional conflicts. China is also focusing on counterspace, offensive cyber operations, and electronic warfare (EW) capabilities meant to deny adversaries the advantages of modern, information technology-driven warfare.

Despite the PLA's gains over the last two decades, its modernization program faces challenges. The organizational reforms unveiled by the leadership are part of a broader effort by President Xi to address the PLA's deficiencies, such as corruption. Since Xi took power in 2012, more than forty senior officers have fallen in a wide-ranging anti-corruption campaign that last year ensnared the former top officer in the PLA. Moreover, Xi's slogan exhorting the PLA to prepare to "fight and win" battles implies that the leadership is concerned about how the PLA, which has not fought a war in more than thirty years, would fare in combat.

## **The U.S. Shift to “Rebalancing” to Asia in 2012**

America’s public strategy towards China and Asia has evolved more strikingly than China’s public strategy documents. China and the U.S. have long differed over the nature of China’s strategy and military modernization, and the U.S. has long seen both opportunities and risks in its military relations with China.

The US began to react to China’s growing strength more than a decade earlier. Indeed, there is some evidence that the shift in U.S. foreign policy focus towards Asia may have been a focus during the George W. Bush administration if not for the 9/11 attacks and the two subsequent wars in the Middle East.<sup>6</sup> The U.S. formally announced the major shift in its strategy in 2012 that called for the U.S. to “rebalance” its forces to Asia. The U.S. did so in a document called *Sustaining US Global Leadership: Priorities for 21<sup>st</sup> Century Defense* that the Department of Defense issued on January 5, 2012.<sup>7</sup>

The document did, however, address China’s military build-up as a key factor behind the limited “rebalancing” of U.S. forces.<sup>8</sup>

U.S. economic and security interests are inextricably linked to developments in the arc extending from the Western Pacific and East Asia into the Indian Ocean region and South Asia, creating a mix of evolving challenges and opportunities. Accordingly, while the U.S. military will continue to contribute to security globally, *we will of necessity rebalance toward the Asia-Pacific region*. Our relationships with Asian allies and key partners are critical to the future stability and growth of the region. We will emphasize our existing alliances, which provide a vital foundation for Asia-Pacific security. We will also expand our networks of cooperation with emerging partners throughout the Asia-Pacific to ensure collective capability and capacity for securing common interests. The United States is also investing in a long-term strategic partnership with India to support its ability to serve as a regional economic anchor and provider of security in the broader Indian Ocean region. Furthermore, we will maintain peace on the Korean Peninsula by effectively working with allies and other regional states to deter and defend against provocation from North Korea, which is actively pursuing a nuclear weapons program.

The maintenance of peace, stability, the free flow of commerce, and of U.S. influence in this dynamic region will depend in part on an underlying balance of military capability and presence. Over the long term, China’s emergence as a regional power will have the potential to affect the U.S. economy and our security in a variety of ways. Our two countries have a strong stake in peace and stability in East Asia and an interest in building a cooperative bilateral relationship. However, the growth of China’s military power must be accompanied by greater clarity of its strategic intentions in order to avoid causing friction in the region. The United States will continue to make the necessary investments to ensure that we maintain regional access and the ability to operate freely in keeping with our treaty obligations and with international law. Working closely with our network of allies and partners, we will continue to promote a rules-based international order that ensures underlying stability and encourages the peaceful rise of new powers, economic dynamism, and constructive defense cooperation.

The 2012 document also underlined a key tenet of the United States’ rebalance efforts with the Asia-Pacific and China: the promotion and upkeep of a rules-based international order in the region. This focus on a rules-based order has subsequently been part of many American talking points, particularly in dealing with disagreements with China like the territorial disputes in the South China Sea.

It is important to note, however, that the U.S. only called for a rebalancing effort that involved limited shifts of air and seapower from Europe to the Pacific. The rebalancing strategy in the 2012 document – and in the US official strategy documents that have followed – never referred to a “pivot” to Asia and gave the Middle East the same strategic priority as Asia. Moreover, the U.S. did so at a time before the Russian invasion of the Crimea and the reemergence of a Russian

challenge in Europe, and before the U.S. reengaged in Iraq and in a major campaign against ISIS, and before its domestic debates over the total U.S. budget placed growing limits on the modernization and readiness of U.S. forces.

### **Secretary of Defense Panetta's Summary of U.S. Views of China at the Shangri-La Dialogue in 2012**

Like China, the U.S. also remained cautious about any direct confrontation with China or describing its rising military power as hostile. Then Secretary of Defense Leon Panetta updated the U.S. view of Chinese military developments in more detail in a speech at the Shangri-La Security Dialogue in Singapore on June 2, 2012. He did not announce increases in US forces. He instead acknowledged the growing constraints on US military resources, and focused on the need for US and Chinese cooperation and dialogue:<sup>9</sup>

The purpose of this trip, and of my remarks today, is to explain a new defense strategy that the United States has put in place and why the United States will play a deeper and more enduring partnership role in advancing the security and prosperity of the Asia-Pacific region, and how the United States military supports that goal by rebalancing towards this region.

...America's fate is inexorably linked with this region. This reality has guided more than six decades of U.S. military presence and partnership in this region -- a defense posture that, along with our trading relations, along with our diplomatic ties, along with our foreign assistance, helped usher in an unprecedented era of security and prosperity in the latter half of the 20th century.

In this century, the 21st century, the United States recognizes that our prosperity and our security depend even more on the Asia-Pacific region. After all, this region is home to some of the world's fastest growing economies: China, India, and Indonesia to mention a few. At the same time, Asia-Pacific contains the world's largest populations, and the world's largest militaries. Defense spending in Asia is projected by this institute, the IISS, to surpass that of Europe this year, and there is no doubt that it will continue to increase in the future.

Given these trends, President Obama has stated the United States will play a larger role in this region over the decades to come. This effort will draw on the strengths of the entire United States government. We take on this role not as a distant power, but as part of the Pacific family of nations. Our goal is to work closely with all of the nations of this region to confront common challenges and to promote peace, prosperity, and security for all nations in the Asia-Pacific region.

...As we take existing alliances and partnerships in new directions, this rebalancing effort also places a premium on enhancing partnerships with Indonesia, Malaysia, India, and Vietnam, and New Zealand. In the coming days I will travel to Vietnam to advance bilateral defense cooperation, building off of the comprehensive memorandum of understanding that our two nations signed last year. From Vietnam, I will travel to India to affirm our interest in building a strong security relationship with a country I believe will play a decisive role in shaping the security and prosperity of the 21st century.

As the United States strengthens these regional partnerships, we will also seek to strengthen a very important relationship with China. We believe China is a key to being able to develop a peaceful, prosperous, and secure Asia-Pacific in the 21st century. And I am looking forward to traveling there soon at the invitation of the Chinese government. Both of our nations recognize that the relationship -- this relationship between the United States and China is one of the most important in the world. We in the United States are clear-eyed about the challenges, make no mistake about it, but we also seek to grasp the opportunities that can come from closer cooperation and a closer relationship.

I'm personally committed to building a healthy, stable, reliable, and continuous mil-to-mil relationship with China. I had the opportunity to host Vice President Xi and later Defense Minister General Liang at the Pentagon in the effort to pursue that goal. Our aim is to continue to improve the strategic trust that we must have between our two countries, and to discuss common approaches to dealing with shared security challenges.

We are working with China to execute a robust military-to-military engagement plan for the rest of this year, and we will seek to deepen our partnership in humanitarian assistance, counter-drug, and counter-proliferation efforts. We have also agreed on the need to address responsible behavior in cyberspace and in outer space. We must establish and reinforce agreed principles of responsible behavior in these key domains.

I know that many in the region and across the world are closely watching the United States-China relationship. Some view the increased emphasis by the United States on the Asia-Pacific region as some kind of challenge to China. I reject that view entirely. Our effort to renew and intensify our involvement in Asia is fully compatible -- fully compatible -- with the development and growth of China. Indeed, increased U.S. involvement in this region will benefit China as it advances our shared security and prosperity for the future.

In this context, we strongly support the efforts that both China and Taiwan, both have made in recent years trying to improve cross-strait relations. We have an enduring interest in peace and stability across the Taiwan Strait. The United States remains firm in the adherence to a one-China policy based on the Three Communiqués and the Taiwan Relations Act. China also has a critical role to play in advancing security and prosperity by respecting the rules-based order that has served the region for six decades. The United States welcomes the rise of a strong and prosperous and successful China that plays a greater role in global affairs.

Another positive step towards furthering this rules-based order is Asia's deepening regional security architecture, which the United States strongly supports. Last October, I had the opportunity to be the first U.S. secretary of defense to meet privately with all ASEAN defense ministers in Bali. We applaud the ASEAN Defense Ministers Meeting Plus for producing real action plans for multilateral military cooperation, and I strongly support the ASEAN decision to hold more frequent ADMM-Plus discussions at the ministerial level. We think this is an important step for stability, real coordination, communication, and support between these nations.

The United States believes it is critical for regional institutions to develop mutually agreed rules of the road that protect the rights of all nations to free and open access to the seas. We support the efforts of the ASEAN countries and China to develop a binding code of conduct that would create a rules-based framework for regulating the conduct of parties in the South China Sea, including the prevention and management of disputes.

On that note, we are obviously paying close attention to the situation in Scarborough Shoal in the South China Sea. The U.S. position is clear and consistent: we call for restraint and for diplomatic resolution; we oppose provocation; we oppose coercion; and we oppose the use of force. We do not take sides when it comes to competing territorial claims, but we do want this dispute resolved peacefully and in a manner consistent with international law.

We have made our views known and very clear to our close treaty ally, the Philippines, and we have made those views clear to China and to other countries in the region. As a Pacific power, the United States has a national interest in freedom of navigation, in unimpeded economic development and commerce, and in a respect for the rule of law. Our alliances, our partnerships, and our enduring presence in this region all serve to support these important goals.

### **Secretary of Defense Hagel's Summary at Shangri-La Dialogue in 2013**

His replacement, Secretary Chuck Hagel, gave a similar speech at the May 31, 2013 Shangri-La Forum:<sup>10</sup>

...[T]he world is undergoing a time of historic transformation, and Asia is at the epicenter of that change. The 21<sup>st</sup> century will be defined by the rise of new powers; the rapid spread of information, goods, and technologies; innovation and economic integration; new security coalitions that take on shared challenges; issues of trade, energy and the environment; and greater opportunities for people of all nations to have a voice in shaping their future.

With this incredible promise come complications and challenges. In Asia, we see a range of persistent and emerging threats, including:

- North Korea's nuclear weapons and missile programs, and its continued provocations;
- Ongoing land and maritime disputes and conflicts over natural resources;

- The continued threat of natural disaster, the curse of poverty and the threat of pandemic disease;
- Environmental degradation;
- Illicit trafficking in people, weapons, drugs, and other dangerous materials – including the proliferation of weapons of mass destruction;
- And the growing threat of disruptive activities in space and cyberspace.

...Building a positive and constructive relationship with China is also an essential part of America's rebalance to Asia. The United States welcomes and supports a prosperous and successful China that contributes to regional and global problem solving. To this end, the United States has consistently supported a role for China in regional and global economic and security institutions, such as the G20. We encourage our allies and partners to do the same.

The United States strongly supports the efforts made by the PRC and Taiwan in recent years to improve cross-Strait relations. We have an enduring interest in peace and stability in the Taiwan Strait. The United States remains firm in its adherence to a one-China policy based on the three joint U.S.-China communiques and the Taiwan Relations Act.

While the U.S. and China will have our differences – on human rights, Syria, and regional security issues in Asia – the key is for these differences to be addressed on the basis of a continuous and respectful dialogue. It also requires building trust and reducing the risk of miscalculation, particularly between our militaries.

President Obama and President Xi, who will soon meet for a summit in California, have both been clear that they seek a stronger military-to-military relationship. I am pleased that the dialogue between our armed forces is steadily improving. Over the course of the past year, positive developments include:

- We hosted then-Vice President Xi Jinping at the Pentagon, and later hosted China's Minister of Defense;
- Secretary Panetta, General Dempsey and Admiral Locklear led delegations to China;
- The first ever Chinese observation of the US-Philippine Balikatan exercise;
- The first-ever joint counter-piracy exercise in the Gulf of Aden;
- The U.S. invitation for China to participate in RIMPAC, the Pacific's largest multilateral Naval exercise;
- An agreement to co-host a Pacific Army Chiefs Conference with China for the first time;
- Later this year, I look forward to welcoming the Minister of Defense to the Pentagon.

While we are pleased to see this progress, it is important for both the United States and China to provide clarity and predictability about each other's current and future strategic intentions.

Accordingly, China, the United States and all nations of the region have a responsibility to work together to ensure a vibrant regional security architecture that solves problems. America's bilateral relationships and Alliances will continue to underpin the region's security and prosperity, but multilateral institutions provide critical platforms and opportunities for countries to work together.

...The United States has been committed to ensuring peace and stability on the Korean Peninsula for sixty years. That means deterring North Korean aggression and protecting our allies, and achieving the complete denuclearization of the Korean Peninsula. The United States will not stand by while North Korea seeks to develop a nuclear-armed missile that can target the United States.

The United States has been clear that we will take all necessary steps to protect our homeland and our allies from dangerous provocations, including significantly bolstering our missile defense throughout the Pacific. No country should conduct "business as usual" with a North Korea that threatens its neighbors. We are working closely with our ROK and Japanese allies to strengthen our posture and ability to respond to threats from North Korea. The prospects for a peaceful resolution also will require close U.S. coordination with China.



Beyond the peninsula, the United States also remains concerned over the potential for dangerous miscalculations or crises posed by numerous competing territorial claims in the region.

The United States has been clear that we do not take a position on the question of sovereignty in these cases. That does not mean, however, that we do not have an interest in how these disputes are addressed and settled. The United States stands firmly against any coercive attempts to alter the status quo. We strongly believe that incidents and disputes should be settled in a manner that maintains peace and security, adheres to international law, and protects unimpeded lawful commerce, as well as freedom of navigation and overflight.

In the South China Sea, the United States continues to call on all claimants to exercise restraint as they publicly pledged in 2002, and to seek peaceful means to resolve these incidents. In that regard, we support the recent agreement between China and ASEAN to establish crisis hotlines to help manage maritime incidents. The U.S. also welcomes efforts to start talks on a Code of Conduct for the South China Sea. We encourage claimants to explore all peaceful means of settling their territorial disputes and the use of the dispute adjudication resolution mechanisms provided by the Law of the Sea Convention. Such efforts should not hinder progress towards developing a binding Code of Conduct.

Even as we seek to uphold principles in well-established areas, we must also recognize the need for common rules of the road in new domains.

The U.S. and all nations in the region have many areas of common interest and concern in cyberspace, where the threats to our economic security, businesses and industrial base are increasing. In response, the United States is increasing investment in cyber security and we are deepening cyber cooperation with Allies in the region and across the globe. Next week I will attend a meeting of NATO Defense Ministers devoted to cyber issues.

We are also clear-eyed about the challenges in cyber. The United States has expressed our concerns about the growing threat of cyber intrusions, some of which appear to be tied to the Chinese government and military. As the world's two largest economies, the U.S. and China have many areas of common interest and concern, and the establishment of a cyber working group is a positive step in fostering U.S.-China dialogue on cyber. We are determined to work more vigorously with China and other partners to establish international norms of responsible behavior in cyberspace.

The United States and its Asian-Pacific allies and partners are far more likely to be able to live peacefully and prosperously in a world where we are bound together by strong economic ties, mutual security interests and respect for rules, norms, and the institutions that underpin them.

## **The 2014 U.S. Quadrennial Defense Review**

The U.S. did place more emphasis on China's military modernization in the Quadrennial Defense Review it issued in March 2014. This document was issued after the Russian invasion of the Crimea and beginning intervention in the Ukraine in February 2014, but was developed before the Russian actions, before the scale of the U.S. intervention in Iraq and Syria was fully clear, and before it became clear the U.S. would have to stay in Afghanistan for years beyond its planned deadlines for withdrawal.<sup>11</sup>

Powerful global forces are emerging. Shifting centers of gravity are empowering smaller countries and non-state actors on the international stage. Global connections are multiplying and deepening, resulting in greater interaction between states, non-state entities, and private citizens. In a fundamentally globalized world, economic growth in Asia; aging populations in the United States, Europe, China, and Japan; continued instability in the Middle East and Africa; and many other trends interact dynamically. The operating environment is increasingly enabled by technology, which provides the types of capabilities once largely limited to major powers to a broad range of actors. The rapidly accelerating spread of information is challenging the ability of some governments to control their populations and maintain civil order, while at the same time changing how wars are fought and aiding groups in mobilizing and organizing.

Regional and global trends in the security environment, coupled with increasing fiscal austerity, will make it imperative that the United States adapt more quickly than it has in the past and pursue more innovative approaches and partnerships in order to sustain its global leadership role.

...Rebalancing and sustaining our presence and posture abroad to better protect U.S. national security interests. In striving to achieve our three strategic objectives, the Department will also continue to rebalance and sustain our global posture. We will continue our contributions to the U.S. rebalance to the Asia-Pacific region, seeking to preserve peace and stability in a region that is increasingly central to U.S. political, economic, and security interests. Faced with North Korea's long-range missiles and WMD programs – particularly its pursuit of nuclear weapons – the United States is committed to maintaining peace and security on the Korean Peninsula. As part of our broader efforts for stability in the Asia-Pacific region, the United States will maintain a robust footprint in Northeast Asia while enhancing our presence in Oceania and Southeast Asia. As we end combat operations in Afghanistan, we are prepared to transition to a limited mission focused on counterterrorism and training, advising, and assisting Afghan security forces.

...The United States has been a Pacific power for more than a century, with deep and enduring economic and security ties to the region. Particularly in the past six decades, the United States has helped ensure peace and prosperity in the Asia-Pacific region through our commitment to free and open commerce, promotion of a just international order, and maintenance of open access to shared domains. U.S. economic, security, and people-to-people ties with the region are strong and growing.

...The Asia-Pacific region is increasingly central to global commerce, politics, and security. Defense spending in this region continues to rise. As nations in the region continue to develop their military and security capabilities, there is greater risk that tensions over long-standing sovereignty disputes or claims to natural resources will spur disruptive competition or erupt into conflict, reversing the trends of rising regional peace, stability, and prosperity. In particular, the rapid pace and comprehensive scope of China's military modernization continues, combined with a relative lack of transparency and openness from China's leaders regarding both military capabilities and intentions.

A multilateral security architecture – composed of groups such as the Association of South East Asian Nations (ASEAN) and regional actors collaborating on issues ranging from humanitarian assistance to maritime security to counterterrorism – is emerging to help manage tensions and prevent conflict. Traditional anchors of regional security such as Australia, Japan, and the Republic of Korea (ROK), and growing powers such as India and Indonesia, are taking on additional leadership roles to foster increased communication and shared understanding.

As many Asia-Pacific countries seek to achieve greater prosperity, establish regional norms, and strive for a stable military balance, North Korea remains closed and authoritarian. North Korea's long-range missile and weapons of mass destruction (WMD) programs – particularly its pursuit of nuclear weapons in contravention of its international obligations – constitutes a significant threat to peace and stability on the Korean Peninsula and in Northeast Asia and is a growing, direct threat to the United States.

...In striving to achieve our three strategic objectives, the Department will also continue to rebalance and sustain our global posture. We will continue our contributions to the U.S. rebalance to the Asia-Pacific region, seeking to preserve peace and stability in a region that is increasingly central to U.S. political, economic, and security interests. Faced with North Korea's long-range missiles and WMD programs – particularly its pursuit of nuclear weapons – the United States is committed to maintaining peace and security on the Korean Peninsula. As part of our broader efforts for stability in the Asia-Pacific region, the United States will maintain a robust footprint in Northeast Asia while enhancing our presence in Oceania and Southeast Asia. As we end combat operations in Afghanistan, we are prepared to transition to a limited mission focused on counterterrorism and training, advising, and assisting Afghan security forces.

...U.S. interests remain inextricably linked to the peace and security of the Asia-Pacific region. The Department is committed to implementing the President's objective of rebalancing U.S. engagement toward this critical region. Our enduring commitment to peace and security in the Asia-Pacific region requires a sustained ability to deter aggression, operate effectively across all domains, and respond decisively to emerging crises and contingencies. In support of these goals, we are enhancing and modernizing our defense relationships, posture, and capabilities across the region.

The centerpiece of the Department of Defense commitment to the U.S. Government's rebalance to the Asia-Pacific region continues to be our efforts to modernize and enhance our security alliances with Australia, Japan, the ROK, the Philippines, and Thailand. We are taking steps with each of our allies to update our combined capacity and to develop forward-looking roles and missions to address emerging regional

challenges most effectively. We are also deepening our defense relationships with key partners in the region, such as Singapore, Malaysia, Vietnam, and many others. Through both our alliances and partnerships, we are focused on enhancing our partners' capacity to address growing regional challenges in areas such as missile defense, cyber security, space resilience, maritime security, and disaster relief.

With China, the Department of Defense is building a sustained and substantive dialogue with the People's Liberation Army designed to improve our ability to cooperate in concrete, practical areas such as counter-piracy, peacekeeping, and humanitarian assistance and disaster relief. At the same time, we will manage the competitive aspects of the relationship in ways that improve regional peace and stability consistent with international norms and principles.

Underpinning all of the Department's engagements in the Asia-Pacific region is our commitment to key principles and values that are essential to regional peace and security. We are working to support and expand the flourishing network of multilateral organizations and engagements that are taking root in the region. We are focused on promoting responsible behaviors and establishing mechanisms that will prevent miscalculation and disruptive regional competition and avoid escalatory acts that could lead to conflict. This includes supporting trilateral engagements and exercises, as well as strengthening ASEAN's central role in the region through participation in institutions such as the ASEAN Defense Ministers' Meeting-Plus.

As we end combat operations in Afghanistan, we are prepared to transition to a limited mission focused on counterterrorism and training, advising, and assisting Afghan security forces. We will continue efforts to help stabilize Central and Southwest Asia and deepen our engagement in the Indian Ocean region to bolster our rebalance to Asia. The stability of Pakistan and peace in South Asia remain critical to this effort. The United States supports India's rise as an increasingly capable actor in the region, and we are deepening our strategic partnership, including through the Defense Trade and Technology Initiative.

### **Secretary Ashton Carter's Speech in May 2015**

Growing tensions over air defense zones, the East China Sea, and South China Sea helped lead Secretary Hagel's successor, Ashton Carter, to put still more emphasis on competition with China when he spoke at the 2015 Shangri-La Dialogue. Secretary Carter did call for "a regional security architecture where everyone rises," and for cooperation with China. Yet, Secretary Carter also focused on U.S. strategic partnerships and regional security arrangements in Asia, and was very specific about China's actions in the South China Sea.<sup>12</sup>

*Yet, one country has gone much further and much faster than any other. And that's China.*

China has reclaimed over 2,000 acres, more than all other claimants combined...and more than in the entire history of the region. And China did so in only the last 18 months. It is unclear how much farther China will go. That is why this stretch of water has become the source of tension in the region and front-page news around the world.

The United States is deeply concerned about the pace and scope of land reclamation in the South China Sea, the prospect of further militarization, as well as the potential for these activities...to increase the risk of miscalculation or conflict among claimant states. As a Pacific nation, a trading nation, and a member of the international community, the United States has every right to be involved and concerned. But these are not just American concerns. Nations across the region and the world, many of you here in the room today, have also voiced the same concerns and raised questions about China's intentions in constructing these massive outposts.

*So let me make clear the position of the United States:*

First, we want a peaceful resolution of all disputes. To that end, there should be an immediate and lasting halt to land reclamation by all claimants. We also oppose any further militarization of disputed features. We all know there is no military solution to the South China Sea disputes. Right now, at this critical juncture, is the time for renewed diplomacy, focused on finding a lasting solution that protects the rights and the interests of all. As it is central to the regional security architecture, ASEAN must be a part of this effort: the United States encourages ASEAN and China to conclude a Code of Conduct this year. And America will support the

right of claimants to pursue international legal arbitration and other peaceful means to resolve these disputes, just as we will oppose coercive tactics.

Second, the United States will continue to protect freedom of navigation and overflight – principles that have ensured security and prosperity in this region for decades. There should be no mistake: The United States will fly, sail, and operate wherever international law allows, as U.S. forces do all over the world. America, alongside its allies and partners in the regional architecture, will not be deterred from exercising these rights – the rights of all nations. After all, turning an underwater rock into an airfield simply does not afford the rights of sovereignty or permit restrictions on international air or maritime transit.

Finally, with its actions in the South China Sea, China is out of step with both the international rules and norms that underscore the Asia-Pacific's security architecture, and the regional consensus that favors diplomacy and opposes coercion. These actions are spurring nations to respond together in new ways: in settings as varied as the East Asia Summit to the G-7, countries are speaking up for the importance of stability in the South China Sea. Indonesia and the Philippines are putting aside maritime disputes and resolving their claims peacefully. And in venues like ADMM-Plus and East Asia Maritime Forum [sic: Expanded ASEAN Maritime Forum], nations are seeking new protocols and procedures to build maritime cooperation.

The United States will always stand with its allies and partners. It's important for the region to understand that America is gonna remain engaged...continue to stand up for international law and universal principles...and help provide security and stability in the Asia-Pacific for decades to come.

The South China Sea is just one issue we will face as the Asia-Pacific continues to rise and prosper. There will surely be others. We cannot predict what challenges the future holds, but we do know how we can work to ensure the peace and prosperity...the region, and the opportunity to rise for all nations and all people...for that to happen, we must do so together. What the region needs instead, is an architecture where everyone rises and everybody wins.

## **The 2015 Asia-Pacific Maritime Security Strategy**

U.S. strategy and the U.S. force posture in the Pacific has continued to evolve, although – as Chapter Sixteen explores in depth – the U.S. has still not shaped clear plans to fully implement its strategy of rebalancing of forces and creating strategic partnerships in Asia.

The U.S. issued a new version of its Asia-Pacific Maritime Security Strategy in July 2015 that reiterated the U.S. commitment to maintaining regional stability. The document emphasizes greater U.S. cooperation with regional allies and security institutions. A particular portion directed towards China restates the U.S. policy that “The Department will continue to fly, sail, and operate wherever international law allows.

It outlined four major priorities for U.S. forces in the region:”<sup>13</sup>

First, we are strengthening our military capacity to ensure the United States can successfully deter conflict and coercion and respond decisively when needed. The Department is investing in new cutting-edge capabilities, deploying our finest maritime capabilities forward, and distributing these capabilities more widely across the region. The effort also involves enhancing our force posture and persistent presence in the region, which will allow us to maintain a higher pace of training, transits, and operations. The United States will continue to fly, sail, and operate in accordance with international law, as U.S. forces do all around the world. The Department will continue to fly, sail, and operate wherever international law allows.

Second, we are working together with our allies and partners from Northeast Asia to the Indian Ocean to build their maritime capacity. We are building greater interoperability, updating our combined exercises, developing more integrated operations, and cooperatively developing partner maritime domain awareness and maritime security capabilities, which will ensure a strong collective capacity to employ our maritime capabilities most effectively.

Third, we are leveraging military diplomacy to build greater transparency, reduce the risk of miscalculation or conflict, and promote shared maritime rules of the road. This includes our bilateral efforts with China as

well as multilateral initiatives to develop stronger regional crisis management mechanisms. Beyond our engagements with regional counterparts, we also continue to encourage countries to develop confidence-building measures with each other and to pursue diplomatic efforts to resolve disputed claims.

Finally, we are working to strengthen regional security institutions and encourage the development of an open and effective regional security architecture. Many of the most prevalent maritime challenges we face require a coordinated multilateral response. As such, the Department is enhancing our engagement in ASEAN-based institutions such as the ASEAN Defense Ministers Meeting Plus (ADMM-Plus), ASEAN Regional Forum (ARF), and the Expanded ASEAN Maritime Forum (EAMF), as well as through wider forums like the Western Pacific Naval Symposium (WPNS) and Indian Ocean Naval Symposium (IONS), which provide platforms for candid and transparent discussion of maritime concerns.

The report showed, however, that the U.S. was also seeking to increase military-to-military cooperation and transparency with China in the hopes of avoiding “accidents of miscalculations” that could damage relations. U.S. officials want China to cooperate in order to improve regional security:<sup>14</sup>

China’s rise as a political, economic, and military actor is a defining characteristic of the 21st century; and we have a broad, complex relationship that has both elements of cooperation and competition. As a result, our defense engagement strategy considers both elements. The Department pursues an objectives-based military-to-military relationship with China that seeks to deepen cooperation in areas of mutual interest and to manage security competition and friction in a way that supports overall stability. To reach these objectives, DoD pursues a defense relationship with China based on three pillars and related efforts.

First, DoD pursues sustained and substantive dialogue through policy and senior leader engagement to develop common views on the international security environment and related challenges. Second, we are attempting to build concrete, practical areas to develop the capacity to cooperate in areas of shared interest. Lastly, DoD is enhancing risk reduction measures through focused activities that seek to improve operational safety and to develop and institutionalize modalities (such as the Defense Telephone Link) that can reduce the potential for accidents or miscalculations that could derail the overall bilateral relationship.

### **From Rebalancing to Asia to Global Rebalancing**

Moreover, by this time, the U.S. had also begun to make major qualifications to its strategy of rebalancing to Asia. Budget limitations had a major impact in limiting the size and readiness of U.S. forces, and rising tensions with Russia, growing U.S. military commitments in the Middle East to deal with threat like ISIS and Iran, and the Afghan war, had begun to lead in 2014 to a broader global approach to “rebalancing.” This was clearly reflected in the FY2016 Defense Budget Overview that the Department of Defense submitted as part of the President’s FY2016 budget request in February 2015 – which made some quiet adjustment in the emphasis of the 2014 QDR:<sup>15</sup>

The 2014 QDR outlines three mutually-supporting pillars that shape our defense priorities: *protect the homeland; build security globally; and project power and win decisively*:

- Protect the homeland to deter and defeat threats to the nation and to mitigate the effects of potential attacks and natural disasters. This means making selective investments in missile defense, nuclear modernization, and cyber capabilities. It also means sustaining capacity to protect U.S. airspace and shores, as well as reshaping the ability of the military forces to provide support to civil authorities when needed.
- Build security globally to preserve regional stability, deter adversaries, support allies and partners, and cooperate with others to address common security challenges. In practice, this means continuing to rebalance the Department’s posture and presence to the Asia-Pacific while maintaining a focus on the Middle East. It also means working closely with European partners to strengthen their capabilities, maximizing the impact of a relatively small U.S. presence in Africa, and working with interagency partners to counter illicit drug trafficking and transnational criminal organization

activity.

- Project power and win decisively to defeat aggression, disrupt and destroy terrorist networks, and provide humanitarian assistance and disaster relief. Sustaining superior forces remains a top priority for force planning and development, so the following focus areas will be key: countering anti-access challenges; space; counterterrorism; precision strike; intelligence, surveillance and reconnaissance; and resilience.

The U.S. forces will be capable of simultaneously defending the homeland, conducting sustained, distributed counter-terrorist operations, and deterring aggression as well as assuring allies through forward presence and engagement in multiple regions. If deterrence fails, the military forces will be capable of defeating a regional adversary in a large-scale multi-phased campaign, and denying the objectives of — or imposing unacceptable costs on — a second aggressor in another region. The President's budget provides the resources to build and sustain the capabilities needed to conduct these operations, although at higher levels of risk for some missions, most notably if the military forces are confronted with a technologically advanced adversary or required to respond to more than one major contingency simultaneously. Across each of the three pillars, the Department is committed to finding creative, effective, and efficient ways to achieve U.S. goals. Innovation—within the Department and with interagency and international partners — is a central line of effort.

The Department must rebalance the Joint Force to address major changes in the security environment.

**Rebalancing for a broad spectrum of conflict.** Future conflicts could range from hybrid contingencies against non-state actors to high-end conflicts against states armed with weapons of mass destruction and/or advanced anti-access and area-denial capabilities. To address this diverse range of challenges, the U.S. military will broaden its capabilities to the full spectrum of possible operations. While preserving hard-won expertise in counterinsurgency and stability operations, the Joint Force must also be prepared to battle sophisticated adversaries employing advanced warfighting capabilities, to include space and cyber capabilities. The Department will sustain robust investments in science, technology, research, and development in areas most critical to meeting future challenges or where there is greatest potential for game-changing advances.

**Rebalancing and sustaining presence and posture abroad to protect U.S. national security interests.** In meeting its priorities, the Department will continue to rebalance and sustain its global posture. The Department will continue its contributions to the Asia-Pacific rebalance, while remaining fully committed to the security of allies and partners in the Middle East. The Department will continue to work with allies and partners in Europe to promote regional security, Euro-Atlantic integration, enhanced military capability, and enhanced interoperability. Across the globe, DoD will ensure that the Joint Force is properly manned, trained, and equipped in the event of a crisis.

**Rebalancing capability, capacity, and readiness within the Joint Force.** After more than 10 years of conflict and amid ongoing budget reductions, the Joint Force's full spectrum readiness capabilities have atrophied.

It is important to note that U.S. strategy was changing more visibly in response to both China and other regional concerns than China's declared strategy was changing. China's actions, however, involved arising confrontation over claims in the South China Sea, claims to islands occupied by Japan and air zone rights in the Northeast Pacific, efforts to expand Chinese ties to South Korea and prevent the deployment of missile defenses in that country, efforts to expand strategic ties to Russia, and an effort to create a New Silk Road to expand Chinese influence in the Indian Ocean and Gulf as well as create new land transit capacity to Europe.

### **Secretary Ashton Carter's Speech at 2016 Shangri-La Dialogue**

This may help explain why Secretary Carter gave a more reserved speech at the Shangri-La Dialogue in June 2016. While Carter underlined comments from his 2015 speech about US intention to “fly, sail, and operate wherever international law allows”, the focus was more on

encouraging China to cooperate with the United States and other regional parties within a rules-based international order.<sup>16</sup>

As we weave these bilateral, trilateral, and multilateral relationships together, it's important to remember that this principled network is not aimed at any particular country: it is open and excludes no one. This means that as nations want to contribute to regional stability and security, they can work together with other nations in the network to do so.

The United States welcomes the emergence of a peaceful, stable, and prosperous China that plays a responsible role in the region's principled security network. We know China's inclusion makes for a stronger network and a more stable, secure, and prosperous region.

In all of our interactions with our Chinese counterparts, the United States consistently encourages China to take actions that uphold – and do not undercut – the shared principles that have served so many in Asia-Pacific so well.

The region will be stronger, safer, and more prosperous when all countries are working toward a common vision in which shared principles are upheld, all countries enjoy equal treatment irrespective of their size or strength, and disputes are resolved peacefully and lawfully.

Unfortunately, there is growing anxiety in this region, and in this room, about China's activities on the seas, in cyberspace, and in the region's airspace. Indeed, in the South China Sea, China has taken some expansive and unprecedented actions that have generated concerns about China's strategic intentions.

And countries across the region have been taking action and voicing concerns publicly and privately, at the highest levels, in regional meetings, and global fora. As a result, China's actions in the South China Sea are isolating it, at a time when the entire region is coming together and networking. Unfortunately, if these actions continue, China could end up erecting a Great Wall of self-isolation.

Now, the United States is not a claimant in the current disputes in the South China Sea. And we do not take a position on which claimant has the superior sovereignty claim over the disputed land features.

But, the United States will stand with regional partners to uphold core principles, like freedom of navigation and overflight, and the peaceful resolution of disputes through legal means and in accordance with international law.

As I affirmed here last year and America's Freedom of Navigation Operations in the South China Sea have demonstrated, the United States will continue to fly, sail, and operate wherever international law allows, so that everyone in the region can do the same.

And the United States will work with all Asia-Pacific nations to ensure these core principles apply just as equally in the vital South China Sea as they do everywhere else. Because only when everyone plays by the same rules can we avoid the mistakes of the past, like when countries challenged one another in contests of strength and will, with disastrous consequences for the region.

The United States views the upcoming ruling by the UN Arbitral Tribunal on the South China Sea as an opportunity for China and the rest of the region to recommit to a principled future, to renewed diplomacy, and to lowering tensions, rather than raising them. All of us should come together to ensure that this opportunity is realized.

The United States remains committed to working with China to ensure a principled future. Our two countries have a long-standing military-to-military relationship. We recently completed two confidence-building measures, one on maritime rules of behavior and another on crisis communications. The regular U.S.-China Military Maritime Consultative Agreement talks were just held in Hawaii. And China will also be back at RIMPAC this year. In fact, the United States and China plan to sail together from Guam to Hawaii for RIMPAC, conducting several exercise events along the way, including an event to practice search-and-rescue.

And the United States wants to strengthen those ties. I plan, at President Xi's invitation, to discuss this deeper cooperation as well as the concerns I've outlined here, when I travel to Beijing later this year. America wants to expand military-to-military agreements with China to focus not only on risk reduction, but also on practical cooperation. Our two militaries can all also work together, bilaterally or as part of the



principled security network, to meet a number of challenges – like terrorism and piracy – in the Asia-Pacific and around the world.

After all, both our nations share so many interests. And we face many of the same global challenges. The United States expects and welcomes a China that plays a responsible role in world affairs commensurate with its wealth and potential influence. Together in a network represented by all the delegates in this room, we all can do so much. And the United States wants to work with China to find solutions for the global problems we're both facing and seize the many opportunities before us.

By networking security together, the United States, China, and all others in the region can continue to ensure stability and prosperity in a dynamic region. We can become more interconnected; we can develop greater interoperability; we can innovate together on shared capabilities. And we can continue to ensure that this region's historic change becomes historic progress...giving everyone and every nation in the Asia-Pacific the opportunity to rise and prosper and win.

The Department of Defense document presenting the President's FY2017 budget request did mention China but only as one of the strategic focuses in U.S. strategy,<sup>17</sup>

The geopolitical developments of the last year have only reinforced the need to adequately resource the Department of Defense (DoD). The Department's response to recent events, which include the Islamic State of Iraq and the Levant (ISIL) offensive into Iraq and Syria, the Russian Federation's aggressive acts and attempts to intimidate neighboring countries, China's continued anti-access military modernization programs and its island-building and sovereignty claims in international waters, as well as high-profile cyberattacks, have placed additional pressures on DoD that would be extremely difficult to resource should the Department be forced to return to sequester level funding after FY 2017.

Like the FY2016 defense budget request before it, it focused on global rebalancing rather than rebalancing to Asia. This reflected a key change in U.S. strategy, and the need to respond to increased tensions in other regions and with powers like Russia. It called for the U.S. to seek a balanced Joint Force to meet worldwide needs, and, not for rebalancing to Asia,<sup>18</sup>

For much of the past decade, the DoD focused on fighting terrorism and countering violent insurgencies. The Department will continue the fight as long as these threats exist. But the security environment is rapidly changing as warfare evolves across all domains. The defense strategy outlined in the 2014 QDR and supported in this budget focuses on a Joint Force with the ability to simultaneously protect the homeland; provide a global presence in support of U.S. interests; and project power against a range of adversaries and challenges across the spectrum of conflict.

The FY 2017 budget request is consistent with the FY 2016 budget request in planning to adjust the size of the force over the next several years to a level of 980,000 soldiers, 308 ships, 182,000 active-duty Marines, and 55 Air Force tactical fighter squadrons. The budget continues to make informed choices to achieve a modern, ready, and balanced force to meet the full range of potential military missions. The restructured force will sustain its technological edge, be capable of deterring and, if necessary, defeating aggression, and improve its readiness to accomplish key missions.

... The United States continues to face a rapidly changing security environment, as warfare evolves across all domains. The Department must maintain ready forces with superior capabilities to deter potential adversaries and defeat attacks across the full spectrum of conflict and address a wide range of security challenges. The nation faces emerging challenges in particular from Russia and China, who continue to develop military systems and doctrine that could erode traditional U.S. military advantages in specific areas, as well as continuing challenges and threats from potential regional aggression posed by Iran and North Korea. The nation will also continue to confront terrorists around the globe, most immediately in Iraq and Syria as part of operations to counter the Islamic State in Iraq and the Levant (ISIL). Thus, the Department's strategic approach to resourcing and developing the Joint Force must be to ensure its ability to deter aggression posed by these priority threats while continuing to prosecute counter-terrorism operations. The Department's budget must enable the Joint Force to fight and win today while simultaneously prioritizing and protecting its capability and readiness to ensure the United States can fight and win in possible future conflicts.

The Department must balance the Joint Force and adapt to changes in the security environment. The Secretary of Defense has directed the Department to prioritize the challenges presented by ongoing or possible future aggression from China, Russia, Iran, and North Korea, as well as maintaining the capabilities to conduct ongoing counter-terrorism operations. These five challenges are informative to balancing the Joint Force.

**Balancing for broad spectrum of conflict.** Future conflicts could range from hybrid contingencies against state or non-state actors to high-end conflicts against states armed with weapons of mass destruction and/or advanced anti-access and area-denial capabilities. To address this diverse range of challenges, the U.S. military will continue to invest in a broad range of capabilities to support the full spectrum of possible operations. While preserving hard-won expertise in counterinsurgency and stability operations, the Joint Force must also be prepared to battle sophisticated adversaries employing advanced warfighting capabilities, especially space and cyber. The Department will sustain robust investments in science, technology, research, and development in areas most critical to meeting future challenges or where there is greatest potential for game-changing advances.

**Balancing presence and sustaining posture abroad to protect U.S. national security interests.** In meeting the defense priorities of the nation, the Department will continue to ensure the right balance is achieved to sustain a global posture that deters aggression and safeguards the nation's allies. The Department will continue its contributions to the Asia-Pacific rebalance, while remaining committed to the security of allies and partners in the Middle East.

The Department will continue to work with allies and partners in Europe to promote regional security, Euro-Atlantic integration, enhanced military capability, and enhanced interoperability. Across the globe, DoD will ensure that the Joint Force is properly manned, trained, and equipped in the event of a crisis.

## ***The Chinese Response***

China too, however, updated its view of the strategic choices between cooperation and competition. In 2015, the Deputy Chief of the PLA General Staff Department, Admiral Sun Jianguo, responded with much the same care and moderation as Secretary Carter in his speech at the Shangri-La Dialogue:<sup>19</sup>

Let me take this opportunity to illustrate China's policies, concepts, practices and proposals on safeguarding peace and security.

**I. China adheres to the path of peaceful development and is committed to promoting regional and international prosperity and stability.**

We have but one planet and countries share one world. Committed to peaceful development, China upholds a national defence policy that is defensive in nature. A more developed and stronger China will bring important opportunities, common prosperity and positive energy to countries around the world.

China advocates the building of a community of shared destiny, providing its strategy for peace and development of mankind. Our world today is witnessing in-depth development in multipolarisation and economic globalization, and constant progress is being made in IT application and cultural diversity. It has become a salient feature of human progress that countries are increasingly interdependent and they fall and rise together. As early as in 2012, based on his profound insight into the future of human destiny, Chinese President Xi Jinping put forward the idea of building a community of shared destiny for all mankind. At the Boao Forum for Asian Annual Conference last March, President Xi further advocated that countries need to respect each other and treat each other as equals, seek win-win cooperation and common development, pursue common, comprehensive, cooperative and sustainable security, and uphold inclusiveness and mutual learning between civilizations. This grand vision transcends national and ideological boundaries. It is a new vision that will promote the world to enduring peace and common prosperity, and represents China's wisdom to work with the rest of the world to build a better home for mankind.

China is committed to promoting win-win cooperation and a new model of international relations that meets the security and development needs of all countries. Confrontation must be replaced with cooperation and zero-sum game with mutual benefits if the purposes and principles of the UN Charter are to be carried

forward. And this is also the way to achieve peaceful development. To keep up with the times, we cannot live in the 21st century with outdated thinking from the age of colonial expansion or the zero-sum mentality of the Cold War. Cooperation for win-win outcomes should be adopted as the fundamental goal in interactions between countries. And it is necessary to seek common ground while shelving differences, increase common interests and defuse disputes, and pursue peace, development and security through cooperation. While seeking security and development for themselves, countries need to accommodate the security of others and work for common development of all.

China advocates common, comprehensive, cooperative and sustainable security and the building of a path towards security that is shared by and win-win to all. In today's world, security means much more than before and its implications go well beyond a single region or time frame and all kinds of factors are becoming increasingly complex and intertwined. No country can enjoy the security of its own while leaving the rest insecure. Nor can one seek absolute security of itself at the expense of the security of others. Countries should resolve disputes and differences through peaceful dialogue and negotiation and accommodate the security concerns of others while safeguarding their own. It is important to take into consideration both history and reality concerning security issues and tackle traditional and non-traditional security issues in a coordinated way. It is important to emphasize both development and security, encourage partnership instead of alliance, and establish more inclusive and constructive partnership without setting imaginary enemies or targeting any third party, so as to promote sustainable security through sustainable development.

China firmly believes in the approach of upholding justice while pursuing shared interests and values faith, friendship, justice and principles in international affairs. Committed to upholding justice while pursuing common interests, China has provided assistance to other countries to the best of its ability and shall always be a reliable friend and sincere partner of other developing countries. China strives to play a constructive role in international affairs with an objective and impartial position, and will never depend on or subjugate itself to any external forces. Believing in openness and inclusiveness, China respects the social systems and development paths chosen by the people for their own countries and stands for tolerance and mutual learning among civilizations, with a view to jointly contributing to human progress.

## **II. China actively fulfils its international responsibilities and obligations and plays a constructive role in safeguarding regional and international security and stability.**

As a permanent member of the UN Security Council and a responsible major country, China has actively engaged in international security cooperation and played a unique role in the effort to create a peaceful, stable, prosperous neighbourhood and provided public services to address global problems and challenges.

First, fulfil international obligations as a major country and actively participate in the missions under the UN Framework. Since 1990, the Chinese military has sent over 30,000 officers and soldiers to participate in 24 UN peace-keeping missions. This year, for the first time, China sent an infantry battalion of 700 personnel to South Sudan. China is the largest force contributor among the permanent members of UNSC. Authorized by the UNSC resolutions, China has sent 20 task groups of 59 naval vessels to the Gulf of Aden and the waters off Somalia since 2008, providing protection to nearly 6,000 ships of which half are from foreign countries. Answering to the call of the UNSC and OPCW, Chinese naval ships accomplished the task to escort the ships delivering Syria's chemical weapons for destruction in 2014.

Second, promote humanitarian spirit and actively participate in disaster relief and emergency response efforts. China shares the pain and difficulties of the affected countries and stands ready to provide personnel, financial and material assistance to the best of its ability. In responding to the typhoon disaster in the Philippines, in searching for the missing passenger plane of Malaysian Airlines, in fighting the Ebola epidemic, and in delivering emergency water supplies to Maldives, the Chinese military has provided swift humanitarian assistance. Not long ago, during its operation to evacuate Chinese citizens from Yemen, the Chinese Navy helped evacuate 279 people from 15 countries, including Pakistan, Sri Lanka, Germany, Japan, and Singapore. When a magnitude 8.1 earthquake hit Nepal, the Chinese military not only provided emergency disaster relief supplies, but also sent rescue and medical teams. The PLA naval hospital ship, the Peace Ark, carried out overseas medical services and participated in medical relief operations in 18 countries, providing treatment and medicines to the people in need.

Third, address common security challenges and deepen practical security cooperation. China has actively enhanced its bilateral and multilateral defence and security cooperation in a bid to work with the rest of the world to deal with security threats and challenges. Up to now, the Chinese military has conducted over 100 joint military exercises and training activities with more than 50 countries. In April this year, the Chinese and U.S. naval ships held the CUES exercise in the South China Sea. In the middle of this month, the Chinese and Russian navies carried out a joint exercise in the Mediterranean Sea aimed at protecting open sea shipping. A few days ago, China sent personnel to take part in the 4th ARF disaster relief exercise in Malaysia. Over the years, China helped train tens of thousands of military personnel of various kinds for more than 130 countries. China has also taken an active part in international humanitarian mine clearance assistance by training technical personnel from Afghanistan, Iraq and Sudan, donating mine clearance equipment and providing assistance to relevant countries.

Fourth, enhance mutual understanding and trust and strengthen defence and security dialogue and exchanges. China is actively advancing the steady development of the new model of military-to-military relationship with the United States, enriching the security connotation of China-Russia comprehensive strategic and cooperative partnership, building up a closer China-ASEAN Community of Shared Destiny, taking the initiative to launch China-ASEAN Defence Minister's informal meetings, establishing defence and security consultation mechanisms with 27 countries and actively participating in multilateral defence exchanges within the frameworks such as Shanghai Cooperation Organization, ASEAN Regional Forum and ASEAN Defence Ministers' Meeting Plus.

Fifth, safeguard regional peace and stability and properly handle disputes over territorial sovereignty and maritime rights and interests. China commits to forge friendship and partnership with its neighbours and foster amity, sincerity, mutual benefit and inclusiveness in its neighbourhood. So far, China has completed the delimitation of land borders with 12 of its 14 neighbours, and established the maritime boundary with Vietnam in the Beibu Gulf. China has signed treaties of good neighbourliness, friendship and cooperation with eight of its neighbours and has started the negotiation on a similar treaty with ASEAN. When dealing with maritime disputes with relevant neighbouring countries, China has always kept in mind the large picture of maritime security. In spite of the sufficient historical and legal evidence and its indisputable claims of rights and interests, China has exercised enormous restraint, making positive contributions to peace and stability of the region and the world at large.

At present, the situation in the South China Sea is on the whole peaceful and stable, and there has never been an issue with the freedom of navigation in the South China Sea. China has carried out construction on some islands and reefs in the South China Sea mainly for the purpose of improving the functions of the relevant islands and reefs and the working and living conditions of personnel stationed there. Apart from meeting the necessary defence needs, it is more geared to better perform China's international responsibilities and obligations regarding maritime search and rescue, disaster prevention and relief, maritime scientific research, meteorological observation, environmental protection, safety of navigation, and fishery production services.

China has built an oceanic survey station for the United Nations on the Yongshu Jiao and started the construction of two multifunctional lighthouses on the Huayang Jiao and Chigua Jiao, and these construction projects are for the purpose of providing international public services. As a major country, the scale and pace of its construction is in line with the international responsibilities and obligations China assumes in the South China Sea.

I want to reaffirm that these construction projects fall well within the scope of China's sovereignty and are legitimate, justified and reasonable. They do not target any other countries or affect the freedom of navigation. There are no changes in China's claims in the South China Sea, no changes in China's position on peaceful resolution of the relevant disputes through negotiation and consultation, no changes in China's will to safeguard the freedom and safety of navigation in the South China Sea, and no changes in China's goal to uphold peace and stability in the South China Sea. We hope relevant countries will work together in the same direction to build the South China Sea into a sea of peace, friendship and cooperation.

I wish to explain to you that it only took China several decades to accomplish the progress developed countries made in several hundred years, which China undoubtedly can be proud of. China has become the world's second largest economy since 2010 in aggregate terms. However, with a total population of over 1.3 billion, China's per capita GDP ranks around the 90th place in the world, and China is still the largest developing country in the world. China's water, oil and gas resources in per capita terms are only about 25%,

20% and 5% respectively of the world average, and its per capita farmland is less than half of the world average. Each year, another 10 million workers need to find jobs in cities, and there are over 8.5 million people with disabilities in China.

According to World Bank standards, there are still over 200 million people living under the poverty line in China. What's more, China is under huge pressure when it comes to treatment of environmental pollution and ecological protection. These difficulties that China faces in its development are beyond the imagination of other countries. In spite of such circumstances, China has actively fulfilled various international obligations and done its utmost to help countries and peoples in need, and this demonstrates the earnest effort of the Chinese government and people to translate the vision for a community of shared destiny into reality.

**III. Vigorously enhance defence and security cooperation and make greater contribution to common security of the region and the world. Peaceful development needs the joint efforts of all countries.** Defence departments and militaries of various countries should strengthen defence and security cooperation and jointly safeguard regional and world security and stability. Here, I would like to share with you the following ideas and proposals in this profession.

- Pursue enduring peace. History and reality have told us that wars, like devil and nightmare, bring disaster and deep sufferings to mankind and must be resolutely prevented. Peace, like air and sunshine, is hardly noticed when people are benefiting from it, but no one can survive without it and utmost care must be given to look after it.

The Chinese military will unswervingly defend the core national interests, unswervingly promote defence and security cooperation, unswervingly shoulder international responsibilities and fulfil international obligations. We are ready to work with defence departments and militaries of all countries, stay committed to taking history as a mirror, and make joint efforts to safeguard the post-war international order with the United Nations as the core and based on the purposes and principles of the UN Charter, jointly safeguard world peace, so that people of all countries can share peace and happiness.

- Uphold mutual trust and inclusiveness. Only when countries treat each other with mutual trust, honouring of commitment, mutual understanding and inclusiveness, can they find more common ground, resolve differences, and work together for the common interests. We should take mutual respect as the prerequisite. All countries, big or small, rich or poor, strong or weak, are equal members of the international community and enjoy equal rights to participate in international affairs.

The affairs of a country should be run by that country independently. We should uphold fairness and objectiveness, and make assessment of things taking place on the international stage on the basis of their merits or demerits, rather than following double standards and making irresponsible remarks based on one's own subjective preferences or sowing discord. We should value inclusiveness as a principle. Since countries have different histories, cultures and traditions, the defence departments in various countries should have more understanding and trust, and less suspicion or misgivings, so as to really turn mutual trust into a bridge and bond for realizing common security and building a community of shared destiny for mankind.

- Adhere to the effective approach of dialogue and consultation. It is not so terrible to have differences. What is important is to find the measures and ways to resolve them. We should seek resolutions to disputes and differences step by step through strengthening mutual understanding and consensus building via peaceful negotiations while preventing conflicts and confrontation. We should focus on common interests and strive to expand common interests through strengthening cooperation.

We should continue to construct and use well the existing regional security cooperation mechanisms, such as the Shanghai Cooperation Organization, the Conference on Interaction and Confidence-Building Measures in Asia, the ASEAN Regional Forum, and ASEAN Defence Ministers' Meeting Plus, so as to provide guarantee for enduring peace in the region. At present, China and ASEAN countries are exploring the establishment of crisis management measures such as bilateral defence telephone links. China and Japan have restarted consultation over maritime and air liaison mechanism. Currently, China is working with the U.S. to further improve the Rules of Behavior for Safety of Air and Maritime Encounters.

- Meet the inherent demand for sharing responsibilities. All countries, big or small, have the equal rights to participate in regional security affairs and share the responsibilities to maintain world peace and regional stability. Big countries should take on responsibilities for a big country and should not bully small countries.

Small countries need to meet responsibilities for a small country, provoke no incident and refrain from hijacking regional security for selfish gains.

Developed countries possess and control a larger part of global resources and should shoulder more responsibilities in the joint endeavor to meet global challenges and major security threats. Developing countries should strive to overcome difficulties and take progressive steps to gradually improve their security environment and play a role corresponding to their strength in promoting international security.

- Uphold the core concept of win-win cooperation. In the new historical era, force cannot build peace and power cannot guarantee security. Only through win-win cooperation can we do big and good things which can last in the long run. China proposes the “Belt and Road” initiative, and is in the process of establishing the Asian Infrastructure Investment Bank, and all of these will bring tangible benefits to countries in the region. In October this year, China will host the China-ASEAN Defence Ministers’ Special Meeting and the 6th Xiangshan Forum in Beijing. We are ready to discuss with other countries the way ahead for defence and security cooperation. We hope that all countries in the world will, in the spirit of win-win and all-win cooperation, strengthen communication and consultation, and make concerted efforts to safeguard peace and stability.

A year later, at the Shangri-La Dialogue in 2016, Admiral Sun returned with only a slightly more combative message. With the resolution of the China-Philippines Permanent Court of Arbitration case looming, he noted that, “China’s South China Sea policy has not and cannot change.”

Admiral Sun offered an expansive and more stern overview of China’s developing defense policy, but one that still stressed the need for peace and cooperation.<sup>20</sup>

The Chinese army is currently undergoing a holistic, revolutionary transformation, including the disarmament of 300,000 service personnel. I believe that when the current Chinese army is held in comparison to the world’s advanced armies, the disparity is relatively great, and the per capita military expenditure on each serviceman is only US\$60,000, hugely disparate from the US, the UK, France, and Japan’s more than US\$200,000 to US\$300,000 per capita expenditure. And so, China’s army must drive reform forward, increase benefits, strengthen construction and speed up development.

China holds the banner of peace, development, cooperation and mutual profitability high, and has all along pursued a defensive national-defence policy. China holds no ambition to proclaim itself hegemon. After being reformed the army will increase self-defence and defence capability, and make even more and even better contributions to regional and international peace and security. It will promote the mutual establishment of cultural exchange across different civilizations, and forge a firm foundation for security governance.

There are many different nationalities, religions and cultures in the Asia-Pacific region; societal systems, development paths, and the standards of economic development are all different. The acknowledgement of and concern about related security issues is not the same. China opposes linking terrorism to a particular religion; to establish contact, it promotes strengthening cultural-exchange dialogue, shows tolerance to mutual establishments. It is a proponent of harmony and diversity, it transforms cultural diversity and differences between countries into development vigor and power, so that the different cultures of the Asia-Pacific region can peacefully coexist and become a model of harmonious symbiosis.

China’s Ministry of Defense and army have actively developed comprehensive international communication and mutually beneficial cooperation, deepening mutual trust with all countries, continuously enriching the content and form of communication and cooperation. We strive to build a new type of mutually trusting, cooperative, non-conflicting and non-confrontational Sino-US military relationship, supporting measures to reduce disasters, keeping peace, countering pirate activity and other domains – the continued deepening of communicative cooperation.

In the interim, both China and the US are preparing to participate in the RIMPAC 2016 military exercises. China and Russia’s military relations are maintained at a high level; not long ago, both armies conducted united anti-missile computer exercises for the first time, and pragmatic cooperation continues to deepen. The Chinese and Pakistan armies built a significant China–Pakistan Community of Shared Destiny consensus in accordance with the leaders of both countries, continuously deepening and expanding regional counter-terrorism cooperation. China’s and India’s armies and ministry of defence leaders will exchange visits within six months to jointly promote the relationship between both armies entering into a new phase of

development. China and Japan's defence talks are currently resuming step by step. They will persist in dialogue whereby mutual understanding and mutual compromise will be discussed, leading the way to a new idea of security governance.

The notion of the weak being prey to the strong belongs to a different time and place. Engagement in wars of aggression at will does not create peace. Only through mutual understanding and mutual compromise can stability be attained; only through sticking steadfastly to righteousness and justice can lasting security be won. With regard to complex regional issues of special interest, all parties concerned will remain cool-headed, hold fast to peace, negotiate and cultivate honest friendships with neighbours, control crises through the establishment of a control mechanism of rules and regulations, alleviate tension through the promotion of mutual trust, resolve crises through political strategy and progressively promote the resolution of issues.

Under the premise that the Chinese army steadfastly defends national sovereignty, security and development interests, they devote their efforts to handling disputes with related countries appropriately, to jointly controlling risks, and to peaceful settlement of disputes. The Chinese and US armies concluded the Rules of Behavior for Safety of Air and Maritime Encounters Memorandum of Understanding, and expanded the important inter-operational notification-mechanism military operation, further strengthening communication between navy and air-force front-line commanders and pilots. The Chinese and Japanese ministries of defence are currently jointly driving forward the establishment of maritime- and air-communication mechanisms. China and India are actively developing a frontier-defence association, jointly defending the peace of the border area. At the informal meeting held last week in Laos by the Chinese [and] ASEAN ministers of defence, the Chinese side proposed holding a meeting next year with the armies of the ASEAN countries about the rules concerning the encountering of maritime accidents, combining drills for maritime search and rescue and disaster relief.

China has always insisted that the Korean Peninsula should denuclearize to safeguard the peace and stability of the peninsula and insists on settling the issue through dialogue and consultation. China will comprehensively and completely implement the United Nations Security Council resolutions together with the international community, and actively promote pulling the dialogue back to a conventional way of thinking in order to resolve the nuclear problem, and at the same time we resolutely oppose US deployment of Terminal High Altitude Area Defence systems in Korea, undermining strategic stability. Security infrastructure must be developed in accordance with regional characteristics, strengthening the mechanism of security governance.

The Asia-Pacific region countries must transcend cold war thinking, extend compatibility and non-confrontation, not be against any third party, and cooperate in mutually beneficial and mutually profitable security; move away from one string of dialogue as well as non-confrontation, form companionships as well as new non-aligned relationship routes. They should insist on mutual respect, unanimous agreement, take care of the Asian way of comfort for all parties, strengthen the coordination of security mechanisms in all regions, cross the river together in the same boat, jointly respond to challenges, and gradually adapt international cooperation of the Asia-Pacific region's security needs.

China's Ministry of Defense and army have actively participated in regional multilateral security dialogue and cooperation. We have deepened defence cooperation with the member countries of the Shanghai Cooperation Organization, deterring the three forces, and jointly protecting the peace of the Central Asia region. China resolutely supports ASEAN exhibiting a leading role in cooperation in the East Asia region. We show initiative in holding the informal ASEAN defence ministers' meeting, comprehensively participate in the ASEAN minister of defence general assembly framework for dealing with concrete issues in every sphere, actively making our own contribution to related joint drills, and from next year China will work with Thailand as co-chair of the next round of the counter-terrorism specialist group. We will drive forward pragmatic counter-terrorism cooperation in conjunction with all member countries. At the same time, China is currently researching the establishment of counter-terrorism negotiation mechanisms with the Pakistan, Afghanistan and Tajikistan armies to strengthen efforts to crack down on regional terrorism.

Ladies and gentlemen, the South China Sea is currently the focus of attention of all parties, and I would like to emphasize that for a long time, with the cooperation of China and the neighbouring countries, the situation in the South China Sea has been completely stabilized. Freedom of navigation in the South China Sea is also not affected by the influence of some disputes, while we firmly safeguard territorial sovereignty and ocean rights. At the same time, we have all along insisted on negotiations and agreement to peaceful resolution of

the dispute. We adhere to the rules and mechanisms for management and control of differences of opinion, we adhere to realizing mutual benefits through cooperation, we adhere to safeguarding freedom of navigation in and flight over the South China Sea, [we] adhere to peace and stability in the South China Sea.

The consensus between China and ASEAN countries is bilateral dialogue and a consultation process to resolve the dispute. China and ASEAN countries have the ability to safeguard peace and stability in the South China Sea through cooperation, and foreign countries should play a constructive role, rather than the reverse. The present intensification of the South China Sea issue is due to individual countries deliberately causing provocation for their own interests. The South China Sea arbitration case brought by the Philippines uses international law as a pretense. Its essence negates China's territorial sovereignty and maritime rights and interests in the South China Sea, to cover up its act of illegal occupation of China's share of the island reef of the Spratly Islands.

I would like to emphasize that the arbitration method is not applicable to the China–Philippines-related dispute. China and the Philippines have already held bilateral negotiations, and have opted to adopt negotiation to settle this in the Code of Conduct of all parties in the South China Sea. In addition, the territorial-sovereignty issue does not fall under the scope of the Convention, and the Philippines matter relating to the maritime delimitation dispute has been excluded from the 2006 Chinese government statement. The Philippines' unilaterally proposed arbitration is contrary to the China–Philippines protocol, is contrary to the related provisions of the Convention and violates international law. This arbitration is based, in the Philippines, on the basis of violations and illegal demands, has no jurisdiction; the result of the arbitration is non-binding as far as China is concerned. The Chinese government has already repeatedly made it clear that it will not accept it, will not attend the arbitration, does not acknowledge it and will not implement the result of the arbitration. This is not only not a violation of international law, it is precisely the exercise of the rights of international law conferred by law, and complies and safeguards the embodiment of international law.

We also note that some countries adopt joint rules of use of the international law, and do not conform to the agreeable approach of not taking unfair advantage, on one hand setting the example of implementing what is known as freedom-of-navigation operations in the South China Sea, openly flaunting its military force, and on the other hand pulling in help from cliques, supporting their allies in antagonizing China, forcing China to accept and implement the result of the arbitration. China firmly opposes this. We don't cause trouble, and we are not afraid of getting into trouble. China cannot swallow painful consequences, evil consequences; it cannot permit its sovereignty and security rights and interests to be encroached upon; it cannot sit idly and watch a minority of countries stir up trouble in the South China Sea.

I want to reiterate the speech given here last year: The Chinese people and armed forces have always believed in not believing evil, have always been reason-oriented, not power-oriented. And at the same time, I hope to again reiterate, China's South China Sea policy has not and cannot change. China has the wisdom and patience to resolve the dispute through peaceful negotiation, and believes that the other countries involved have the wisdom and patience to collaboratively come over to this peaceful path, and countries who aren't involved should not try to destroy the path we walk in order to benefit their own selfish interests.

Ladies, gentlemen, China proposes two objectives in this hundred-year struggle. We are in the process of trying to realize the revival of the Chinese dream, of the mighty Chinese race. This dream, along with the Asia-Pacific region and even the beautiful dreams of the people of every country in the world, are mutually harmonious and interlinked. The building of lasting peace, a jointly prosperous Asia-Pacific is our common aspiration. I am a veteran, and like the people and service personnel of every nation, seeking to win is my mission in life. Protecting the peace is my true dream. I have always firmly believed that shaking hands is better than making a fist, an open heart is better than a cocked gun. The two great world wars have given mankind a tragic and sorrowful lesson. We should reflect on history, treasure the current world peace, and cherish the hard-won peace and stability in the Asia-Pacific region. In the wake of the great development of economic globalization, the common destiny of present-day mankind is inseparably linked, causing us to join hands in driving forward the building of the Asia-Pacific community's destiny, jointly defending Asia-Pacific security, prosperity and stability, offering mankind an even more beautiful tomorrow.



## ***Actions Speak as Well as Words***

Declared strategy is one thing. Actions are another, and often speak more loudly. U.S. strategy documents tend to be more transparent and explicit than China's. Although, a wise emerging power has more reason to be cautious than an existing power, and China's history over the last two centuries has scarcely inspired confidence in either the west or its neighbors.

Indeed, China's neighbors remained concerned by Chinese power projection in the region and beyond. China's increasingly combative behavior, controversial island building, and rejection of the South China Sea international tribunal has led to great disquiet from all diplomatic corners of the world.

This concern seems extremely unlikely to slow down President Xi Jinping's quest for the "China Dream". President Xi has exerted substantial political capital into his "One Belt, One Road" (OBOR) initiative which seeks to build a series of "new silk roads" across Central and South Asia, the Middle East, Africa, before terminating in Europe. The exact motivation for developing these expansive trade routes remains opaque but ensuring the continued progress of the resurgent Chinese economy seems to be a top priority.

Indeed, China's maritime disputes in the South and East China seas cannot be divorced from the fact that these are among the most important and well-travelled trade routes on Earth. China's planned \$46 billion investment into the China-Pakistan Economic Corridor (CPEC) allows for a significant shortening of trade lines by cutting through Pakistan overland on way to the Gwadar Port on the Arabian Sea—which the Pakistani government has granted the Chinese full control over. Developing trade routes through a reliable ally like Pakistan allows China to rely substantially less on the Straits of Malacca and Asia-Pacific states that may become more oppositional towards China's interests.

While OBOR certainly has economic goals, there is growing concern amongst the United States, Japan, South Korea, and other ASEAN countries that this is an exercise in building Chinese soft power across the world as China attempts to solidify regional dominance. This is reflected in the United States' concerted efforts to establish and deepen alliances in the Asia-Pacific region. For example, the removal of the arms embargo on Vietnam and the diplomatic opening of Burma. Additionally, Washington has advanced defense agreements with India, the Philippines, and numerous others.

The U.S. has good reason to be concerned about the emergence of a regional superpower with unknown limits to its goals and ambitions. At the same time, it needs to remember its own regional ambitions and actions in emerging as a major power between 1789 and the present, and the ambition it showed in issuing the Monroe Doctrine, or that President Wilson showed in seeking to reshape the world after World War I. One has to wonder how Britain appraised the U.S. in 1823 when President Monroe declared that any intervention by external powers in the politics of the Americas was a potentially hostile act against the US. – a U.S. that then had a tiny navy and virtually no other power projection capability.

## ***Competition and Cooperation***

Some degree of tension between China and the U.S. is inevitable as China continues to emerge as a major new global power in a world where the U.S. has been the preeminent power since the collapse of the former Soviet Union. And, if China's military development has led to a major US

strategic reaction, the U.S. is scarcely alone in this regard. Regional powers like Japan, South Korea, the states of Southeast Asia, and Taiwan also see Chinese military power as a possible threat – albeit for a wide variety of different reasons.

There is, however, a broader strategic context. China's growing military power is the product of China's even greater rise as a global economic power. This is a rise that has not only brought immense benefits to China, but also created a new structure of global economic interdependence. Military competition or cooperation between China and the U.S. must be seen from a grand strategic perspective in a world where geo-economics has superseded geopolitics as a dominant strategic interest.

China, the U.S. and all of the Asian states involved need to remember the grim lessons that Europe should have learned before August 1914. There is no way that any form of military victory by either China or the U.S., can offset the strategic cost of a clash, even if it does not escalate to a major conflict. Any major crisis or confrontation – much less conflict – that triggers an arms race between China and the U.S. is likely to be more costly than achieving some form of compromise and stability. Any major conflict would cost the “winner” more than the victory is worth. In game theory terms, the only way to win is not to play, and competition must be balanced by cooperation.

Cooperation, however, requires transparency and dialogue on all sides, as well as the ability to look beyond the military and traditional geopolitical values that are the natural focus of national security strategy. The differences in each country's political systems, and some aspects of China's military development make this difficult. The U.S. is forced into a high level of transparency by its political system – although not necessarily into a high level of predictability. China's political system often allows it to avoid a similar level of transparency; China sometimes deliberately obscures the details of its strategy, force plans, and modernization efforts.

China's military buildup to some extent reflects the legacy of China's history since the Opium Wars. Over the last two centuries, China has had scarce reason to trust outside states and few nations have suffered as much as China did between the 1930 and 1949. Some Chinese strategists and military analysts believe that the ability to conceal China's efforts helps secure its emergence as a major military power, quoting Sun Tzu to defend this position.

The fact is, however, that China has now emerged as a major military power. Today's challenges for China, the U.S., and other Asian states is to create a new and stable structure of regional military relationships based on mutual dialogue, transparency, understanding, and compromise. While China and the U.S. are just two of the actors involved, they are by far the largest in military terms and will set the tone for future cooperation. They both need to remember that their economic cooperation is at least as important a grand strategic interest as any credible outcome of military competition.

The U.S. and China also need to remember that there are many areas where they can benefit from cooperation in military and national security affairs. They share common strategic interests in maintaining regional stability, protecting global trade routes, and fighting extremism and terrorism. The stability of the Persian Gulf is critical both to China's energy supply and Asia's ability to provide a flow of critical exports to the U.S. They may compete to some extent in supporting Pakistan and India, but they would benefit far more from a stable and developing South Asia. For all of the problems outlined in later chapters concerning Northeast Asia, Taiwan, and the South China Sea, cooperation offers far more mutual benefits than any form of competition that leads to even local crises and confrontations.

At the same time, China and the U.S. face two “wild cards” that they will have to find ways to address. The first is the impact of Russia’s actions in the Ukraine on the security and stability of Europe and NATO. The second is the growing instability in the Middle East and the Gulf.

Russian actions in the Ukraine since the spring of 2014 are forcing the US to rethink its future force posture in Europe and NATO, but no clear plans have yet been made public. Much still depends on future Russian actions in Ukraine and the rest of Europe. At the same time, China must rethink its position and decide how much backing it wants to give to North Korea, a power which threatens regional security.

The second set of challenges is the threat of Islamic extremism, exemplified by the rise of the Islamic State in Iraq and Syria, on stability in the MENA region and its effect on the security of energy exports. US withdrawal from Afghanistan and the hope of ending any military involvement in the Middle East now seem likely to be replaced with some form of lasting presence in the Gulf, involving low level combat by US forces in Iraq, due to a terrorist threat that ranges from the Philippines to Morocco. The future of China and U.S. strategic cooperation or competition outside Northeast Asia, the East China Sea, and South China Sea is an issue where neither power has yet chosen a posture.

The key question for both the US and China is how all these widely differing pressures will affect both their efforts at strategic competition and at cooperation. Much of the analysis that follows shows that their focus now seems to be increasingly on competition, even if their rhetoric still stresses cooperation. China also still seems to be driven by fears of US efforts to limit and “contain” it -- a sentiment expressed by Chinese Ministry of Defense Chang in a recent dialogue with former Secretary Hagel.<sup>21</sup> The U.S. in turn, sometimes seems to focus on worst cases when it should be trying to create opportunities.

## CHAPTER 2: ASSESSING CHINA'S ARMED FORCES

The PLA has engaged in a broad military modernization and force development program over the last two decades that has produced the force structure summarized in **Figures 2.1 - 2.4**. As the following chapters show, however, these figures only tell a small part of the story and China's strategy, force structure, and modernization efforts continue to evolve.

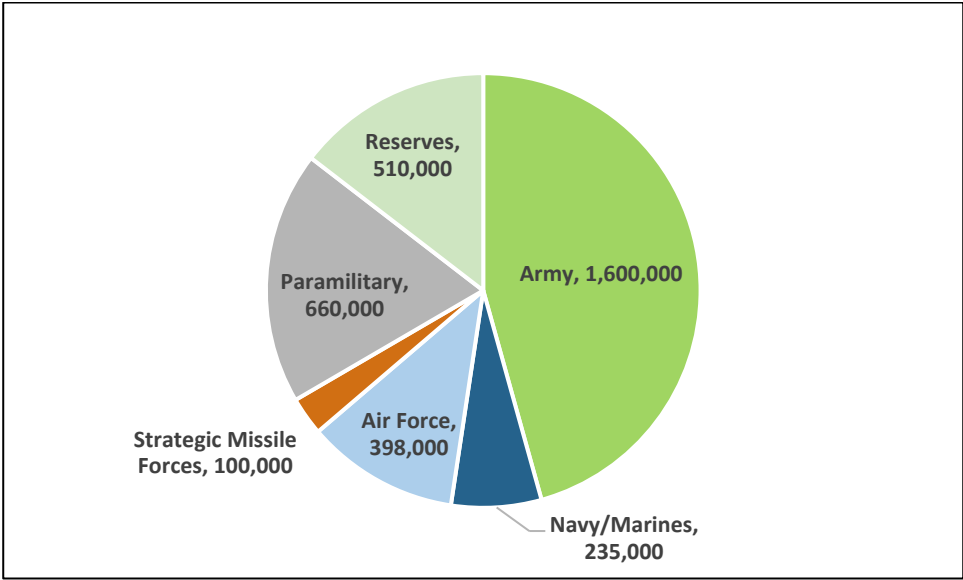
Like the US and other powers, China has a wide range of strategic expertise, and no one voice or document can be regarded as authoritative. At the 18<sup>th</sup> National Congress of the Communist Party of China in November 2012, China's leaders stated that the country was undergoing a period of strategic opportunity through 2020, and they publically focused on domestic development in the context of a relatively peaceful international order.

In general, however, it seems that China's new leader, Xi Jinping, is concentrating more on great power diplomacy than his predecessor, Hu Jintao, although China is concentrating on both civil and military development.<sup>22</sup> Xi Jinping quickly began establishing himself as a strong military leader, going on high-profile visits to Navy, Air Force, Army, and Second Artillery facilities during his first 100 days in office.

He also launched a campaign to enhance the armed forces' ability to "fight and win wars," through large increases in defense spending, organizational reforms, and modernization programs. He took direct control of an interagency body that has overseen the escalation over islands claimed by both Japan and China, as well as the land reclamation in the South China Sea.<sup>23</sup> Likewise China's 2015 military strategy document<sup>24</sup> made it clear that it will continue building its military power to project power beyond its periphery and protect its economic and strategic interests abroad.

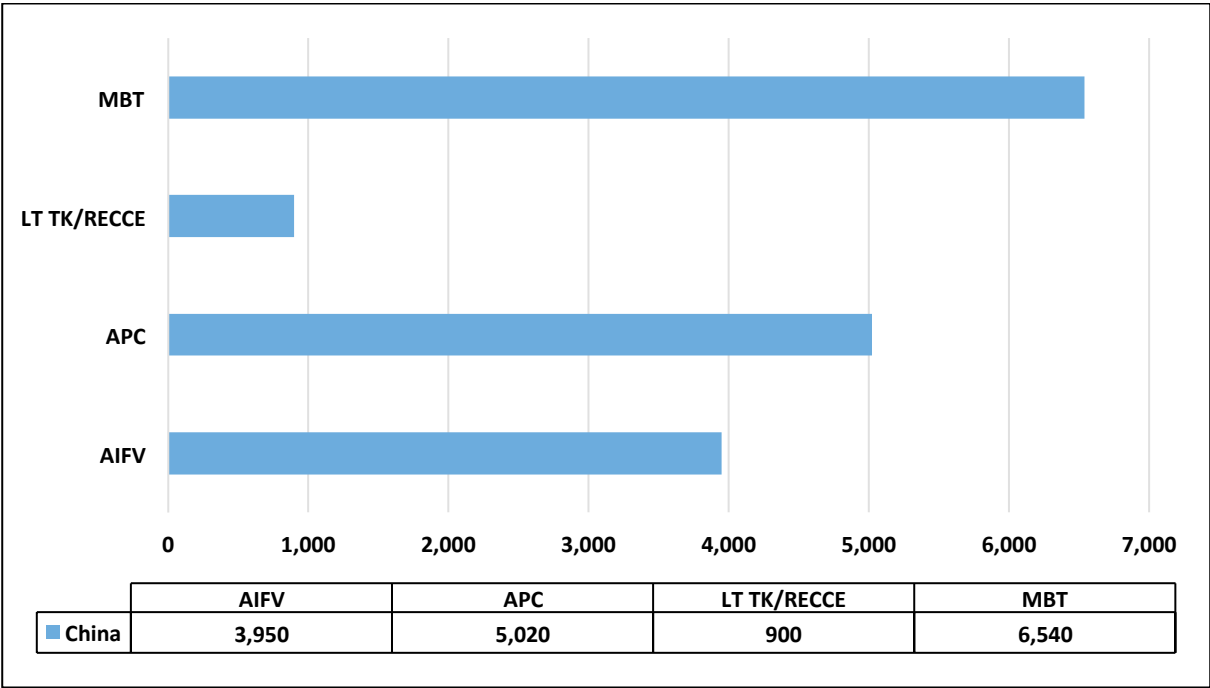
At the same time, this analysis has already shown that China's previous national defense white papers also provide insights into China's actions and strategy. They set the stage for understanding the pace of Chinese military development and modernization, and the extent to which China's public strategy actually shapes its actions and force development.

**Figure 2.1: People’s Liberation Army: Total Personnel**



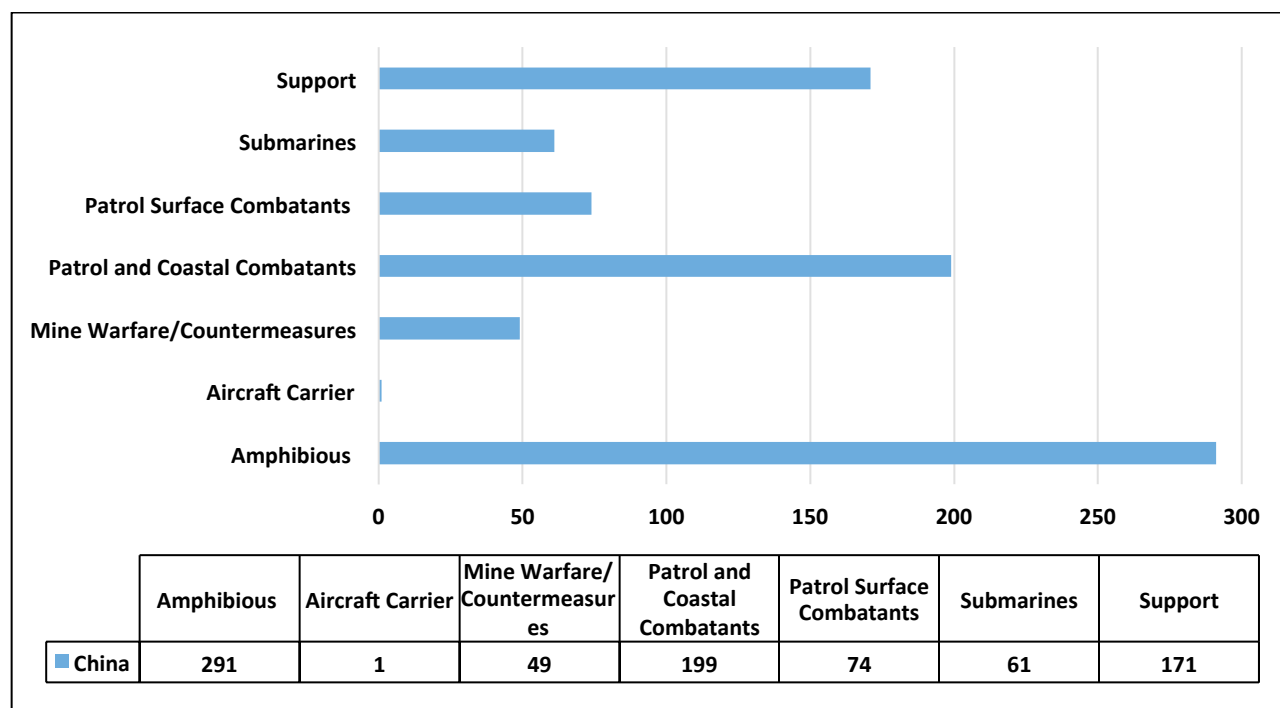
Source: IISS, *Military Balance 2016*, 240 adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 2.2: Selected PLA Army Equipment Holdings**



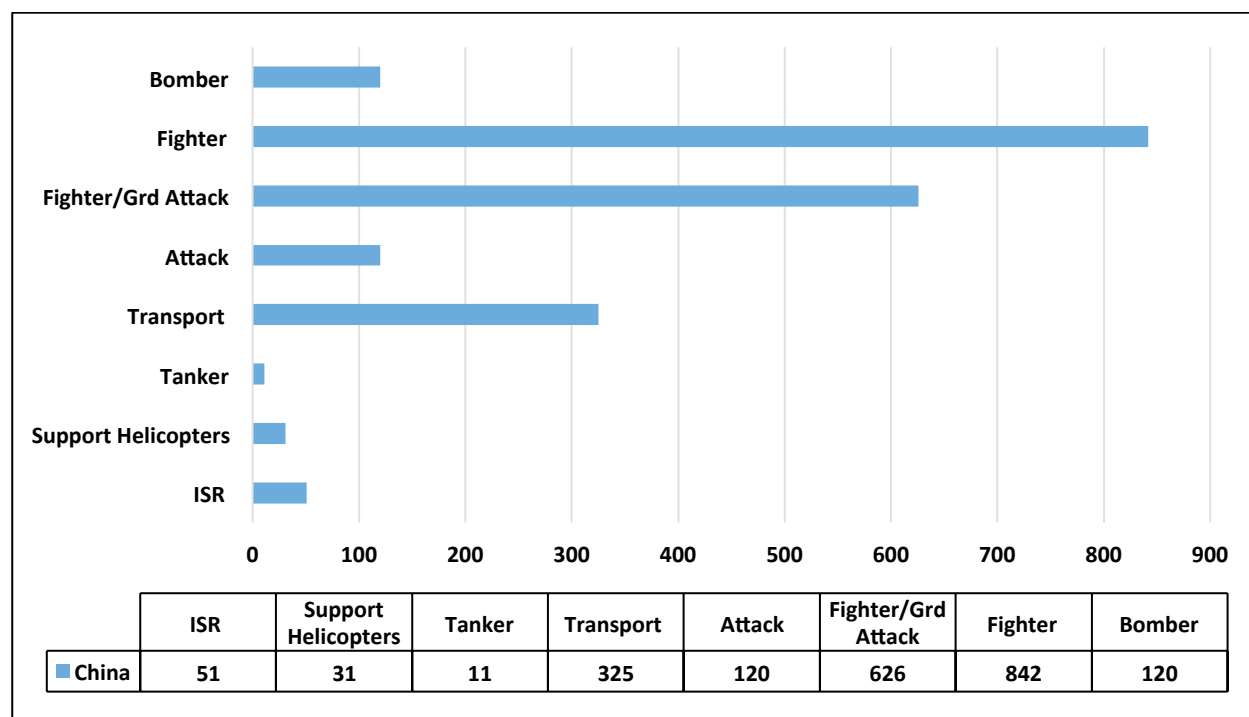
Source: IISS, *Military Balance 2016*, 241, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 2.3: Selected PLA Navy Equipment Holdings**



Source: IISS, *Military Balance 2016*, 242-243, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 2.4: Selected PLA Air Force Equipment Holdings**



Source: IISS, *Military Balance 2016*, 245, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## ***China's Defense White Papers***

China's defense white papers are issued biennially by the Information Office of the State Council of the People's Republic of China. Three recent white papers -- *China's National Defense in 2010*, and *The Diversified Employment of China's Armed Forces* (2013), and *China's Military Strategy* (2015) - provide a detailed picture of China's public statements, the logic and drivers behind its military modernization program and China's strategic view of the world.

It should be stressed that these papers are meant to be viewed as a series, so the older versions of the white paper still provide valuable background as well as illustrate the evolution of Chinese thinking and effort.<sup>25</sup>

### **The 2010 White Paper**

The 2010 White Paper sets the stage in describing the official Chinese view of its modern strategic environment. The 2010 White Paper emphasized both the search for stability and China's need to respond to a steadily more unstable global political and economic environment, as well as to growing military competition:<sup>26</sup>

The international situation is currently undergoing profound and complex changes. The progress toward economic globalization and a multi-polar world is irreversible, as is the advance toward informationization of society. The current trend toward peace, development and cooperation is irresistible. But, international strategic competition and contradictions are intensifying, global challenges are becoming more prominent, and security threats are becoming increasingly integrated, complex and volatile.

On the whole, the world remains peaceful and stable. The international community has reaped the first fruits in joint efforts to respond to the global financial crisis. All countries have stepped up to adjust their strategies and models for economic development, and no effort has been spared in attempting to foster new economic growth points. Scientific and technological innovations are breeding new breakthroughs. And economic globalization has achieved further progress. The international balance of power is changing, most notably through the economic strength and growing international status and influence of emerging powers and developing countries. Prospects for world multi-polarization are becoming clearer. The prevailing trend is towards reform in international systems.

Steady progress is being made in the establishment of mechanisms for management of the global economy and finance. G20 is playing a more outstanding role. The international spotlight has turned to the reform of the UN and other international political and security systems. Profound realignments have taken place in international relations; economic interdependence among various countries has been enhanced; shared challenges have been increasing; and communication, coordination and cooperation have become mainstream in relationships among the world's major powers. As factors conducive to maintaining peace and containing conflict continue to grow, mankind can look forward to a future that on the whole is bright.

The international security situation has become more complex. International strategic competition centering on international order, comprehensive national strength and geopolitics has intensified. Contradictions continue to surface between developed and developing countries and between traditional and emerging powers, while local conflicts and regional flashpoints are a recurrent theme. In a number of countries, outbreaks of unrest are frequently triggered off by political, economic, ethnic, or religious disputes. In general, world peace remains elusive. Deep-seated contradictions and structural problems behind the international financial crisis have not been resolved. World economic recovery remains fragile and imbalanced. Security threats posed by such global challenges as terrorism, economic insecurity, climate change, nuclear proliferation, insecurity of information, natural disasters, public health concerns, and transnational crime are on the rise. Traditional security concerns blend with non-traditional ones and domestic concerns interact with international security ones, making it hard for traditional security approaches and mechanisms to respond effectively to the various security issues and challenges in the world.

International military competition remains fierce. Major powers are stepping up the realignment of their security and military strategies, accelerating military reform, and vigorously developing new and more

sophisticated military technologies. Some powers have worked out strategies for outer space, cyber space and the Polar Regions, developed means for prompt global strikes, accelerated development of missile defense systems, enhanced cyber operations capabilities to occupy new strategic commanding heights. Some developing countries maintain the push towards strengthening their armed forces, and press on with military modernization. Progress has been made in international arms control, but prevention of the proliferation of weapons of mass destruction remains complex, there is still much to do to maintain and strengthen the international non-proliferation mechanism.

### **The 2013 White Paper**

China released another defense white paper on April 16, 2013. It was entitled *The Diversified Employment of China's Armed Forces* and differed from its predecessors in several key ways.

One way was that the paper revealed the structure of each military branch – in terms of numbers of troops and officers as well as the organization of each branch. Moreover, the Air Force, Navy, and domestic R&D investment were all emphasized in terms of capabilities and operational reach expansions. Many details are examined in many of the following chapters of this report.

Another was that the 2013 paper discussed China's view of itself and its place in the international arena, again emphasizing the PRC's commitment to peaceful development.<sup>27</sup>

In today's world, peace and development are facing new opportunities and challenges. It is a historic mission entrusted by the era to people of all nations to firmly grasp the opportunities, jointly meet the challenges, cooperatively maintain security and collectively achieve development.

It is China's unshakable national commitment and strategic choice to take the road of peaceful development. China unswervingly pursues an independent foreign policy of peace and a national defense policy that is defensive in nature. China opposes any form of hegemonism or power politics, and does not interfere in the internal affairs of other countries. China will never seek hegemony or behave in a hegemonic manner, nor will it engage in military expansion. China advocates a new security concept featuring mutual trust, mutual benefit, equality and coordination, and pursues comprehensive security, common security and cooperative security.

It is a strategic task of China's modernization drive as well as a strong guarantee for China's peaceful development to build a strong national defense and powerful armed forces which are commensurate with China's international standing and meet the needs of its security and development interests. China's armed forces act to meet the new requirements of China's national development and security strategies, follow the theoretical guidance of the Scientific Outlook on Development, speed up the transformation of the generating mode of combat effectiveness, build a system of modern military forces with Chinese characteristics, enhance military strategic guidance and diversify the ways of employing armed forces as the times require. China's armed forces provide a security guarantee and strategic support for national development, and make due contributions to the maintenance of world peace and regional stability.

The PLA's 2013 white paper also underscored China's adherence to the following principles and policies:<sup>28</sup>

- Safeguarding national sovereignty, security and territorial integrity, and supporting the country's peaceful development.
- Aiming to win local wars under the conditions of informationization and expanding and intensifying military preparedness.
- Formulating the concept of comprehensive security and effectively conducting military operations other than war (MOOTW).
- Deepening security cooperation and fulfilling international obligations.
- Acting in accordance with laws, policies and disciplines.



## **The 2015 White Paper**

China released its latest defense white paper, *China's Military Strategy*, in May 2015. It provided a broad view of China's strategic goals. While it remained similar to previous defense white papers, it did mention various key observations of its military-to-military relationships with the major players of the region and outlined an emphasis on a posture of "active defense".

The 2015 paper explained China's growing influence and its strategic interests, as well as some of the Chinese priorities that have caused concern on the part of the U.S. and various powers in the Asia-Pacific region.<sup>29</sup>

### **Preface**

The world today is undergoing unprecedented changes, and China is at a critical stage of reform and development. In their endeavor to realize the Chinese Dream of great national rejuvenation, the Chinese people aspire to join hands with the rest of the world to maintain peace, pursue development and share prosperity.

China's destiny is vitally interrelated with that of the world as a whole. A prosperous and stable world would provide China with opportunities, while China's peaceful development also offers an opportunity for the whole world. China will unswervingly follow the path of peaceful development, pursue an independent foreign policy of peace and a national defense policy that is defensive in nature, oppose hegemonism and power politics in all forms, and will never seek hegemony or expansion. China's armed forces will remain a staunch force in maintaining world peace.

Building a strong national defense and powerful armed forces is a strategic task of China's modernization drive and a security guarantee for China's peaceful development. Subordinate to and serving the national strategic goal, China's military strategy is an overarching guidance for blueprinting and directing the building and employment of the country's armed forces. At this new historical starting point, China's armed forces will adapt themselves to new changes in the national security environment, firmly follow the goal of the Communist Party of China (CPC) to build a strong military for the new situation, implement the military strategic guideline of active defense in the new situation, accelerate the modernization of national defense and armed forces, resolutely safeguard China's sovereignty, security and development interests, and provide a strong guarantee for achieving the national strategic goal of the "two centenaries" and for realizing the Chinese Dream of achieving the great rejuvenation of the Chinese nation.

### **I. National Security Situation**

In today's world, the global trends toward multi-polarity and economic globalization are intensifying, and an information society is rapidly coming into being. Countries are increasingly bound together in a community of shared destiny. Peace, development, cooperation and mutual benefit have become an irresistible tide of the times.

Profound changes are taking place in the international situation, as manifested in the historic changes in the balance of power, global governance structure, Asia-Pacific geostrategic landscape, and international competition in the economic, scientific and technological, and military fields. The forces for world peace are on the rise, so are the factors against war. In the foreseeable future, a world war is unlikely, and the international situation is expected to remain generally peaceful. There are, however, new threats from hegemonism, power politics and neo-interventionism. International competition for the redistribution of power, rights and interests is tending to intensify. Terrorist activities are growing increasingly worrisome. Hotspot issues, such as ethnic, religious, border and territorial disputes, are complex and volatile. Small-scale wars, conflicts and crises are recurrent in some regions. Therefore, the world still faces both immediate and potential threats of local wars.

With a generally favorable external environment, China will remain in an important period of strategic opportunities for its development, a period in which much can be achieved. China's comprehensive national strength, core competitiveness and risk-resistance capacity are notably increasing, and China enjoys growing international standing and influence. Domestically, the Chinese people's standard of living has remarkably improved, and Chinese society remains stable. China, as a large developing country, still faces multiple and

complex security threats, as well as increasing external impediments and challenges. Subsistence and development security concerns, as well as traditional and non-traditional security threats are interwoven. Therefore, China has an arduous task to safeguard its national unification, territorial integrity and development interests.

As the world economic and strategic center of gravity is shifting ever more rapidly to the Asia-Pacific region, the US carries on its "rebalancing" strategy and enhances its military presence and its military alliances in this region. Japan is sparing no effort to dodge the post-war mechanism, overhauling its military and security policies. Such development has caused grave concerns among other countries in the region. On the issues concerning China's territorial sovereignty and maritime rights and interests, some of its offshore neighbors take provocative actions and reinforce their military presence on China's reefs and islands that they have illegally occupied.

Some external countries are also busy meddling in South China Sea affairs; a tiny few maintain constant close-in air and sea surveillance and reconnaissance against China. It is thus a long-standing task for China to safeguard its maritime rights and interests. Certain disputes over land territory are still smoldering. The Korean Peninsula and Northeast Asia are shrouded in instability and uncertainty. Regional terrorism, separatism and extremism are rampant. All these have a negative impact on the security and stability along China's periphery.

The Taiwan issue bears on China's reunification and long-term development, and reunification is an inevitable trend in the course of national rejuvenation. In recent years, cross-Taiwan Straits relations have sustained a sound momentum of peaceful development, but the root cause of instability has not yet been removed, and the "Taiwan independence" separatist forces and their activities are still the biggest threat to the peaceful development of cross-Straits relations. Further, China faces a formidable task to maintain political security and social stability. Separatist forces for "East Turkistan independence" and "Tibet independence" have inflicted serious damage, particularly with escalating violent terrorist activities by "East Turkistan independence" forces. Besides, anti-China forces have never given up their attempt to instigate a "color revolution" in this country. Consequently, China faces more challenges in terms of national security and social stability. With the growth of China's national interests, its national security is more vulnerable to international and regional turmoil, terrorism, piracy, serious natural disasters and epidemics, and the security of overseas interests concerning energy and resources, strategic sea lines of communication (SLOCs), as well as institutions, personnel and assets abroad, has become an imminent issue.

The world revolution in military affairs (RMA) is proceeding to a new stage. Long-range, precise, smart, stealthy and unmanned weapons and equipment are becoming increasingly sophisticated. Outer space and cyber space have become new commanding heights in strategic competition among all parties. The form of war is accelerating its evolution to informationization. World major powers are actively adjusting their national security strategies and defense policies, and speeding up their military transformation and force restructuring. The aforementioned revolutionary changes in military technologies and the form of war have not only had a significant impact on the international political and military landscapes, but also posed new and severe challenges to China's military security.

China's 2015 white paper reiterated the PRC's previous defense policies in seeking to secure China as a sovereign state and to further the cause of world peace. The PLA, however, also described a "new situation" that called for the implementation of "a set of strategic concepts of active defense".<sup>30</sup>

...adherence to the unity of strategic defense and operational and tactical offense; adherence to the principles of defense, self-defense and post-emptive strike; and adherence to the stance that "We will not attack unless we are attacked, but we will surely counterattack if attacked."

Shortly after the founding of the PRC in 1949, the Central Military Commission (CMC) established the military strategic guideline of active defense, and later, in line with the developments and changes in the national security situation, had made a number of major revisions of it. In 1993 the military strategic guideline of the new era was formulated, which took winning local wars in conditions of modern technology, particularly high technology, as the basic point in making preparation for military struggle (PMS). In 2004,

the guideline was further substantiated, and the basic point for PMS was modified to winning local wars under conditions of informationization.

China's socialist nature, fundamental national interests and the objective requirement of taking the path of peaceful development all demand that China unswervingly adhere to and enrich the strategic concept of active defense. Guided by national security and development strategies, and required by the situation and their tasks in the new historical period, China's armed forces will continue to implement the military strategic guideline of active defense and enhance military strategic guidance as the times so require. They will further broaden strategic vision, update strategic thinking and make strategic guidance more forward-looking. A holistic approach will be taken to balance war preparation and war prevention, rights protection and stability maintenance, deterrence and warfighting, and operations in wartime and employment of military forces in peacetime. They will lay stress on farsighted planning and management to create a favorable posture, comprehensively manage crises, and resolutely deter and win wars.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will adjust the basic point for PMS. In line with the evolving form of war and national security situation, the basic point for PMS will be placed on winning informationized local wars, highlighting maritime military struggle and maritime PMS. The armed forces will work to effectively control major crises, properly handle possible chain reactions, and firmly safeguard the country's territorial sovereignty, integrity and security.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will innovate basic operational doctrines. In response to security threats from different directions and in line with their current capabilities, the armed forces will adhere to the principles of flexibility, mobility and self-dependence so that "you fight your way and I fight my way." Integrated combat forces will be employed to prevail in system-vs-system operations featuring information dominance, precision strikes and joint operations.

It also provided a new list of strategic priorities that reflect a growing concern with the rising tensions in the region:<sup>31</sup>

To implement the military strategic guideline of active defense in the new situation, China's armed forces will optimize the military strategic layout. In view of China's geostrategic environment, the security threats it faces and the strategic tasks they shoulder, the armed forces will make overall planning for strategic deployment and military disposition, in order to clearly divide areas of responsibility for their troops, and enable them to support each other and act as an organic whole. Threats from such new security domains as outer space and cyber space will be dealt with to maintain the common security of the world community. China's armed forces will strengthen international security cooperation in areas crucially related to China's overseas interests, to ensure the security of such interests.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will uphold the following principles:

- To be subordinate to and in the service of the national strategic goal, implement the holistic view of national security, strengthen PMS, prevent crises, deter and win wars;
- To foster a strategic posture favorable to China's peaceful development, adhere to the national defense policy that is defensive in nature, persevere in close coordination of political, military, economic and diplomatic work, and positively cope with comprehensive security threats the country possibly encounters;
- To strike a balance between rights protection and stability maintenance, and make overall planning for both, safeguard national territorial sovereignty and maritime rights and interests, and maintain security and stability along China's periphery;
- To endeavor to seize the strategic initiative in military struggle, proactively plan for military struggle in all directions and domains, and grasp the opportunities to accelerate military building, reform and development;

- To employ strategies and tactics featuring flexibility and mobility, give full play to the overall effectiveness of joint operations, concentrate superior forces, and make integrated use of all operational means and methods;
- To make serious preparations to cope with the most complex and difficult scenarios, uphold bottom-line thinking, and do a solid job in all aspects so as to ensure proper responses to such scenarios with ease at any time and in any circumstances;
- To bring into full play the unique political advantages of the people's armed forces, uphold the CPC's absolute leadership over the military, accentuate the cultivation of fighting spirit, enforce strict discipline, improve the professionalism and strength of the troops, build closer relations between the government and the military as well as between the people and the military, and boost the morale of officers and men;
- To give full play to the overall power of the concept of people's war, persist in employing it as an ace weapon to triumph over the enemy, enrich the contents, ways and means of the concept of people's war, and press forward with the shift of the focus of war mobilization from human resources to science and technology; and
- To actively expand military and security cooperation, deepen military relations with major powers, neighboring countries and other developing countries, and promote the establishment of a regional framework for security and cooperation.

### ***US Defense White Papers on China's Strategy and Forces***

The U.S. view of China's strategy and military development has changed in accordance with the changes China's defense white papers and U.S. assessments of the changes in China's forces and Chinese actions. Many sections from the 2014, 2015, and 2016 versions of the DoD's *Military and Security Developments Involving the People's Republic of China* report have virtually identical with the same wording. However, there also are sections that differ in phrasing and substance, and these differences have helped shape U.S. perceptions of Chinese strategy and force modernization

#### **The U.S. View of Chinese Strategy**

The 2015 and 2016 DoD reports both summarized the trends in China's strategy, military efforts, and force posture in the ways reflected in this excerpt from the 2016 report:<sup>32</sup>

Since 2002, China's leaders—including President Xi Jinping—have characterized the initial two decades of the 21st century as a “period of strategic opportunity.” They assess that during this time international conditions will facilitate domestic development and the expansion of China's “comprehensive national power,” which outside observers believe will serve what they assess to be the Chinese Communist Party's (CCP) overriding strategic objectives:

- perpetuate CCP rule;
- maintain domestic stability;
- sustain economic growth and development;
- defend national sovereignty and territorial integrity;
- secure China's status as a great power and, ultimately, reacquiring regional preeminence;
- and safeguard China's interests abroad.

The CCP has distilled these objectives into President Xi's “China Dream” of national rejuvenation. The concept, first articulated by Xi shortly after the 2012 leadership transition, encapsulates a long-standing national aspiration of establishing a powerful and prosperous China. President Xi and other leaders also link the China Dream to two high-profile centenary goals: achieving a “moderately prosperous society” by the

100th anniversary of the CCP in 2012, and building a “modern socialist country that is prosperous, strong, democratic, culturally advanced and harmonious” by the 100th anniversary of the establishment of the PRC in 2049.

The China Dream also includes a commitment to developing military power commensurate with China’s resurgent status as a great power. China’s leaders are increasingly seeking ways to leverage its growing military, diplomatic, and economic clout to establish regional preeminence and expand its international influence. China’s strategy is to secure these objectives without jeopardizing the regional peace that has been conducive to its military modernization and the economic development that has helped the CCP maintain its monopoly on power.

China’s ambitious, two-decade long modernization entered a new phase in 2015 as President Xi unveiled the most sweeping reforms in at least thirty years. Official Chinese press has touted the reforms as the most sweeping in the history of the PLA. The reforms are designed in part to make the PLA a leaner, more lethal force that is more capable of conducting the type of joint operations the U.S. military pioneered. The reforms establish new joint theater commands and a new Joint Staff Department, while replacing the four general departments that have run the PLA since the establishment of the People’s Republic of China in 1949 with new organizations. Xi and the Central Military Commission (CMC) have mandated that the PLA make “major breakthroughs” in overhauling its structure by 2020.

China continues to regard stable relations with the United States and China’s neighbors as key to its development. China sees the United States as the dominant regional and global actor with the greatest potential both to support and to disrupt China’s rise. China is conscious that if its neighbors come to view it primarily as a threat, they will balance against China.

In October, in part to allay these fears, China hosted back-to-back meetings of ASEAN defense chiefs and national and military leaders who attended China’s Xiangshan Forum, a semi-official dialogue on regional security. During the forum, CMC Vice Chairman Fan Changlong defended China’s construction of islands in South China Sea, advocated for handling differences through peaceful bilateral negotiations, and stated that China will never “recklessly” use force to resolve disputes. Fan’s comments underscored the challenges in China’s regional policy. In addition, China used its 2014-2015 chairmanship of the Conference on Interaction and Confidence Building Measures in Asia (CICA) and the inaugural ASEAN-China Defense Ministers’ Informal Meeting in October 2015 to push forward new mechanisms for regional security cooperation.

However, as China’s foreign interests increase and its power have grown, former paramount leader Deng Xiaoping’s oft-repeated policy dictum that China should “hide capabilities and bide time” has come under strain as some members of China’s elite question its continued relevance. China is seeking progressively higher-profile leadership roles in existing regional and global institution while seizing the initiative to establish multilateral mechanisms such as the proposed “New Asian Security Concept,” an all-inclusive security framework that promotes Asian solutions to Asian problems and provides an alternative to U.S. alliances in Asia. In late November 2014, President Xi at a rare CCP Central Foreign Affairs Work Conference—only the fourth since the establishment of the PRC—called on Beijing to take on regional and global leadership and officially endorsed the main thrust of China’s foreign policy. Xi remarked on the “protracted nature of the struggle over the international order” and highlighted China’s intention to play a larger role. He stressed that China would be firm in defending its interests, especially its territorial sovereignty and maritime rights.

China’s increasingly assertive efforts to advance its national sovereignty and territorial claims, its forceful rhetoric, and lack of transparency about its growing military capabilities and strategic decision-making continue to raise tensions and have caused countries in the region to enhance their ties to the United States. These concerns are likely to intensify as the PLA continues to modernize, especially in the absence of greater transparency.

## **Strategy, Modernization, and Shifts that Affect the U.S. Role in Asia**

The DoD went on to cite several specific shifts in Chinese strategy that had an impact on US power projection capabilities as well as on regional deterrence. For U.S. defense analysts and

policy makers the most important development related to China remains overcoming China's anti-access/area-denial (A2/AD) capabilities.

The section addressing China's A2/AD infrastructure from the 2016 edition was nearly identical to the 2015 report:<sup>33</sup>

**Anti-Access/Area Denial.** As China modernizes the PLA and prepares for various contingencies, it continues to develop capabilities that serve to dissuade, deter, or if ordered, defeat possible third-party intervention during a large-scale, theater campaign such as a Taiwan contingency. U.S. defense planners often refer to these collective PLA capabilities as A2/AD, though China does not use this term. China's military modernization plan includes the development of capabilities to attack, at long ranges, adversary forces that might deploy or operate within the western Pacific Ocean in the air, maritime, space, electromagnetic, and information domains. As the PLA Academy of Military Science 2013 Science of Strategy states, "we cannot count on luck and must keep a foothold at the foundation of having ample war preparations and powerful military capabilities of our own, rather than hold the assessment that the enemy will not come, intervene, or strike."

*Information Operations.* An essential element, if not a fundamental prerequisite, of China's ability to counter third-party intervention is the requirement to control the information spectrum in all dimensions of the modern battlespace. PLA authors often cite the need in modern warfare to control information—sometimes termed "information blockade" or "information dominance"—and to seize the initiative early in a campaign so as to set the conditions needed to achieve air and sea superiority. China is improving information and operational security to protect its own information structures, and is also developing EW and other information warfare capabilities, including denial and deception. China's "information blockade" likely envisions the employment of military and non-military instruments of state power across the battlespace, including in cyberspace and space. China's investments in advanced EW systems, counterspace weapons, and cyberspace operations—combined with more traditional forms of control such as propaganda and denial through opacity—reflect the emphasis and priority China's leaders place on building capability for information advantage.

*Cyber Operations.* China believes its cyberspace capabilities and personnel lag behind the rest of the world. To deal with these perceived deficiencies, China is improving training and domestic innovation to achieve its cyberspace capability development goals. PLA researchers advocate seizing "cyberspace superiority" by deterring or stopping an adversary by developing and employing offensive cyberspace capabilities. Chinese offensive cyberspace operations could support A2/AD by targeting critical nodes to disrupt adversary networks throughout the region.

*Long-Range Precision Strike.* The development of China's conventionally armed missile capability has been extraordinarily rapid. As recently as 10 years ago, several hundred short-range ballistic missiles could reach targets in Taiwan, but China had only a rudimentary capability to strike many other locations within or beyond the first island chain, such as U.S. bases in Okinawa or Guam. Today, however, China is fielding an array of conventionally armed short-range ballistic missiles (SRBMs), as well as ground- and air-launched land-attack cruise missiles (LACMs), special operations forces (SOF), and cyber warfare capabilities to hold targets at risk throughout the region. U.S. bases in Japan are in range of a growing number of Chinese MRBMs as well as a variety of LACMs. Guam could also possibly be targeted by air-launched LACMs, as demonstrated by H-6K bomber flights into the Western Pacific for the first time in 2015. At the September 2015 parade, China unveiled the DF-26. This system is capable of conducting intermediate precision strikes against ground targets, which could include U.S. bases on Guam.

China's LACM and ballistic missiles have also become far more accurate and are now more capable against adversary air bases, logistic facilities, communications, and other ground-based infrastructure. PLA analysts have concluded that logistics and power projection are potential vulnerabilities in modern warfare, given the requirements for precision in coordinating transportation, communications, and logistics networks.

*Ballistic Missile Defense (BMD).* China has made efforts to go beyond defense from aircraft and cruise missiles to gain a BMD capability in order to provide further protection of China's mainland and strategic assets. China's existing long-range surface-to-air missile (SAM) inventory offers limited capability against ballistic missiles. New indigenous radars, the JL-1A and JY-27A, are designed to address the ballistic missile

threat, with the JL-1A advertised as capable of the precision tracking of multiple ballistic missiles. China's SA-20 PMU2 SAMs, one of the most advanced SAM systems Russia offers for export, has the advertised capability to engage ballistic missiles with ranges of 1,000 km and speeds of 2,800 meters per second.

China's domestic CSA-9 long-range SAM system is expected to have a limited capability to provide point defense against tactical ballistic missiles with ranges up to 500 km. China is proceeding with the research and development of a missile defense umbrella consisting of kinetic-energy intercept at exo-atmospheric altitudes (greater than 80 km), as well as intercepts of ballistic missiles and other aerospace vehicles within the upper atmosphere. In January 2010, and again in January 2013, China successfully intercepted a ballistic missile at mid-course, using a ground-based missile. The announced acquisition by China of the S-400 SAM system from Russia could provide China with a counter-MRBM capability depending on which interceptor variants are delivered to China.

*Surface and Undersea Operations.* China continues to build a variety of offensive and defensive capabilities that could permit the PLA to achieve sea control within what the PLAN calls the "near seas," as well as to project limited combat power into the "far seas." Of these, China's coastal defense cruise missiles (CDCM), air- / surface- / sub-surface-launched anti-ship cruise missiles (ASCMs), submarine-launched torpedoes, and naval mines provide the PLAN with an ability to counter an adversary fleet's intervention with multi-axis, high-intensity attacks that increase in lethality as adversary naval combatants approach China's coast.

Additionally, China has fielded CSS-5 anti-ship ballistic missiles (ASBMs) specifically designed to hold adversary aircraft carriers at risk 1,500 km off China's coast. China is making gradual progress in the undersea domain as well, but continues to lack either a robust coastal or deep-water anti-submarine warfare capability. It is also unclear whether China has the capability to collect accurate targeting information and to pass it to launch platforms in time for successful strikes in sea areas beyond the first island chain.

*Space and Counterspace.* The PLA continues to strengthen its military space capabilities, which include advancements with the Beidou navigation satellite system, and its space surveillance capabilities that can monitor objects across the globe and in space. China is seeking to utilize space systems to establish a real-time and accurate surveillance, reconnaissance and warning system, and to enhance C2 in joint operations. Publicly, however, China stands against the militarization of space. In 2009, the then-commander of the PLA AF Xu Qiliang retracted his earlier assertion that the militarization of space was a "historic inevitability" after former President Hu Jintao swiftly contradicted him.

PLA strategists regard the ability to use space-based systems—and to deny them to adversaries—as central to enabling modern informationized warfare. Although PLA doctrine does not appear to address space operations as a unique operational "campaign," space operations will probably form an integral component of other PLA campaigns and would serve a key role in enabling actions that counter third-party intervention.

*Integrated Air Defense System (IADS).* Within 300 nm (556 km) of its coast, China has a credible IADS that relies on robust early warning, fighter aircraft, and a variety of SAM systems as well as point defense primarily designed to counter adversary long-range airborne strike platforms. China continues to develop and to market a wide array of IADSs designed to counter U.S. technology, tailoring the threats to attempts to deny "high-tech" operations across a wide range of capabilities. In addition to improving China's ability to counter traditional IADS targets such as fixed-wing aircraft, UAVs, helicopters, and cruise missiles, China's airshow displays claim that new Chinese radar developments can detect stealth aircraft. China's trade materials also emphasize the systems' ability to counter long-range targets, such as long-range airborne strike and combat support aircraft. Long-range air surveillance radars and airborne early-warning aircraft, such as China's indigenous KJ-2000 and KJ-500, are said to extend China's detection range well beyond its borders.

China has increasing numbers of advanced long-range SAMs, including its indigenous CSA-9 (HQ-9), Russian SA-10 (S-300PMU), and SA-20 (S-300PMU1/PMU2), all of which have the advertised capability to protect against both aircraft and low-flying cruise missiles. In fall 2014, China signed a contract for delivery of Russia's extremely long-range SA-X-21b (S-400) SAM system (400 km), and is also expected to continue research and development to extend the range of the domestic CSA-9 SAM to beyond 200 km.

*Air Operations.* The planned development of China's fifth-generation fighter force will bolster China's air-to-air capability. These fighters feature high maneuverability, low observability, and an internal weapons bay, based on the J-20 or FC-31/J-31 prototypes. Other key features of these aircraft are modern avionics and sensors that offer more timely situational awareness for operations in network-centric combat environments,

radars with advanced tracking and targeting capabilities, protection against enemy electronic countermeasures, and integrated EW systems.

These fifth-generation aircraft, which could enter service as early as 2018, will significantly improve China's existing fleet of fourth-generation aircraft (Russian-built Su-27/Su-30 and J-11A, and indigenous J-10 and J-11B fighters) to support regional air superiority and strike operations. China's continuing upgrades to its bomber fleet will give them the capability to carry new, longer-range cruise missiles. In conjunction with procuring more capable military equipment, China is increasing the complexity and realism of air and air-defense training.

Similarly, the acquisition and development of longer-range UAVs will increase China's ability to conduct long-range ISR and strike operations. China is advancing its development and employment of UAVs. In 2015, Chinese media reported the development of the Shendiao (Sacred Eagle or Divine Eagle) as the PLA's newest high-altitude, long-endurance UAV for a variety of missions such as early warning, targeting, EW, and satellite communications. Last year, the PLAAF also reported on its use of a UAV to assist in HA/DR in the aftermath of an earthquake in China's west—the first public acknowledgment of PLAAF UAV operations. Photos of the UAV showed it was the Yilong (also known as the Wing Loong or Pterodactyl).

Both the 2015 and 2016 version of the US document contained matching sections focused on China's continued effort to build vast power projection capabilities:<sup>34</sup>

#### **PLA Power Projection Expanding Outward**

PLA modernization and development trends over the last decade reflect an expansion in the PLA's capabilities to address regional and global security objectives. PLA ground, air, naval, and missile forces are increasingly able to project power during peacetime and to contest U.S. military superiority in the event of a regional conflict. The PLA's growing ability to project power also augments China's globally-oriented objectives to be viewed as a stakeholder in ensuring stability and a regional power.

The PLA will maintain a primary emphasis on developing capabilities for a potential Taiwan contingency but is steadily expanding the force's operational flexibility to be able to meet regionally and globally focused missions. The PLA's missile and air forces remain a critical component in extending China's defensive perimeter. This frees up and enables other military assets to focus on conducting offensive missions, such as blockades, sovereignty enforcement, and/or A2/AD, farther from China's shores. China also is focused on enhancing the PLA's ISR capabilities, which will enable improved targeting and timely responses to perceived threats.

The expansion of naval operations beyond China's immediate region will facilitate non-war uses of military force and provide China with a diverse set of capabilities for striking targets across the Pacific and Indian Ocean regions. Improving "blue water" capabilities will extend China's maritime security buffer to protect China's near and far seas interests more effectively.

China's modern naval platforms include advanced missile and technological capabilities that will strengthen the force's core warfighting competencies and enable credible combat operations beyond the reaches of land-based defenses. Moreover, China's current aircraft carrier and planned follow-on carriers will extend air defense umbrellas beyond the range of coastal systems and help enable task group operations in "far seas." Sea-based land attack probably is an emerging requirement for the PLAN. Chinese military experts argue that in order to pursue a defensive strategy in far seas, the Navy must improve its ability to control land from the sea through long-range LACM development.

#### **Disputes Over the Senkaku/Diaoyu Islands and South China Sea**

The 2014 DoD report discussed the dispute over the Senkaku/Diaoyu islands are as follows:<sup>35</sup>

China claims sovereignty over the Senkaku Islands (which the Chinese refer to as the Diaoyu Islands) in the East China Sea; this territory is also claimed by Taiwan and is under the administration of Japan. In April 2012, the Governor of Tokyo announced plans to purchase three of the five islets from private Japanese owners. In response, in September 2012, the Government of Japan purchased the three islands. China protested the move and since that time has regularly sent maritime law enforcement ships (and less often, aircraft) to patrol near the Senkaku Islands to challenge Japan's ability to demonstrate exclusive



administration. This includes regular Chinese maritime operations within 12 nautical miles (nm) of the islands. In September 2013, China published a white paper entitled, “Diaoyu Dao, an ‘inherent territory’ of China” and submitted information to the UN Commission on the Limits of the Continental Shelf regarding China’s extended continental shelf in the East China Sea, including waters near the islands. In November 2013, China announced the creation of its ADIZ in the East China Sea with coverage that included airspace above the Senkaku Islands and that overlapped with previously established Japanese, South Korean and Taiwan ADIZ. Chinese officials have continued to publicly reiterate the claim that the islands are part of China’s territory and that it will resolutely respond to any external provocation. During the November 10-12, 2014, Asia-Pacific Economic Cooperation (APEC) Summit, President Xi held his first bilateral meeting with Japanese Prime Minister Abe and announced a four-point agreement to improve bilateral ties.

The 2015 version places less emphasis on the Senkaku/Diaoyu islands, but because of the tensions raised by China’s buildup and land reclamation in the South China Sea. It discusses these developments as follows:<sup>36</sup>

The *South China Sea* plays an important role in Northeast and Southeast Asian security considerations. Northeast Asia relies heavily on the flow of oil and commerce through South China Sea shipping lanes, including more than 80 percent of the crude oil to Japan, South Korea, and Taiwan. China claims sovereignty over the Spratly and Paracel Island groups and other land areas within its “nine-dash line” claim—claims disputed in whole or part by Brunei, the Philippines, Malaysia, and Vietnam. Taiwan, which occupies the Itu Aba Island in the Spratly Islands, makes the same claims as the PRC. In 2009, China protested extended continental shelf submissions in the South China Sea made by Malaysia and Vietnam; in its protest to the UN Commission on the Limits of the Continental Shelf, China included its ambiguous “nine-dash line” map, while stating in a note verbale that it has “indisputable sovereignty over the islands in the South China Sea and the adjacent waters and enjoys sovereign rights and jurisdiction over the relevant waters as well as the seabed and subsoil thereof.” (pg. 27)

In 2014, China engaged in an extensive land reclamation effort at five of its outposts in the Spratly Islands. As of late December 2014, China had reclaimed about 500 acres of land as part of this effort. At four reclamation sites, China transitioned from land reclamation operations to infrastructure development and delivered scores of heavy construction equipment to all five reclamation sites. Although it is unclear what will ultimately be built on these expanded outposts, they could include harbors, communications and surveillance systems, logistics support, and at least one airfield. (pg. 72)

At reclamation sites in the infrastructure phase of development, China excavated deep channels and built new berthing areas to allow access for larger ships to the outposts. The ultimate purpose of the expansion projects remains unclear and the Chinese Government has stated these projects are mainly for improving the living and working conditions of those stationed on the islands. However, most analysts outside China believe that China is attempting to change facts on the ground by improving its defense infrastructure in the South China Sea. No Chinese-occupied outpost in the Spratly Islands has an airfield or secure docking, unlike other claimant nations. (pg. 72)

Taiwan began a modest land reclamation effort at Itu Aba Island by April 2014 and to date has reclaimed at least approximately five acres of land near the island’s airstrip. According to regional press reporting, Taiwan is building a \$100-million port next to the airstrip that is designed to accommodate 3,000-ton naval frigates and coast guard cutters. (pg. 72)

The 2016 DoD report was the most detailed report the U.S. had yet issued on China’s maritime claims and disputes. The report provided satellite imaging photos of China’s reclamation of various reefs, a long situation report, and a write up on China’s strategy for low-level maritime conflict.<sup>37</sup>

China has used low-intensity coercion to enhance its presence and control in disputed areas of the East and South China Sea. During periods of tension, official statements and state media seek to frame China as reacting to threats to its national sovereignty or to provocations by outside actors. China often uses a progression of small, incremental steps to increase its effective control over disputed areas and avoid escalation to military conflict. China has also used punitive trade policies as instruments of coercion during past tensions and could do so in future disputes.

In 2015, China continued to employ China Coast Guard and PLA Navy ships to implement its claims by maintaining a near-continuous presence in disputed areas in order to demonstrate continuous and effective administration. Recent land reclamation activity has little legal effect, but will support China's ability to sustain longer patrols in the South China Sea. In 2012, China restricted Philippine fruit imports during the height of Scarborough Reef tensions. In 2010, China used its dominance in the rare earth industry as a diplomatic tool by restricting exports of rare earth minerals to Japan amid tensions over a collision between a Chinese fishing boat and Japanese patrol ship.

## Relations Between China and India

The 2015 and 2016 reports were almost identical in regards to their treatment of the bilateral relations between China and India over their border disputes. The only change was noting the five-day border standoff that occurred in September 2015:<sup>38</sup>

Tensions remain with India along their shared 4,057 km border over **Arunachal Pradesh** (which China asserts is part of Tibet and therefore of China), and over the **Askai Chin** region at the western end of the Tibetan Plateau, despite increases in China-India political and economic relations. In October 2013, Chinese and Indian officials signed the Border Defense Cooperation Agreement, which supplements existing procedures managing the interaction of forces along the Line of Actual Control. China and India continue to accuse each other of frequent incursions and military build-ups along the disputed territories, with the most recent incident occurring in September 2015 along the Line of Actual Control at Burtse in Northern Ladakh. After a five-day standoff, China and India held a senior-level flag meeting and agreed to maintain peace and retreat to positions mutually acceptable to both sides.

## Counter-Space Strategies

Both the 2015 and 2016 reports provided similar discussions of Chinese counter-space strategies. The 2016 report noted the following:<sup>39</sup>

The PLA is acquiring a range of technologies to improve China's counterspace capabilities. In addition to the development of directed energy weapons and satellite jammers, China is also developing anti-satellite capabilities and has probably made progress on the antisatellite missile system it tested in July 2014. China is employing more sophisticated satellite operations and is probably testing dual-use technologies in space that could be applied to counterspace missions.

In the summer of 2014, China conducted a space launch that had a similar profile to the January 2007 test. In 2013, China launched an object into space on a ballistic trajectory with a peak altitude above 30,000 km, which could have been a test of technologies with a counterspace mission in geosynchronous orbit.

Although Chinese defense academics often publish on counterspace threat technologies, no additional antisatellite programs have been publicly acknowledged. PLA writings emphasize the necessity of "destroying, damaging, and interfering with the enemy's reconnaissance...and communications satellites," suggesting that such systems, as well as navigation and early warning satellites, could be among the targets of attacks designed to "blind and deafen the enemy."

The 2016 report had somewhat of a different tone than the 2014 report, which put more emphasis on China's intent to deploy ASAT weapons. Indeed, in recent years, various Western Chinese defense analysts have challenged the American reading that China is developing ASATS for a first-strike space capability. Instead, analysts like Gregory Kulacki suggest that China is trying to replicate an American strength rather than take advantage of weakness.<sup>40</sup> This could account for the slight softening in the 2016 report as opposed to the 2014 report:<sup>41</sup>

PLA strategists regard the ability to use space-based systems – and to deny adversaries access to space-based systems – as central to enabling modern, "informationized" warfare. Although PLA doctrine does not appear to address space operations as a unique operational "campaign," space operations form an integral component of other PLA campaigns and would serve a key role in enabling A2/AD operations. A PLA analysis of U.S. and coalition military operations reinforced the importance of operations in space to enable "informationized" warfare, claiming that "space is the commanding point for the information battlefield."

PLA writings emphasize the necessity of “destroying, damaging, and interfering with the enemy’s reconnaissance ... and communications satellites,” suggesting that such systems, as well as navigation and early warning satellites, could be among the targets of attacks designed to “blind and deafen the enemy.” The same PLA analysis of U.S. and coalition military operations also states that “destroying or capturing satellites and other sensors ... will deprive an opponent of initiative on the battlefield and [make it difficult] for them to bring their precision guided weapons into full play. (pg. 32)

The 2015 report also goes into depth on China’s ASAT tests:<sup>42</sup>

On July 23, 2014, China conducted a non-destructive test of a missile designed to destroy satellites in low Earth orbit. China claimed this test was for a missile defense system. A previous destructive test of this system in 2007 created substantial space debris that continues to present a danger to the space systems of all nations, including China.

In 2013, China also launched an object into space on a ballistic trajectory that took it near geosynchronous orbit, but the launch profile was not consistent with traditional space launch vehicles, ballistic missiles or sounding rocket launches used for scientific research. It could, however, have been a test of technologies with a counterspace mission in geosynchronous orbit. The United States and several public organizations expressed concern to Chinese representatives and asked for more information about the purpose and nature of the launch. China has thus far refrained from providing additional information.

### **Building an “Informationized” Military**

The 2015 and 2016 editions of the report added more details about China’s intent in building an “informationized” military:<sup>43</sup>

**Building an Informationized Military.** The PLA conducts military exercises simulating operations in complex electromagnetic environments, and likely views conventional and cyber operations as means of achieving information dominance. The PLA would likely use EW, cyberspace operations (CO), and deception to augment counterspace and other kinetic operations during a wartime scenario to deny an adversary’s attainment and use of information.

Chinese military writings describe informationized warfare as an asymmetric way to weaken an adversary’s ability to acquire, transmit, process, and use information during war and to force an adversary to capitulate before the onset of conflict. “Simultaneous and parallel” operations would involve strikes against U.S. warships, aircraft, and associated supply craft and the use of information attacks to affect tactical and operational communications and computer networks. These operations could have a significant effect on an adversary’s navigational and targeting radars.

China continues to prioritize C4I modernization as a response to trends in modern warfare that emphasize the importance of rapid information sharing, processing, and decision-making. The PLA seeks to modernize itself both technologically and organizationally to command complex, joint operations in near and distant battlefields with increasingly sophisticated weapons.

The PLA views technological improvements to C4I systems as essential to improve the speed and effectiveness of decision-making while providing secure and reliable communications to fixed and mobile command posts. The PLA is fielding advanced automated command systems like the Integrated Command Platform (ICP) to units at lower echelons across the force. The adoption of the ICP enables multi-service communications necessary for joint operations.

These C4I advancements are expected to shorten the command process. The new technologies introduced into the PLA enable information-sharing—intelligence, battlefield information, logistical information, and weather reports—on robust and redundant communications networks, to improve commanders’ situational awareness. In particular, the transmission of ISR data in near real-time to commanders in the field could facilitate the commanders’ decision-making processes and make operations more efficient.

These technical improvements have greatly enhanced the PLA’s flexibility and responsiveness. “Informationized” operations no longer require in-person meetings for command decision-making or labor-intensive processes for execution. Commanders can issue orders to multiple units at the same time while on the move, and units can rapidly adjust their actions through the use of digital databases and command

automation tools. The PLA also seeks to improve its C4I capabilities by reforming its joint command institutions at the national and regional levels.

**Cyberwarfare.** Cyberwarfare capabilities could serve PLA operations in three key areas. First and foremost, they allow the PLA to collect data for intelligence and potential offensive cyberoperations (OCO) purposes. Second, they can be employed to constrain an adversary's actions or to slow response time by targeting network-based logistics, communications, and commercial activities. Third, they can serve as a force-multiplier when coupled with kinetic attacks during times of crisis or conflict.

The development of cyber capabilities for warfare is consistent with authoritative PLA military writings, which identify information operations (IO) as integral to achieving information superiority and as an effective means for countering a stronger foe. China's most recent Defense White Paper (DWP) for the first time noted cyberspace as a new domain of national security and area of strategic competition. The DWP also declared China's intent to expedite the development of a cyber force in response to a perceived increase in cyber threats.

PLA military writings detail the effectiveness of IO and OCO in conflicts and advocate targeting an adversary's C2 and logistics networks to affect its ability to operate during the early stages of conflict. They portray an enemy's C2 system as "the heart of information collection, control, and application on the battlefield. It is also the nerve center of the entire battlefield."

In the PLA, IO command organizations exist at the strategic, campaign, and tactical levels, according to China's Academy of Military Sciences. The campaign-level IO department contains several groups dedicated to coordinating IO. The structural reforms announced in 2015, however, may change how the PLA organizes and commands IO.

These developments are reshaping the structure and character of virtually every aspect of China's forces, making it a far more effective military power in terms of both conventional and asymmetric warfare capabilities and altering the balance of nuclear deterrence affecting the Pacific region. At the same time, it is important to stress that the Chinese view of the world bears striking similarities to the way in which China's neighbors, the US, and many Western nations presented their views of the security environment in the introduction.

**Figure 2.5: East China Sea Air Defense Identification Zones**



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2014, June 2014, 5.

## ***The Strategic Forces Driving Chinese Military Modernization***

As both China's white papers and the U.S. assessment of China's military power make clear, China has many reasons to modernize its security forces and expand their war-fighting capabilities. From a Chinese perspective, the other nations of the world create as many strategic uncertainties for China as China does for them. China shares borders with 15 other countries in Asia (counting Japan), several of which pose serious security issues in Chinese eyes. Taiwan, North Korea, Pakistan, and India all present challenges to regional stability. The US presence in the region is also seen as posing a further challenge in terms of strategic planning.

China has reason to see the US as both a major trading partner and as a potential strategic rival. China is also reasserting its role as a major regional power after more than a century of outside interference and exploitation -- as well as internal conflict. As a world economic power, China's sphere of interests spans the globe. Becoming a major world power creates strategic and military imperatives that generate a momentum of their own. In the last decade, the development of China's domestic and foreign policies has increased the country's involvement in international affairs. The rapid expansion of international trade, along with China's increased reliance on imported commodities and participation in multilateral policymaking institutions, has exposed

China to risks that may increasingly jeopardize its interests abroad and at home. In addition, domestic problems in China may pose issues for internal stability.

China's white papers also reflect a growing concern over the U.S. role in the Pacific and China's tensions with its neighbors. China described its defense policy in 2010 as one that did not present a threat to any other state and upheld world peace and stability:<sup>44</sup>

China pursues a national defense policy that is defensive in nature. In accordance with the Constitution of the People's Republic of China and other relevant laws, the armed forces of China undertake the... duty of resisting foreign aggression, defending the motherland, and safeguarding overall social stability and the peaceful labor of its people. To build a fortified national defense and strong armed forces compatible with national security and development interests is a strategic task of China's modernization, and a common cause of the people of all ethnic groups.

The pursuit of a national defense policy that is defensive in nature is determined by China's development path, its fundamental aims, its foreign policy, and its historical and cultural traditions. China unswervingly takes the road of peaceful development, strives to build a harmonious socialist society internally, and promotes the building of a harmonious world enjoying lasting peace and common prosperity externally. China unswervingly advances its reform and opening up as well as socialist modernization, making use of the peaceful international environment for its own development which in return will contribute to world peace.

China unswervingly pursues an independent foreign policy of peace and promotes friendly cooperation with all countries on the basis of the Five Principles of Peaceful Coexistence. China unswervingly maintains its fine cultural traditions and its belief in valuing peace above all else, advocating the settlement of disputes through peaceful means, prudence on the issue of war, and the strategy of "attacking only after being attacked." China will never seek hegemony, nor will it adopt the approach of military expansion now or in the future, no matter how its economy develops.

In 2013, China stated that, "the United States is reinforcing its regional military alliances, and increasing its involvement in regional security affairs."<sup>45</sup> The US also continues to sell weapons to Taiwan. The 2013 white paper implicitly criticized the increasing US presence in the Asia-Pacific as well as highlighted the increasing complication of international relations:<sup>46</sup>

There are signs of increasing hegemonism, power politics and neo-interventionism. Local turmoils occur frequently. Hot-spot issues keep cropping up. Traditional and non-traditional security challenges interweave and interact. Competition is intensifying in the international military field. International security issues are growing noticeably more abrupt, interrelated and comprehensive. The Asia-Pacific region has become an increasingly significant stage for world economic development and strategic interaction between major powers. The US is adjusting its Asia-Pacific security strategy, and the regional landscape is undergoing profound changes.

...China still faces multiple and complicated security threats and challenges. The issues of subsistence and development security and the traditional and non-traditional threats to security are interwoven. Therefore, China has an arduous task to safeguard its national unification, territorial integrity and development interests. Some country has strengthened its Asia-Pacific military alliances, expanded its military presence in the region, and frequently makes the situation there tenser. On the issues concerning China's territorial sovereignty and maritime rights and interests, some neighboring countries are taking actions that complicate or exacerbate the situation.... Major powers are vigorously developing new and more sophisticated military technologies so as to ensure that they can maintain strategic superiorities in international competition in such areas as outer space and cyber space.

In 2015, China's defense white paper stated that China's military faces a world in which "China...still faces multiple and complex security threats, as well as increasing external impediments and challenges" that threaten "its national unification, territorial integrity and development interests." Moreover, China's internal concerns, "the 'Taiwan independence' separatist forces," "East Turkistan independence' separatist forces" and "'Tibet independence' separatist forces" pose a threat to China's "political security and social stability."<sup>47</sup>

China's white papers also show that China increasingly feels that the changes in military forces that some in the West call the "Revolution in Military Affairs (RMA)" are forcing China to face new strategic challenges and adapt to a rapidly changing military environment. In addition to "fierce" military competition and the vigorous development of foreign military technology, China must contend with an expansion in the number of militarized domains.

Several specific references are made in in China's 2015 white paper to developing China's armed forces to deal with this "new situation":<sup>48</sup>

#### **IV. Building and Development of China's Armed Forces**

In the implementation of the military strategic guideline in the new situation, China's armed forces must closely center around the CPC's goal of building a strong military, respond to the state's core security needs, aim at building an informationized military and winning informationized wars, deepen the reform of national defense and the armed forces in an all-round way, build a modern system of military forces with Chinese characteristics, and constantly enhance their capabilities for addressing various security threats and accomplishing diversified military tasks.

##### *Development of the Services and Arms of the People's Liberation Army (PLA) and the People's Armed Police Force (PAPF)*

In line with the strategic requirement of mobile operations and multi-dimensional offense and defense, the **PLA Army (PLAA)** will continue to reorient from theater defense to trans-theater mobility. In the process of building small, multi-functional and modular units, the PLAA will adapt itself to tasks in different regions, develop the capacity of its combat forces for different purposes, and construct a combat force structure for joint operations. The PLAA will elevate its capabilities for precise, multi-dimensional, trans-theater, multi-functional and sustainable operations.

In line with the strategic requirement of offshore waters defense and open seas protection, the **PLA Navy (PLAN)** will gradually shift its focus from "offshore waters defense" to the combination of "offshore waters defense" with "open seas protection," and build a combined, multi-functional and efficient marine combat force structure. The PLAN will enhance its capabilities for strategic deterrence and counterattack, maritime maneuvers, joint operations at sea, comprehensive defense and comprehensive support.

In line with the strategic requirement of building air-space capabilities and conducting offensive and defensive operations, the **PLA Air Force (PLAAF)** will endeavor to shift its focus from territorial air defense to both defense and offense, and build an air-space defense force structure that can meet the requirements of informationized operations. The PLAAF will boost its capabilities for strategic early warning, air strike, air and missile defense, information countermeasures, airborne operations, strategic projection and comprehensive support.

In line with the strategic requirement of being lean and effective and possessing both nuclear and conventional missiles, the **PLA Second Artillery Force (PLASAF)** will strive to transform itself in the direction of informationization, press forward with independent innovations in weaponry and equipment by reliance on science and technology, enhance the safety, reliability and effectiveness of missile systems, and improve the force structure featuring a combination of both nuclear and conventional capabilities. The PLASAF will strengthen its capabilities for strategic deterrence and nuclear counterattack, and medium- and long-range precision strikes.

In line with the strategic requirement of performing multiple functions and effectively maintaining social stability, the **PAPF** will continue to develop its forces for guard and security, contingency response, stability maintenance, counter-terrorism operations, emergency rescue and disaster relief, emergency support and air support, and work to improve a force structure which highlights guard duty, contingency response, counter-terrorism and stability maintenance. The PAPF will enhance its capabilities for performing diversified tasks centering on guard duty and contingency response in informationized conditions.

##### *Force Development in Critical Security Domains*

The **seas and oceans** bear on the enduring peace, lasting stability and sustainable development of China. The traditional mentality that land outweighs sea must be abandoned, and great importance has to be attached to

managing the seas and oceans and protecting maritime rights and interests. It is necessary for China to develop a modern maritime military force structure commensurate with its national security and development interests, safeguard its national sovereignty and maritime rights and interests, protect the security of strategic SLOCs and overseas interests, and participate in international maritime cooperation, so as to provide strategic support for building itself into a maritime power.

**Outer space** has become a commanding height in international strategic competition. Countries concerned are developing their space forces and instruments, and the first signs of weaponization of outer space have appeared. China has all along advocated the peaceful use of outer space, opposed the weaponization of and arms race in outer space, and taken an active part in international space cooperation. China will keep abreast of the dynamics of outer space, deal with security threats and challenges in that domain, and secure its space assets to serve its national economic and social development, and maintain outer space security.

**Cyberspace** has become a new pillar of economic and social development, and a new domain of national security. As international strategic competition in cyberspace has been turning increasingly fiercer, quite a few countries are developing their cyber military forces. Being one of the major victims of hacker attacks, China is confronted with grave security threats to its cyber infrastructure. As cyberspace weighs more in military security, China will expedite the development of a cyber force, and enhance its capabilities of cyberspace situation awareness, cyber defense, support for the country's endeavors in cyberspace and participation in international cyber cooperation, so as to stem major cyber crises, ensure national network and information security, and maintain national security and social stability.

The **nuclear force** is a strategic cornerstone for safeguarding national sovereignty and security. China has always pursued the policy of no first use of nuclear weapons and adhered to a self-defensive nuclear strategy that is defensive in nature. China will unconditionally not use or threaten to use nuclear weapons against non-nuclear-weapon states or in nuclear-weapon-free zones, and will never enter into a nuclear arms race with any other country. China has always kept its nuclear capabilities at the minimum level required for maintaining its national security. China will optimize its nuclear force structure, improve strategic early warning, command and control, missile penetration, rapid reaction, and survivability and protection, and deter other countries from using or threatening to use nuclear weapons against China.

#### *Military Force Building Measures*

**Strengthening ideological and political work.** China's armed forces always treat ideological and political building as the first priority, and have endeavored to reinforce and improve their political work in the new situation. They will continue to practice and carry forward the Core Socialist Values, cultivate the Core Values of Contemporary Revolutionary Service Personnel, and carry forward their glorious traditions and fine styles. Moreover, the armed forces will uphold a series of fundamental principles for and institutions of the CPC's absolute leadership over the military, enhance the creativity, cohesion and combat effectiveness of their CPC organizations at all levels, make great efforts to cultivate a new generation of revolutionary service personnel of noble soul, competence, courage, uprightness and virtue, and ensure that the armed forces will resolutely follow the commands of the CPC Central Committee and the CMC at all times and under all conditions, and consistently retain the nature and purpose of the people's armed forces.

**Pushing ahead with logistics modernization.** China's armed forces will deepen logistics reform in relevant policies, institutions and support forces, and optimize strategic logistics deployment. They will innovate the modes of support, develop new support means, augment war reserves, integrate logistics information systems, improve rules and standards, and meticulously organize supply and support, so as to build a logistics system that can provide support for fighting and winning modern wars, serve the modernization of the armed forces, and transform towards informationization.

**Developing advanced weaponry and equipment.** Persevering in information dominance, systems building, independent innovation, sustainable development, overall planning, and emphasis on priorities, China's armed forces will speed up to upgrade weaponry and equipment, and work to develop a weaponry and equipment system which can effectively respond to informationized warfare and help fulfill the missions and tasks.

**Cultivating new-type military personnel.** China's armed forces will continue with the strategic project for personnel training and perfect the system for military human resources. They will deepen the reform of military educational institutions and improve the triad training system for new-type military personnel -



institutional education, unit training and military professional education, so as to pool more talented people and cultivate more personnel who can meet the demands of informationized warfare.

Intensifying efforts in running the armed forces with strict discipline and in accordance with the law. Aiming at strengthening the revolutionization, modernization and regularization of the armed forces in all respects, China will innovate and develop theories and practice in relation to running the armed forces in accordance with the law, establish a well-knit military law system with Chinese characteristics, so as to elevate the level of rule by law of national defense and armed forces building.

**Innovating military theories.** Under the guidance of the CPC's innovative theories, China's armed forces will intensify their studies of military operations, probe into the mechanisms of winning modern wars, innovate strategies and tactics featuring mobility and flexibility, and develop theories on military building in the new situation, so as to bring into place a system of advanced military theories commensurate with the requirement of winning future wars.

**Improving strategic management.** It is necessary to optimize the functions and institutions of the CMC and the general headquarters/departments, improve the leadership and management system of the services and arms, and adhere to demand-based planning and plan-based resource allocation. China's armed forces will set up a system and a working mechanism for overall and coordinated programming and planning. They will also intensify overall supervision and management of strategic resources, strengthen the in-process supervision and risk control of major projects, improve mechanisms for strategic assessment, and set up and improve relevant assessment systems and complementary standards and codes.

### **In-depth Development of Civil-Military Integration (CMI)**

Following the guiding principle of integrating military with civilian purposes and combining military efforts with civilian support, China will forge further ahead with CMI by constantly bettering the mechanisms, diversifying the forms, expanding the scope and elevating the level of the integration, so as to endeavor to bring into place an all-element, multi-domain and cost-efficient pattern of CMI.

Accelerating CMI in key sectors. With stronger policy support, China will work to establish uniform military and civilian standards for infrastructure, key technological areas and major industries, explore the ways and means for training military personnel in civilian educational institutions, developing weaponry and equipment by national defense industries, and outsourcing logistics support to civilian support systems. China encourages joint building and utilization of military and civilian infrastructure, joint exploration of the sea, outer space and air, and shared use of such resources as surveying and mapping, navigation, meteorology and frequency spectra. Accordingly, military and civilian resources can be more compatible, complementary and mutually accessible.

Building a mechanism for operating CMI. At the state level, it is necessary to establish a mechanism for CMI development, featuring unified leadership, military-civilian coordination, abutment of military and civilian needs, and resource sharing. Furthermore, it is necessary to improve the management responsibilities of relevant military and civilian institutions, improve the general standards for both the military and the civilian sectors, make studies on the establishment of a policy system in which the government makes the investment, offers tax incentives and financial support, and expedites legislation promoting military-civilian coordinated development, so as to form a pattern featuring overall military-civilian planning and coordinated development. It is also necessary to push forward with the shared utilization of military capabilities and those of other sectors, and establish a mechanism for joint civil-military response to major crises and emergencies.

Improving the systems and mechanisms of national defense mobilization. China will enhance education in national defense and boost the awareness of the general public in relation to national defense. It will continue to strengthen the building of the reserve force, optimize its structure, and increase its proportion in the PLAN, PLAAF and PLASAF as well as in combat support forces. The ways to organize and employ reserve forces will be more diversified. China will devote more efforts to science and technology in national defense mobilization, be more readily prepared for the requisition of information resources, and build specialized support forces. China aims to build a national defense mobilization system that can meet the requirements of winning informationized wars and responding to both emergencies and wars.

## ***“Defensive” Force Modernization and Transformation versus “Offensive” Force Modernization and Transformation***

While China characterizes its military transformation as defensive in nature, there is little practical difference between *defensive* force modernization and transformation and *offensive* force modernization and transformation. Like other modern military powers, China is transforming the strategy outlined in its recent whitepapers into procurement and force structure decisions that will shape its forces for years to come.

At the same time, a host of internal and external factors could suddenly change the nature of PLA modernization. Even if China has no goals or ambitions beyond those stated in its defense white papers, events and crises can force difficult decisions on national leaders. For this reason, the following chapters focus on hard data rather than concepts, broad policy statements, and conflicting opinions. Much is known about the current state of China’s armed forces and its future plans and arms purchases. China’s holdings and deployment of major weapon systems, order of battle, arms trade, and internal security matters are knowable qualities, providing some insight into what Chinese military thinking.

While there are many uncertainties open source intelligence, many sources such as government reports, yearbooks, white papers, and other official studies address Chinese security policy modernization. Sources like the International Institute for Strategic Studies (IISS) and IHS Jane’s also provide extensive unclassified data on China’s force structure, and other sources also provide recent numbers on defense spending and weapons system procurement. China’s policy of information on military matters does make such assessments difficult in some areas and leaves considerable uncertainty in others, but there is still a wide range of usable data that few experts question.

Since this report focuses on putting China’s strategy and military developments in a format that facilitates dialogue and transparency, it does not focus on the range of potentially unstated motives that might shape China’s possible strategies unless they are addressed in the official commentary and analyses of other countries. It also does not make assumptions about whether China’s military buildup constitutes a threat to the US or other Asian nations.

## CHAPTER 3: UNDERLYING RESOURCES FOR CHINA'S SECURITY CAPABILITIES

China's economic growth has supported the changes in its strategy and force structure, as well as its rapid rate of military modernization. At the same time, China's high rate of economic growth, the size of its gross domestic product (GDP), and its large population have made it a major force in the global economy.

These economic underpinnings have given China the resources to become a major military power with increasingly advanced equipment and technology. If China's growth continues, its strong economic base, steadily more advanced mix of civil and military technology, and increasingly well-trained and educated workforce will both bolster China's prestige in the international system and lay the foundation for steady increases in Chinese military power.

This makes the future stability and growth of China's economy a critical underlying factor in assessing its military power. Moreover, China's future role as a global power may well be defined more by its growing impact on the global economy. China's role as a major trading partner and exporter may ultimately give it more influence and leverage in dealing with the US and the world than the modernization of its military forces and increases in power projection capability.

### *Is Becoming an Economic Superpower a Prelude to Becoming a Military Superpower?*

The long-term outlook of the Chinese economy is mixed. **Figures 3.1 to 3.4** show IMF estimates of China's GDP growth relative to that of other major economies. The IMF estimates show that China has been on track to having the world's largest GDP when adjusted for purchasing power parity (PPP) terms, although its GDP in market terms lags behind its PPP GDP, and its per capita income remains limited.

- **Figure 3.1** – shows a comparative rise in China's GDP with other regional powers.
- **Figure 3.2** – demonstrates China's rise in per capita GDP compared to other regional powers.
- **Figure 3.3** – depicts China's percent change in GDP growth compared to other regional powers.
- **Figure 3.4** – shows China's rise on GDP based on PPP compared to other regional powers.
- **Figure 3.5** – compares the US and China's defense spending as percent of GDP

China has outpaced almost all other states in terms of sustained growth, including major potential rivals in the developing world like India. However, previous cases, such as Japan, indicate that economic growth slows as nations become more industrialized. China's rate of growth also slowed from a past high of 11% to 6.9% in 2015, and seemed likely to drop below 6.5% in 2016.

China's stock market crisis in the summer of 2015 is another sign that China is no more immune to economic cycles than other states, and China faces serious challenges that may hinder its economic growth. These challenges include:

- An aging population and demographic imbalances between men and women. China's working age population is dropping and its population of 60 and above will rise from some 14% in 2014 to nearly 25% in the 2030s.

- Slow progress in transitioning from an export-oriented economy to a consumption-based one
- Exposure to global economic factors (such as high volatility in the Eurozone)
- Competition from less developed nations with lower labor costs.
- Corruption and nepotism
- The dominance of often inefficient State Owned Enterprises
- State-driven barriers to market driven and efficient internal economic investment and tight capital controls
- Restrictive trade practices
- High income inequality
- Flagging domestic consumer demand, and excessive consumer saving equal to some 30% of disposable income. Household Consumer spending is now only 35 percent of China's G.D.P. — one of the lowest levels in the world. China's investment rate is nearly 50 percent of G.D.P. — which is extremely high — and the productivity of most such investment has become is poor to uncertain
- High levels of state debt, often driven by provincial and state sector borrowing. China's debt load rose from \$7 trillion in 2007 to \$28 trillion by mid-2014. It is now 282 percent of GDP, and larger than that of the United States or Germany.
- Excessive investment in real estate, construction, and infrastructure; and in planned areas of development and residential growth for which there is uncertain or little real world demand.
- A stock market that lacks adequate regulation, and experienced a serious contraction in the summer of 2015, driven in part by the collapse of major bubble in stock values and of the value of shares in companies with little real worth.
- China's service sector has become a key engine of growth while the State has invested in industrial capacity and facilities in ways that may have produced at least serious near-term over capacity. For example, Chinese steel manufacturing capacity was 100 million tons in the 1990s. It is now 1.1 billion tons, or roughly twice Chinese annual domestic demand for steel. This has had serious secondary effects. The massive expansion of steel manufacturing drove the price of iron ore from \$30 in 2008 to nearly \$200 a ton in 2011, from around \$30 in 2008, but as the recent commodity bubble burst, the price dropped to just under \$100.
- Uncertain monetary and currency control policies

It is far from clear that China cannot deal with these problems in the future, but they do warn that regardless of their initial trends, trees do not grow to the sky. As **Figures 3.1-3.4** show, the rise in

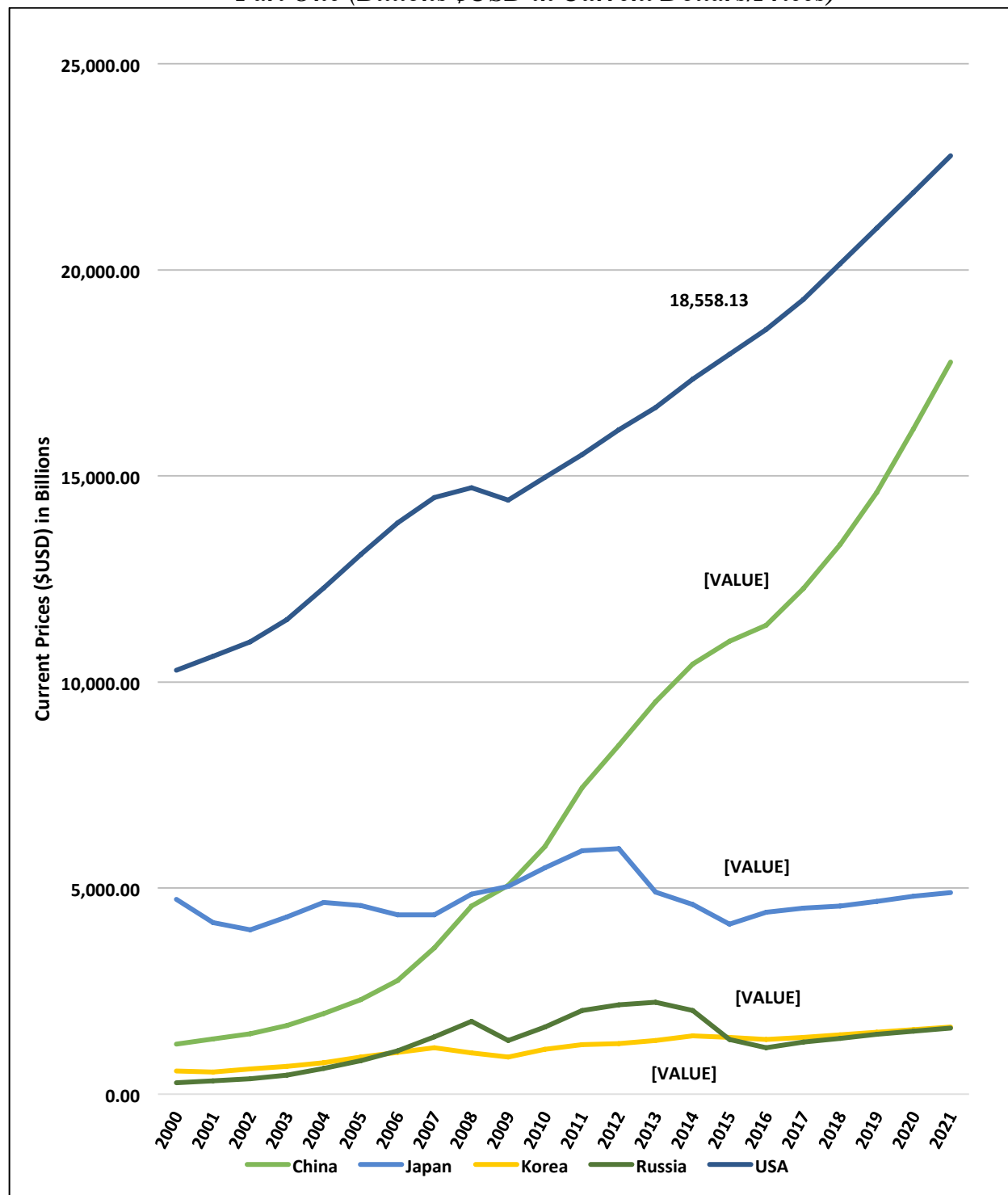
China's GDP has been relatively constant in the past, but its official growth rate has fallen to approximately 6.9% and some experts put the figure as low as 4%.

While China's performance is "still the envy of most countries," it is unclear what will happen in the future. China needs serious structural reforms and better monetary policy to avoid limit the impact of problems that could equal that of the problems that led to the collapse of Japan's economic growth, and to achieve what President Xi Jinping calls a "new normal" sustainable growth rate.<sup>49</sup>

Even if China can sustain high growth, it will face financial limits on the development of its military power if it is to meet the growing needs and expectations of its people. **Figure 3.5** shows the comparison between the US and Chinese military spending as a percentage of GDP. There is a natural synergy between economic and military power, but it is a synergy that has its limits.

China's emerging economic power also depends on China's relations with other states, and stable mutually beneficial trade relationships. It also depends on a stable domestic economy and transitioning to a consumption based economy. China may compete with other states for natural resources and trade but – like the use of force – there are limits on such competition.

**Figure 3.1: IMF Estimate of Comparative Rise in China's GDP (nominal)  
– Part One (Billions \$USD in Current Dollars/Prices)**



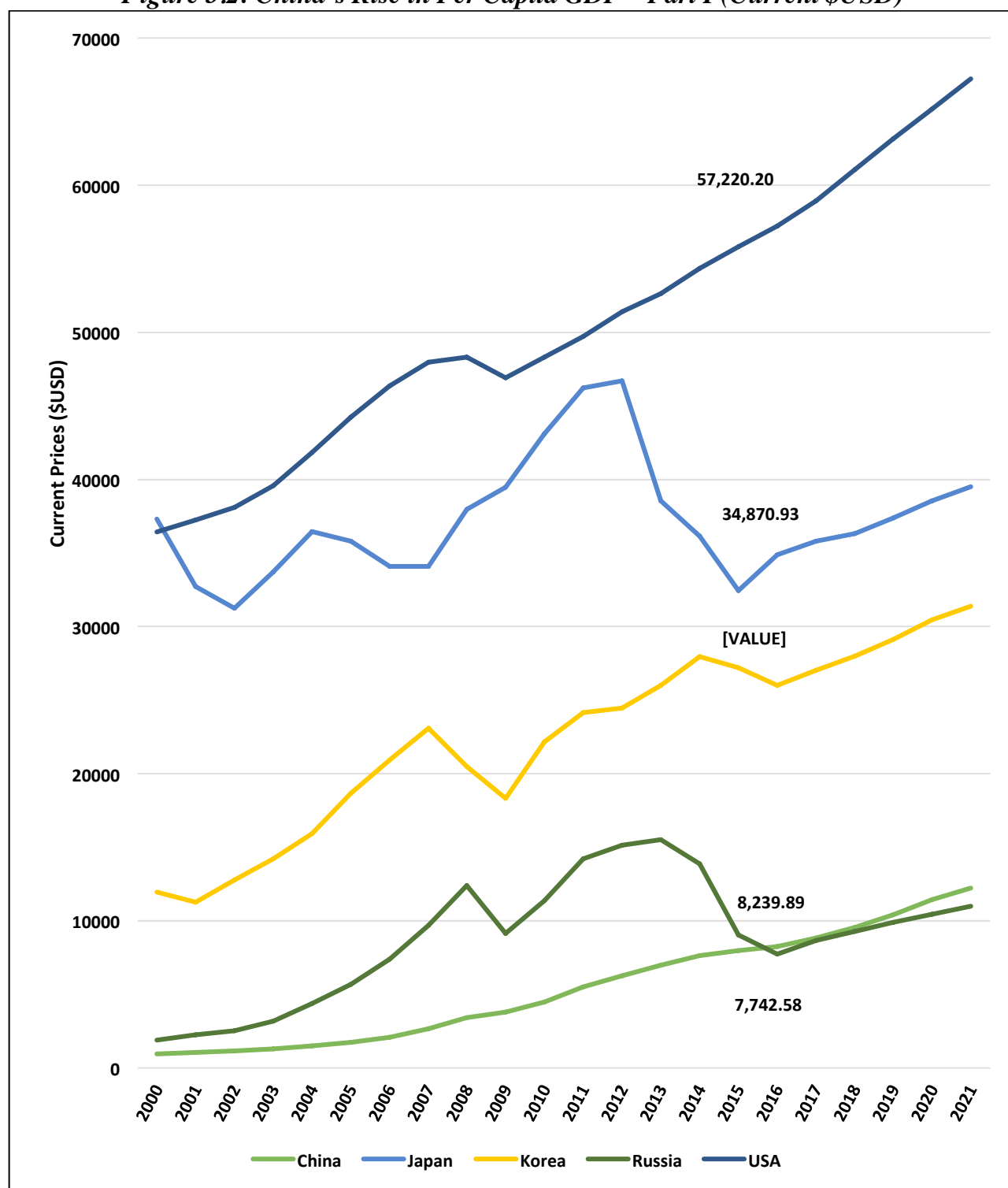
Source: IMF, *World Economic Outlook Database*, April 2016, accessed June, 29 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.1: IMF Estimate of Comparative Rise in China's GDP (nominal) - Part Two (Billions \$USD in Current Dollars/Prices)**

	China	Japan	Korea	Russia	USA
2000	1,208.85	4,730.99	561.595	277.014	10,284.75
2001	1,336.92	4,161.03	533.188	327.021	10,621.83
2002	1,468.86	3,980.90	609.017	368.133	10,977.53
2003	1,660.71	4,302.60	680.581	458.973	11,510.68
2004	1,952.64	4,656.40	764.892	630.585	12,274.93
2005	2,291.45	4,572.41	898.137	814.613	13,093.70
2006	2,751.92	4,356.84	1,012.04	1,055.92	13,855.90
2007	3,542.56	4,356.35	1,122.68	1,386.34	14,477.63
2008	4,564.95	4,849.19	1,002.22	1,771.56	14,718.58
2009	5,071.46	5,035.14	901.935	1,304.15	14,418.73
2010	6,005.25	5,498.72	1,094.50	1,626.57	14,964.40
2011	7,442.03	5,908.99	1,202.46	2,031.77	15,517.93
2012	8,471.36	5,957.25	1,222.81	2,171.74	16,115.25
2013	9,518.58	4,908.86	1,305.60	2,231.84	16,663.15
2014	10,430.71	4,596.16	1,410.38	2,029.62	17,348.08
2015	10,982.83	4,123.26	1,376.87	1,324.73	17,947.00
2016	11,383.03	4,412.60	1,321.20	1,132.74	18,558.13
2017	12,263.43	4,513.75	1,379.31	1,267.55	19,284.99
2018	13,338.23	4,562.21	1,434.95	1,355.36	20,145.05
2019	14,605.29	4,675.79	1,498.76	1,447.13	21,016.05
2020	16,144.04	4,800.06	1,566.40	1,530.61	21,873.55
2021	17,762.01	4,895.419	1,628.61	1,607.95	22,765.72

Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.2: China's Rise in Per Capita GDP – Part I (Current \$USD)**



Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx> adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

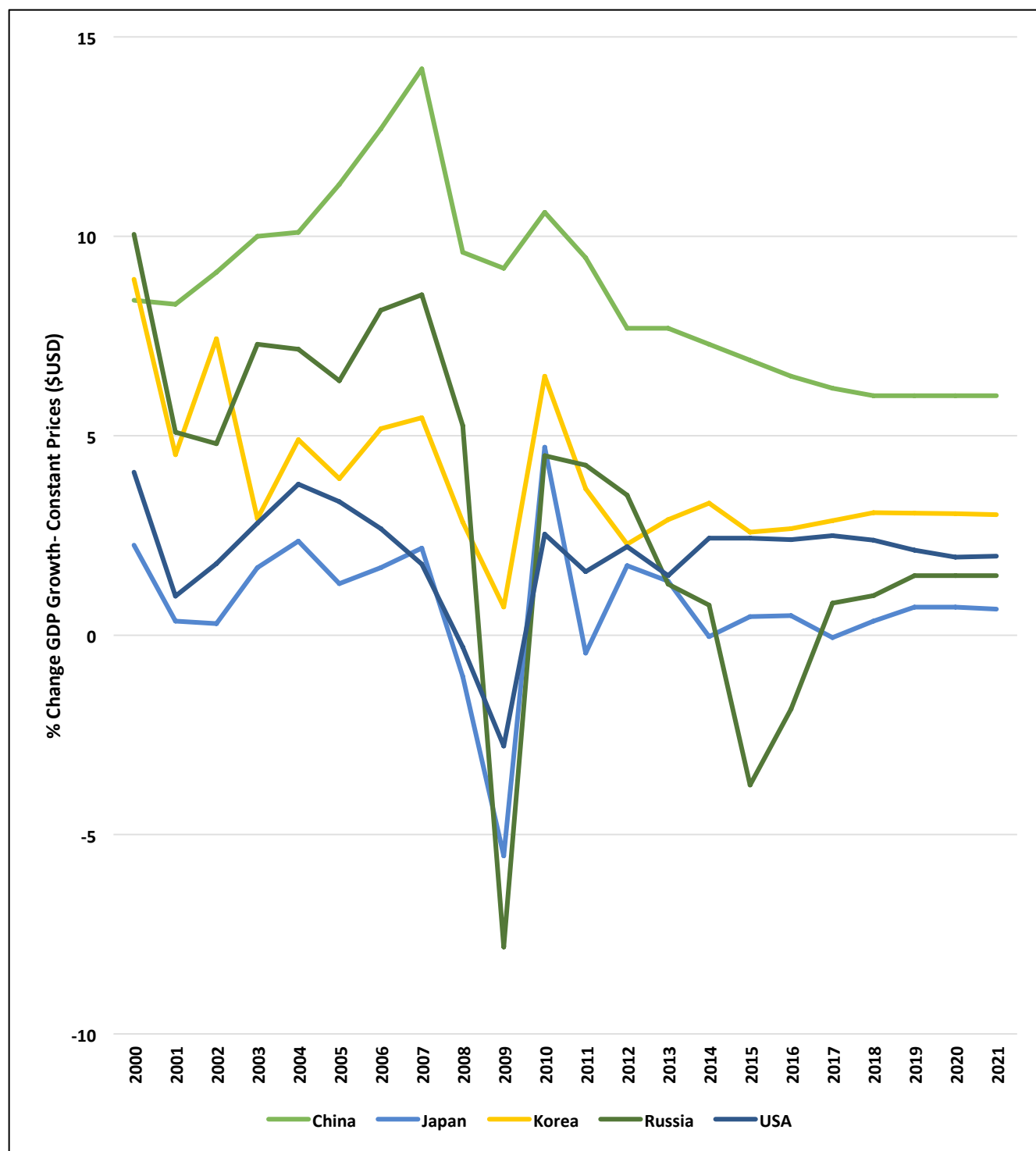


**Figure 3.2: China's Rise in Per Capita GDP – Part II (Current \$USD)**

	China	Japan	Korea	Russia	USA
<b>2000</b>	953.778	37,301.41	11,946.77	1,893.46	36,432.51
<b>2001</b>	1,047.52	32,729.95	11,258.81	2,252.21	37,241.35
<b>2002</b>	1,143.50	31,247.15	12,788.52	2,538.84	38,113.89
<b>2003</b>	1,285.11	33,726.03	14,220.45	3,180.70	39,591.87
<b>2004</b>	1,502.17	36,453.80	15,922.18	4,374.15	41,838.46
<b>2005</b>	1,752.46	35,791.33	18,657.52	5,688.54	44,218.31
<b>2006</b>	2,093.55	34,105.46	20,922.13	7,394.42	46,351.67
<b>2007</b>	2,681.14	34,098.58	23,101.51	9,708.29	47,954.53
<b>2008</b>	3,437.41	37,975.54	20,474.89	12,414.58	48,302.28
<b>2009</b>	3,800.27	39,475.64	18,338.71	9,132.70	46,909.42
<b>2010</b>	4,478.49	43,095.33	22,151.21	11,382.58	48,309.45
<b>2011</b>	5,523.46	46,225.06	24,155.83	14,208.17	49,725.50
<b>2012</b>	6,256.36	46,704.56	24,453.97	15,155.20	51,385.49
<b>2013</b>	6,994.24	38,551.51	25,997.88	15,531.02	52,615.34
<b>2014</b>	7,625.79	36,156.19	27,970.49	13,872.99	54,360.50
<b>2015</b>	7,989.72	32,458.54	27,195.10	9,054.91	55,805.20
<b>2016</b>	8,239.89	34,870.93	25,989.88	7,742.58	57,220.20
<b>2017</b>	8,833.28	35,793.71	27,023.24	8,664.06	58,952.03
<b>2018</b>	9,559.92	36,317.74	27,999.24	9,264.27	61,053.67
<b>2019</b>	10,416.28	37,380.11	29,125.99	9,891.53	63,147.86
<b>2020</b>	11,456.74	38,542.08	30,462.14	10,462.14	65,161.47
<b>2021</b>	12,242.59	39,505.61	31,393.40	10,990.79	67,238.34

Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.3: China's GDP Growth - Part I**  
**(Percent Change in Constant Prices)**



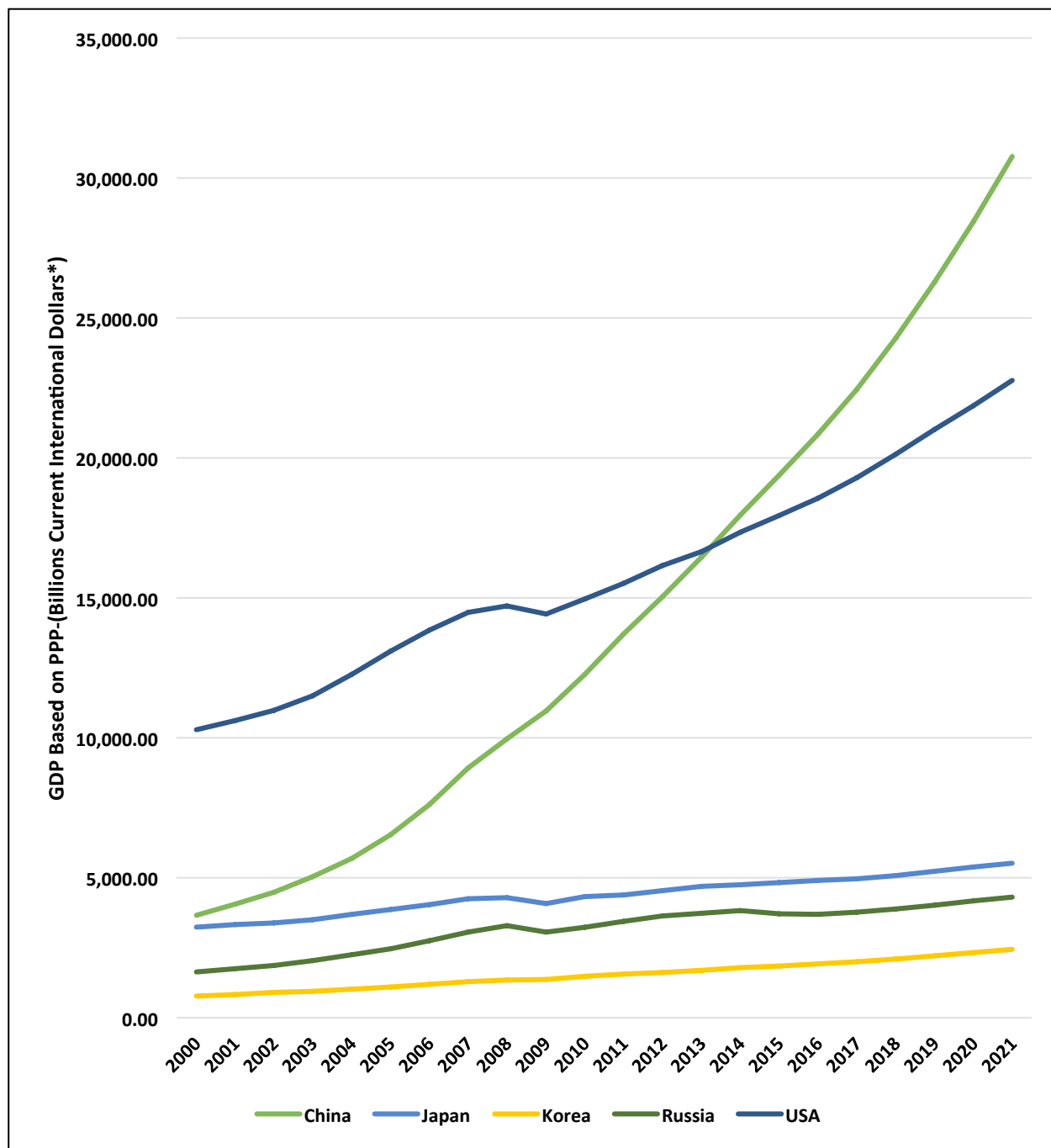
Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.3: China's GDP Growth - Part II (Percent Change in Constant Prices)**

	China	Japan	Korea	Russia	USA
2000	8.40	2.26	8.92	10.05	4.09
2001	8.30	0.36	4.53	5.09	0.98
2002	9.10	0.29	7.43	4.80	1.79
2003	10.00	1.69	2.93	7.30	2.81
2004	10.10	2.36	4.90	7.17	3.79
2005	11.30	1.30	3.92	6.38	3.35
2006	12.70	1.69	5.18	8.15	2.67
2007	14.20	2.19	5.46	8.54	1.78
2008	9.60	-1.04	2.83	5.25	-0.29
2009	9.20	-5.53	0.71	-7.82	-2.78
2010	10.61	4.71	6.50	4.50	2.53
2011	9.46	-0.45	3.68	4.26	1.60
2012	7.70	1.74	2.29	3.51	2.22
2013	7.70	1.36	2.90	1.28	1.49
2014	7.30	-0.03	3.31	0.75	2.43
2015	6.90	0.47	2.59	-3.75	2.43
2016	6.49	0.49	2.67	-1.85	2.40
2017	6.20	-0.06	2.87	0.81	2.50
2018	6.00	0.36	3.08	1.00	2.38
2019	6.00	0.70	3.06	1.50	2.13
2020	6.00	0.70	3.05	1.50	1.96
2021	6.00	0.66	3.02	1.50	1.98

Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.4: China's Rise in GDP (PPP) – Part I (Billions of Current International Dollars\*)**



Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

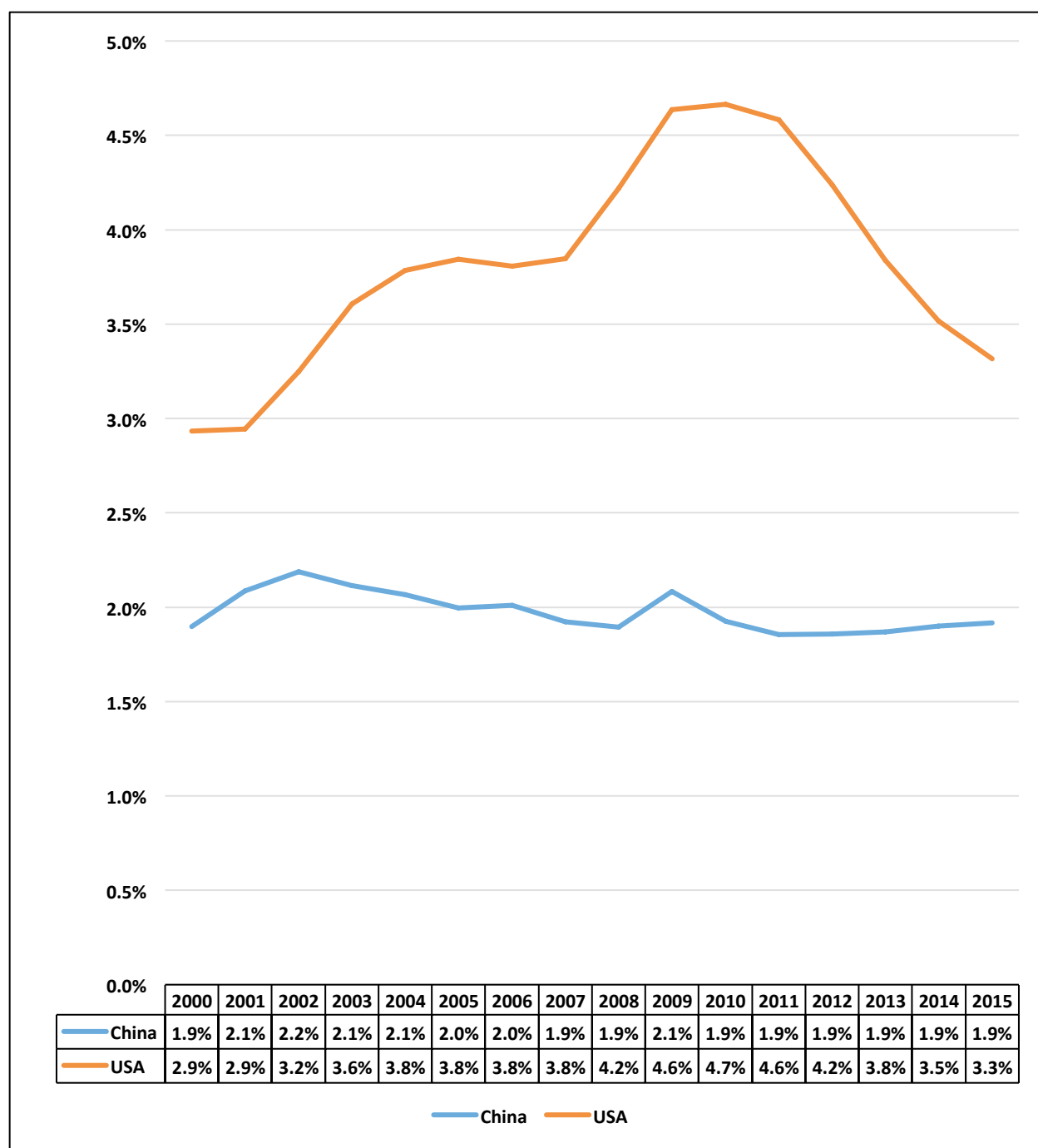
\*One international dollar has the same value as one US dollar in the US. In other words, one international dollar can buy a comparable amount of goods and services a US dollar would but in the US. The term “international dollar” is used here because the IMF data uses this unit, not the US dollar. See <https://datahelpdesk.worldbank.org/knowledgebase/articles/114944-what-is-an-international-dollar>.

**Figure 3.4: China's Rise in GDP (PPP) – Part II (Billions of Current International Dollars)**

	China	Japan	Korea	Russia	USA
2000	3,660.66	3,236.73	773.396	1,631.87	10,284.75
2001	4,054.85	3,322.26	826.818	1,754.03	10,621.83
2002	4,491.75	3,383.03	901.907	1,866.36	10,977.53
2003	5,039.45	3,508.63	946.873	2,042.46	11,510.68
2004	5,701.01	3,690.22	1,020.58	2,249.22	12,274.93
2005	6,549.37	3,858.57	1,094.75	2,469.61	13,093.70
2006	7,607.94	4,044.46	1,186.80	2,753.04	13,855.90
2007	8,919.46	4,243.10	1,284.94	3,067.53	14,477.63
2008	9,967.49	4,281.27	1,347.21	3,291.84	14,718.58
2009	10,967.16	4,075.36	1,367.05	3,057.43	14,418.73
2010	12,278.55	4,319.50	1,473.65	3,234.17	14,964.40
2011	13,717.18	4,388.15	1,559.45	3,441.69	15,517.93
2012	15,045.55	4,547.35	1,624.58	3,628.01	16,155.25
2013	16,468.20	4,684.18	1,698.88	3,734.31	16,663.15
2014	17,960.66	4,759.64	1,783.95	3,824.00	17,348.08
2015	19,392.36	4,830.06	1,848.52	3,717.62	17,947.00
2016	20,853.33	4,901.10	1,916.44	3,684.64	18,558.13
2017	22,451.91	4,965.87	1,998.61	3,765.82	19,284.99
2018	24,283.72	5,085.43	2,102.03	3,880.93	20,145.05
2019	26,292.65	5,230.59	2,212.75	4,023.61	21,016.06
2020	28,449.95	5,376.79	2,327.71	4,168.91	21,873.55
2021	30,777.17	5,523.48	2,447.36	4,318.47	22,765.72

Source: IMF, *World Economic Outlook Database*, April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

*Figure 3.5: China & USA Defense Spending as a Percentage of GDP*



Source: SIPRI, "Military Expenditure Data, 1988-2015," accessed September 23, 2016, [http://www.sipri.org/research/armaments/milex/milex\\_database](http://www.sipri.org/research/armaments/milex/milex_database), adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## ***The Economic Trends Shaping Military Spending***

So far, China has not faced serious fiscal challenges in shaping its strategy and military modernization. China has recorded comparatively high GDP growth rates during the past two decades, although there are some indications that economic growth is slowing.

Many governments increase military spending roughly proportionality to economic growth; while they may find strategic rationales for doing so, wealth seems to spur military spending in developing nations and emerging powers. China's levels of military expenditure have risen consistently compared to national income.

In 2016 China's GDP stood at \$11.4 trillion (based on the official exchange rate), while its purchasing power parity (PPP) GDP stood at an impressive \$13.8 trillion.<sup>50</sup>

### **Downward Economic Growth Trends but Stable Forecast**

In spite of a slight drop in its growth rate in recent years, most sources predict that China's economy will continue a robust expansion into the middle of the decade at a sustainable growth rate. While the Chinese government announced it was targeting growth of 7.5% in 2013, in 2015, it has dropped that growth target to 7% in light of a recent downturn in the Chinese economy.

In April 2016, the International Monetary Fund (IMF) predicted that China's growth would drop to 6.5% and inflation was forecasted to be 1.2% in 2016. However, according to the IMF, "the pace of fiscal consolidation is likely to be more gradual, reflecting reforms to strengthen social safety nets and the social security system announced as part of the Third Plenum reform agenda" and that "monetary policy will remain broadly unchanged from its current status, consistent with the authorities' announcement of maintaining stable economic growth".<sup>51</sup>

The IMF's World Economic Outlook report for 2015 – which was written before China's stock market crisis in mid-2015 -- explained the decline in China's growth as follows:<sup>52</sup>

Growth in China is expected to decline to 6.8 percent this year and 6.3 percent in 2016. These projections have been revised downward by  $\frac{1}{4}$  and  $\frac{1}{2}$  percentage point, respectively, as previous excesses in real estate, credit, and investment continue to unwind. The Chinese authorities are now expected to put greater weight on reducing vulnerabilities from recent rapid credit and investment growth, and hence the forecast assumes less of a policy response to the underlying moderation. Ongoing implementation of structural reforms and lower oil and commodity prices are expected to expand consumer-oriented activities, partly buffering the slowdown. (pg. 14)

**Near-term growth risks in China:** Investment growth slowed in China in 2014, including in the real estate sector, after a boom in 2009–12. Some further slowdown is already factored into the baseline, but it could be stronger than expected, as striking a balance between reducing vulnerabilities, supporting growth, and implementing reforms remains challenging. Moreover, the impact of slowing investment on aggregate demand has been cushioned by policy stimulus, but the Chinese authorities are now expected to put greater weight on reducing vulnerabilities from recent rapid credit and investment growth. As a result, investors might be more concerned about risks of a further slowdown, which could feed into current investment. (pg. 22)

**Hard landing in China:** Since the policy stimulus deployed during the global financial crisis, booming credit and investment have been key sources of growth in China, and vulnerabilities have been building. This is a medium-term risk because the Chinese government still has sufficient buffers to prevent a sharp growth slowdown by using public resources and state influence. The current reform effort to rebalance the economy is important to reduce this risk, since without reforms to change the pattern of growth, vulnerabilities will continue to increase, and the available policy space will shrink. (pg. 22)

Despite the tailwind from oil prices, Asia's near-term growth outlook has been marked down slightly. Downward growth revisions for major emerging markets outside Asia will soften the external contribution to Asia's growth, as will the further tightening of international financial conditions. A slower but more sustainable growth path in China will exert additional drag. Relative to the October 2014 WEO, Asia's growth forecast has been trimmed very modestly to 5.6 and 5.5 percent in 2015 and 2016, respectively, but with diverse performances across the region:

In China, growth fell to 7.4 percent in 2014 and is expected to fall further to 6.8 percent in 2015 (0.3 percentage point lower than the October 2014 WEO forecast) as previous excesses in real estate, credit, and investment continue to unwind. Ongoing implementation of structural reforms and lower commodity prices are expected to expand consumer oriented activities, partially buffering the slowdown. (pg. 54)

**Slower growth in China and Japan:** Significantly slower growth than currently projected for China or Japan would also affect the rest of the region and the world economy given these economies' large size and deep trade and financial linkages with other nations. For China, the main risk is failure to implement the reform agenda to address financial risks, rebalance the economy, and tap new sources of growth. In Japan, the challenge is to implement structural reforms to boost medium-term growth prospects while balancing near-term fiscal stimulus with a convincing medium term consolidation plan. Asia's medium-term growth prospects are also critically dependent on the success of these reform strategies. (pg. 55)

The 2016 IMF World Economic Outlook adds:<sup>53</sup>

China, now the world's largest economy on a purchasing-power-parity basis, is navigating a momentous but complex transition toward more sustainable growth based on consumption and services. Ultimately, that process will benefit both China and the world. Given China's important role in global trade, however, bumps along the way could have substantial spillover effects, especially on emerging market and developing economies.

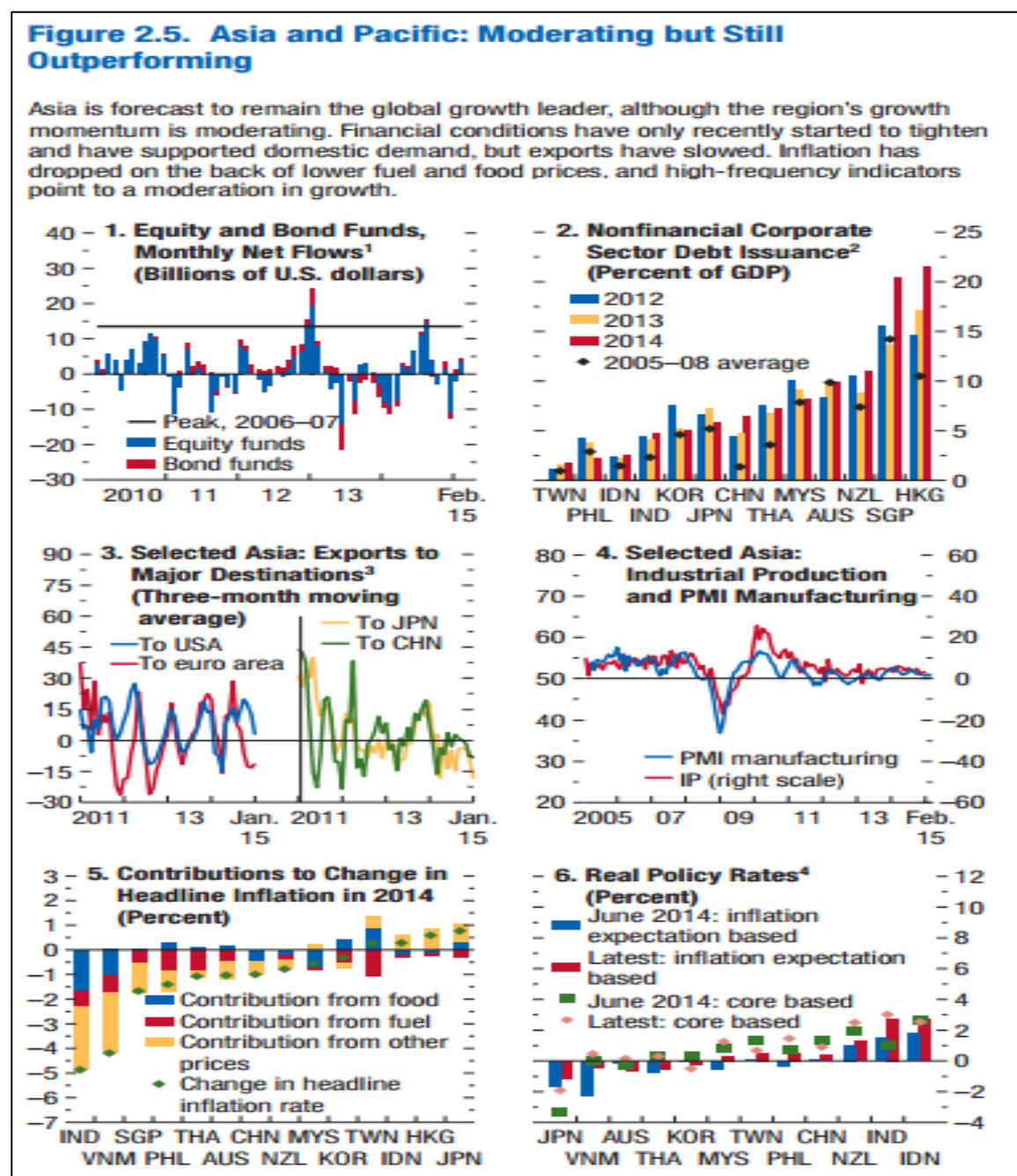
To put these trends in a regional perspective, **Figure 3.6** demonstrates the overall performance of the Asia-Pacific region in recent years. While China's growth rate is slowing, it is still outperforming its neighbors. Additionally, the IMF's World Economic Outlook report for 2016 expressed concern that China's slowing growth could impact the world economy.<sup>54</sup>

China's transition to a new growth model and a more market-based economy is inherently challenging and has been bumpy at times. Corporate profitability in China has eroded over the past few years, as growth has declined toward a more sustainable pace following a period of rapid credit growth and investment. Lower corporate earnings, in turn, are hindering the ability of Chinese firms to service their debt obligations, raising banks' levels of nonperforming loans (Chapter 1 of the April 2016 GFSR). As bank lending capacity is increasingly constrained, Chinese firms are turning to capital markets. The combination of corporate balance sheet weakness, a high level of nonperforming loans, and inefficiencies in bond and equity markets is posing risks to financial stability, complicating the authorities' task of achieving a smooth rebalancing of the economy while reducing vulnerabilities from excess leverage. Limited progress on key reforms and increasing risks in the corporate and financial sectors have led to medium-term growth concerns, triggering turbulence in Chinese and global financial markets. Policy actions to dampen market volatility have, at times, been ineffective and poorly communicated.

A sharper-than-forecast slowdown in China could have strong international spillovers through trade, commodity prices, and confidence, with attendant effects on global financial markets and currency valuations as discussed in Chapter 2 of the April 2016 *Regional Economic Outlook: Asia and Pacific*. That outcome could lead to a more generalized slowdown in both emerging market and advanced economies, especially if it should further compromise investment, potential growth, and expectations of future income.



**Figure 3.6: 2015 IMF World Economic Outlook – Asia and Pacific Region’s Growth Moderation**



Source: IMF, *World Economic Outlook: Uneven Growth – Short and Long Term Factors*, April 2015, 54, <https://www.imf.org/external/pubs/ft/weo/2015/01/pdf/text.pdf>.

## Economic Uncertainties and Risks

While President Xi Jinping exerts considerable power in his government, and “an anti-corruption drive and a crackdown on dissent have strengthened the central leadership”, the Economist Intelligence Unit (EIU) expects the Chinese government may struggle in implementing sustaining its growth and implementing its reforms.<sup>55</sup> The EIU predicted that after “We are cautious on economic prospects. Real GDP is forecast to slow to 6% in 2017, from 6.6% this year. However, we anticipate a sharper slowdown in 2018, when we expect the authorities to take belated steps to tame an unsustainable build-up in debt. Growth will slow to 4.2% in that year, but some recovery is likely in subsequent years as investment stabilizes.”<sup>56</sup>

As noted earlier, there are important short term and structural uncertainties as to China’s downward trend in economic growth rate and the ability to keep funding a massive military program in the longer term. There is uncertainty as to how effective China’s Third and Fourth Plenum fiscal reforms will be on its economy and indirectly on its ability to continue the funding increases to its military.

In a report published in July 2014, the IMF assessed that the Third Plenum reforms would “put growth on a sounder footing with higher per capita income and consumption over the medium term, benefiting China and the global economy.” The IMF continued with the following assessment of the reform’s blueprint and forecasted outcomes in **Figure 3.7**:<sup>57</sup>

**Three scenarios.** The staff’s baseline scenario, which assumes gradual implementation of reforms, is compared to scenarios of “fast reform” and “no reform.” The baseline and fast reform scenarios include:

**Financial sector reforms** include accelerating deposit rate liberalization, establishing a formal deposit insurance system, and strengthening financial supervision and resolution framework. These would encourage a better pricing of risk (increasing average cost of credit) and redirect credits to more efficient uses.

**Fiscal reforms** include a gradual unwinding of borrowing from LGFVs, improving coverage and portability of basic pensions and health insurance, strengthening social safety nets, and more efficient and redistributive taxes. These measures (see Box 6 for details) would reduce investment, creating room to increase social spending for a gradual reduction of the augmented deficit by about 5 percentage points of GDP over the medium term. They would also gradually reduce the household saving rate due to a lower incentive for precautionary saving.

**Structural reforms.** Opening up markets, and SOE and resource pricing reforms would shift resources to the more efficient private sector, lifting economy-wide productivity. Urbanization through hukou reforms would increase the participation rate and also help raise productivity. Previous research (IMF 2013) suggests that these reforms would bring productivity gains of 1½–2 percentage points.

**Exchange rate reforms** include widening the trading band and allowing the currency to move more in line with market forces. Together with other reform measures these would contribute to continued domestic and external rebalancing, by reducing the savings rate by more than the targeted reduction of the investment/GDP ratio.

The “fast reform” scenario assumes that financial, exchange rate and structural reforms are implemented promptly, and fiscal reforms are phased in over a two-year lag (this compares to about five-year lag for reforms in the baseline).

“Fast reform”. Fast implementation would slow China’s growth in the near-term (by about ½ percentage point, largely due to faster fiscal adjustment and higher interest rates), but the long-run income is much higher and private consumption grows faster. With less LGFV borrowing, augmented debt is falling and credit growth is likely to be slower, leading to a faster reduction of vulnerabilities. The fast implementation would also generate sizeable benefits to the global economy. Simulation suggests that global growth could increase by 0.2 percentage points over the medium term, although growth may be slower in the near term, reflecting the upfront cost of reforms and steps to reduce vulnerabilities.

“No reform”. Without reforms, growth would be weaker (as productivity growth slows and investment becomes increasingly inefficient) and the likelihood of a sharp slowdown in the future higher, with knock-on effects to the global economy. Repeated reliance on credit and government intervention to prop up growth without reforms would boost near-term growth, but reduce future growth and exacerbate vulnerabilities, increasing the risk of a disorderly adjustment, stalling the convergence process, and adversely affecting the global economy. This would map into annual growth of less than 4 percent by 2030, with considerable risk of an even sharper slowdown.

China’s overarching goal is to improve financial stability to attain a sustainable growth rate that will allow China to realize its “Chinese Dream of great national rejuvenation”<sup>58</sup> both economically and militarily. To achieve this, its party leaders put into effect a reform agenda, described earlier by the IMF, which provides the following objective, according to the World Bank:<sup>59</sup>

The objective is to increase the role of markets and to facilitate resource reallocation to sectors with high returns. The key policy challenge is to shift growth towards more sustainable sources in the medium-term, while avoiding a sharp slowdown, or financial distress, in the short-term. A couple of areas stand out as candidates for early action:

Fiscal reforms to place local government finances on a more solid footing and facilitate a shift from investment to consumption; and

Financial sector reforms to improve resource allocation, strengthen market discipline, and contain a further buildup of financial sector vulnerabilities.

Next in line would be reform of state-owned enterprises, land ownership, and labor markets. Such changes would help maintain growth and lift employment (World Bank and Development Research Center of the State Council, the People’s Republic of China, 2014).

### **Shorter Term Risks**

Any significant reforms to a large economy that has a significant impact on the global financial situation has risks and uncertainties. Indeed, much of the discussion from the IMF, World Bank, and economic experts revolves around concern that the coming downturn in China will affect not just Asia but also the entire world economy. The 2016 Global Economic Prospects report from the World Bank projects that China will experience some drop in growth:<sup>60</sup>

Regional growth slowed to 6.5 percent in 2015, and is expected to decelerate to 6.2 percent during 2016-18. The gradual slowdown in China more than offsets a nascent pickup in activity elsewhere in the region, supported by public investment and robust private consumption. Short-term risks are broadly balanced. On the downside, they include a sharper-than-expected slowdown in China (although a low-probability scenario), and tighter business credit amid high corporate and household leverage in the region. Since the region is highly open to trade, a pickup in advanced country growth, or further declines in commodity prices, are upside risks. Key policy objectives include an orderly sectoral rebalancing and deleveraging in China, strengthened medium-term fiscal and macro-prudential frameworks, and structural reforms to support long-term growth as the population ages and the labor force grows more slowly.

...In China, measures to address overcapacity, including through cuts in investment, in energy intensive, highly polluting, inefficient enterprises in older sectors (raw coal and crude steel for example), have caused a sharp drop in industrial production (Figure 2.1.2). Weak external demand and periods of financial market volatility have also contributed to the slowdown in activity. Expansionary policies have moderated the deceleration. In 2015, the People’s Bank of China (PBC) implemented five cuts in the benchmark one-year lending rate and four cuts to the reserve requirement rate. A new round of fiscal stimulus measures in 2016 includes tax cuts, increases in spending on social welfare (poverty reduction and social housing), and education. These measures are expected to contribute to a record budget deficit of 3 percent of GDP in 2016. The PBC kept an easing bias in 2016 by implementing additional cut in reserve requirement rate in March.

The rapid growth of monetary aggregates, accompanied by a rise in debt to over 250 percent of GDP in March 2016, and of housing prices (especially in first tier cities), is raising concerns about financial

vulnerabilities. A tightening of property market policy, including higher down payment requirements for home buyers and tighter oversight on financing through the shadow banking system, was implemented in March, and aims to moderate the surge in first tier housing prices. There are also indications that credit growth started to ease in April, reflecting new measures implemented by the PBC to temper excessive borrowing.

China's economic rebalancing continues, from investment to domestic consumption, and from manufacturing to services (Lardy 2016). The services sector, which now constitutes half of nominal GDP, has overtaken manufacturing as the major driver of growth and accounts for the majority of new urban jobs. The financial sector and other services were particularly dynamic in 2015. Inflation, which was less than 2 percent in 2015 (below the PBC target rate of 3 percent), picked up in early 2016. Producer price inflation, which has been negative since March 2012, showed signs of bottoming out.

Capital outflows in 2015 contributed to a depletion of about 20 percent (\$0.8 trillion) of foreign reserves compared with their August 2014 peak. About two fifths of these outflows were related to a repayment of short-term external debt and diversification of assets by residents. The remaining capital outflows may partly have reflected expectations of renminbi depreciation. Tighter enforcement of capital controls and improved communication of policy objectives, including exchange rate policies, helped to clarify policy objectives, stabilize financial markets, ease pressures on the renminbi, and slow outflows. China's net foreign asset position remains firmly positive (14 percent of GDP at the end of the third quarter of 2015; BIS 2016; World Bank 2016b).

The 2015 World Bank report provided the following assessment of the risks to both China and the East Asia Pacific region:<sup>61</sup>

Risks, both external and internal to the region, remain tilted to the downside, but less so than in January. Although the probability is low, the risk of a hard landing in China remains. Since the region's economies are very open, they are vulnerable to trading partner slowdowns and large exchange rate shifts, including further U.S. dollar appreciation. Low fuel prices, if sustained, present an upside risk for the regional outlook.

Financial market volatility or sharply tightening financing conditions pose significant risk to the outlook. This may take the form of asynchronous monetary policy tightening in major economies, or geopolitical risks. Abrupt increases in bond yields and exchange rate volatility could result, as investors reassess growth prospects and policies. Debt stands at high levels in several countries. Although it remains predominantly local currency-denominated, corporations have borrowed large amounts in foreign currencies. High debt stocks expose countries to risks from rising borrowing costs, or credit shut-offs. Exchange rate adjustments may cause balance sheet strains in some countries. The combination of high debt levels and currency mismatches creates systemic risk and the possibility of sharp increases in country risk premiums.

A weaker-than-expected recovery in high-income countries, especially in the United States, the Euro Area, Japan, and the Newly Industrialized Economies would weaken global and regional trade and impair the region's exports. High-income country exports account for about 60 percent (Thailand) to 90 percent of the region's exports.

A sharp slowdown in China, while unlikely, would have spillover effects on regional trading partners and commodity exporters. A hard landing could originate from:

- a steep decline in property prices that forces developers and banks to deleverage quickly and investment in real estate to contract sharply;
- a sharp slowdown in infrastructure investment following the implementation of the local government debt framework;
- bankruptcies in primary and heavy industries (now suffering from overcapacity); or
- a decline in shadow banking activity that causes a sharp cutback in credit availability.

Finally, as the surge in China's stock market continues, the financial and economic consequences from a possible correction will increase. Should it materialize, a sharp slowdown in China could usher in a prolonged period of slow growth as the economy heals, and would have regional and global spillovers

(World Bank, 2014a). A onetime 1 percentage point decrease in China's growth relative to the baseline (a 2 percentage point decrease in investment growth) would reduce growth in the region by approximately 0.2 percentage points (World Bank, 2014a). The impact would vary across countries, with commodity exporters with less diversified economies and regional supply chain economies affected the most (Ahuja and Nabar, 2012). Nevertheless, China is in a strong fiscal position with policy buffers that appear adequate to contain risk related to financial sector distress.

The IMF assessment for 2014 was also generally favourable, but it did note that China needed reform in additional areas:<sup>62</sup>

...China's economic performance over the past three decades has been remarkable, a testament to its ability to implement necessary but difficult reforms. Continued success now requires another round of decisive measures—in line with the new leadership's expressed intention to re-energize the reform effort.

...Staff expect the economy to grow by 73/4 percent this year, although with downside risks from both external and domestic uncertainties. Since the global crisis, a mix of investment, credit, and fiscal stimulus has underpinned activity. This pattern of growth is not sustainable and is raising vulnerabilities.

While China still has significant buffers to weather shocks, the margins of safety are diminishing...To secure more balanced and sustainable growth, a package of reforms is needed to contain the growing risks while transitioning the economy to a more consumer-based, inclusive, and environmentally-friendly growth path.

In the near term, a priority is to rein in broader credit growth and prevent a further build-up of risks in the financial sector. Only if growth were to slow too sharply below the authorities' target, on-budget fiscal stimulus should be used in a manner that supports rebalancing and helps protect vulnerable groups.

Accelerated financial sector reforms are needed to secure a safe transition to a market-based financial system. This will combine allowing greater room for market forces (such as liberalizing interest rates in the 'traditional' banking industry) with strengthened oversight, governance, and investor accountability. While this will lead to higher borrowing costs for many firms, it is critical to reduce the large-scale regulatory arbitrage and moral hazard evident in the current system, and to improve the allocation of credit essential to future growth and sound finance.

The post-2008 expansion in quasi-fiscal activity needs to be gradually unwound. Key reforms to this end should include a comprehensive revamp of local government finances, increasing SOE dividend payments to the budget, and continuing tax reforms allowing, inter alia, a shift in the tax burden away from regressive social contributions.

A more market-based exchange rate, with reduced intervention, will facilitate further adjustment in the renminbi which staff assess as moderately undervalued against a broad-basket of currencies.

Other Asian countries have questioned China's future economic performance. The 2013 Japanese defence white paper noted that China was experiencing increasing domestic challenges:<sup>63</sup>

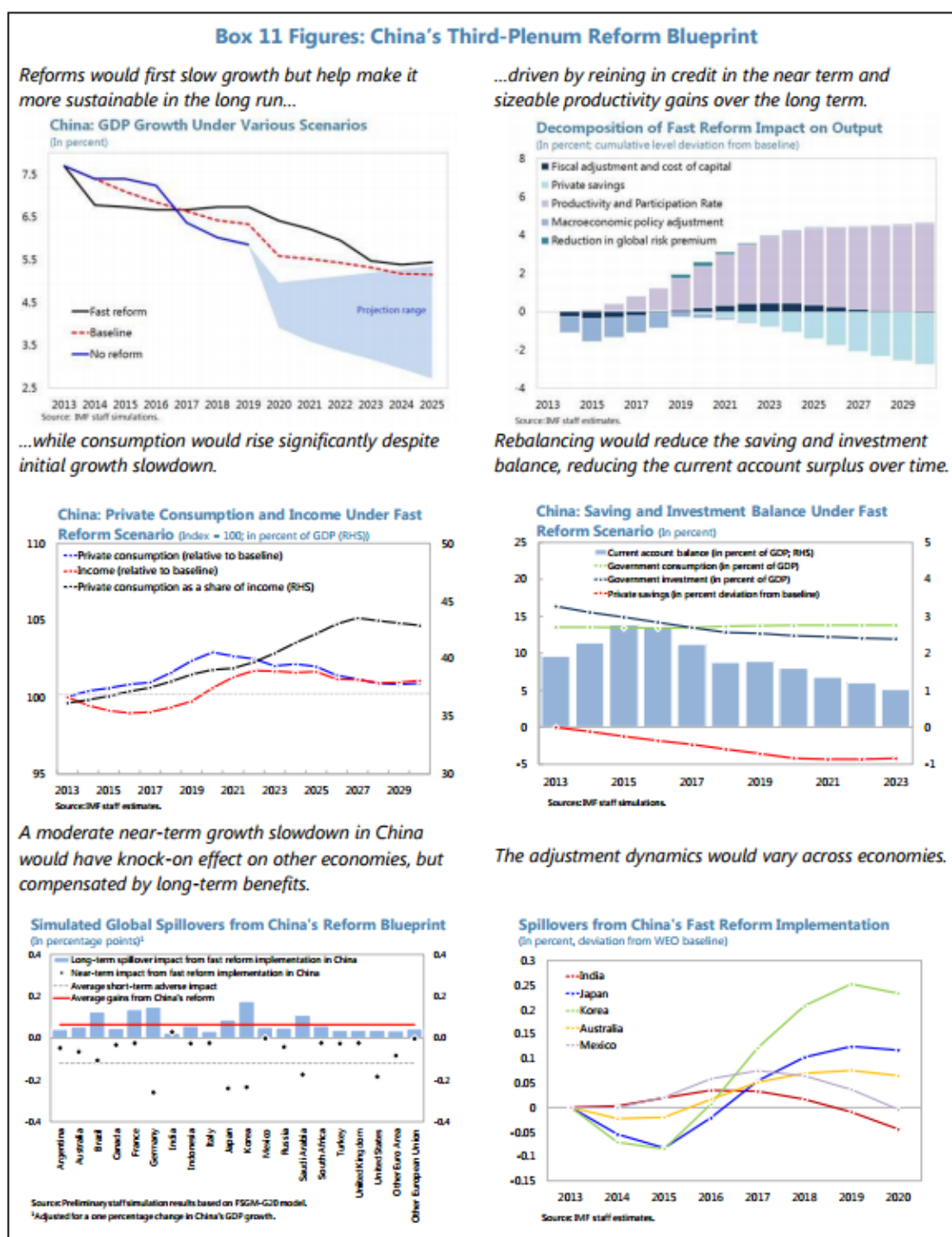
China has various domestic problems. Corruption within central and local communist party leaderships is becoming a significant political problem. As a result of China's rapid economic growth, there are emerging problems such as regional disparities between urban-rural and coastal-inland regions, wealth gaps among urban residents, inflation, environmental pollution, and lack of agricultural and industrial water. Moreover, issues associated with the rapid aging of the population are forecasted to arise in the future. China is expected to continue to tighten its control over society as these potentially destabilizing factors to the government administration expand and diversify. However, analysts point out that with the spread of the Internet, coupled with other factors, the Chinese government will face increasing difficulties controlling the activities of the masses.

Moreover, China has domestic ethnic minority issues, such as protest activities by ethnic minorities in areas such as the Tibet Autonomous Region and the Xinjiang Uyghur Autonomous Region. According to reports, some ethnic minorities are undertaking campaigns seeking separation and independence. Against this background, Xi Jinping assumed the post of General Secretary of the Chinese Communist Party (CCP) and Chairman of the CCP Central Military Commission at the first plenary session of the 18th Central Committee of the CCP in November 2012, and then assumed the post of President at the first session of the 12<sup>th</sup> National

People's Congress in March 2013, thus seizing control of the three powers of party, military and government. The environment surrounding the Xi government is not optimistic.

During the third plenary session of the 18th CCP Central Committee in November 2013, the session adopted "The Decision on Major Issues Concerning Comprehensively Deepening Reforms" regarding reforms in a wide range of areas, such as economics, politics, culture, society, environment, and national defense and the military. Through the Decision, the Central Committee decided to establish a central leading team for comprehensively deepening reform, which is deemed responsible for the overall design of the reform. The team held its first meeting in January 2014. How these reforms will take shape, including how China will deal with corruption problems within the party, will be a point to watch out for going forward.

**Figure 3.7: IMF Assessment of China's Economic Reforms – 2014**



Source: IMF, *People's Republic of China 2014 Article IV Consultation* [IMF Country Report 14/235], July 2014.

## Longer-Term Risks

At the same time, China faces longer-term problems in shifting from a rural agricultural economy to an urban industrialized economy. China plans to move 250 million rural residents into newly-built cities and towns over the next 12 years, primarily as a way to find a new source of economic growth.<sup>64</sup>

Corruption, influence peddling, and nepotism are a serious problem. Xi Jinping has recently led an anti-corruption drive that will be a key priority for his government in the future. This appears to be, at least in part, a reaction to the increasing public discontent regarding daily incidents of minor corruption, high-level leadership scandals, and the negligence of local Party members. However, many believe that the corruption-related problems in China cannot be solved without fundamental political reforms, such as developing an independent media and judiciary.<sup>65</sup>

China also must address the effects of rising labor costs and the resultant movement of businesses to countries with cheaper labor, like Cambodia and Vietnam, the latter of which has wages half those in China.<sup>66</sup> Low operations costs and a large labor pool made China attractive for foreign manufacturers and investors; over the past several years, wages have steadily risen, increasing the cost of manufacturing in China. These rising labor costs and uncertainty on the pace of economic reforms are reducing foreign investors' confidence in the economy.<sup>67</sup>

Furthermore, the country must deal with an aging population, an issue that is especially serious as a result of its One Child Policy. According to the 2010 census, people between the ages of 15 and 59 began to decrease in 2010 and will likely fall by 29.3 million by 2020. Total urban employment is still increasing as Chinese workers move to the cities, but the workforce has started to shrink in absolute terms; China will now need to boost economic output through increased economic efficiency via reallocating resources.<sup>68</sup>

“The urbanization blueprint released by the Central Committee of the CPC and the State Council in May 2014 --, *National New-Type Urbanization Plan 2014-2020* -- announced the acceleration of the process of turning rural migrants into urban citizens. The plan anticipates that by 2020 urban residents will make up 60 per cent of the total population, compared to 53.7 per cent in 2013 — while urban permanent residents will comprise 45 per cent, compared to 36 per cent in 2013.

Some of the key trends affecting this aspect of China's future are summarized in the following **Figures**:

**Figure 3.8** – is an IMF assessment of China's demographic changes from 2013

**Figure 3.9** – is an IMF assessment of China's rebalancing economy from a 2016 report

**Figure 3.10** – is an IMF assessment of China's financial sector from the 2016 report

**Figure 3.11** – is an IMF assessment of China's economic growth and inequality from 2014

Most experts do still feel that China's growth rate will slow over time, but continue to grow comfortably enough in the coming years for it to fund a steady expansion in the capability of its military forces. **Figures 3.12 and 3.13** demonstrate differing – although increasingly uncertain – estimates of China's economic performance. They show that multiple organizations estimate that China will continue to experience robust economic growth, even if not at the double-digit rate of the mid-2000s.

- **Figure 3.12** illustrates Chinese percentage growth rates from 2000 to a 2020 projection.
- **Figure 3.13** shows Chinese GDP based on purchasing power parity, from 2011-2020.



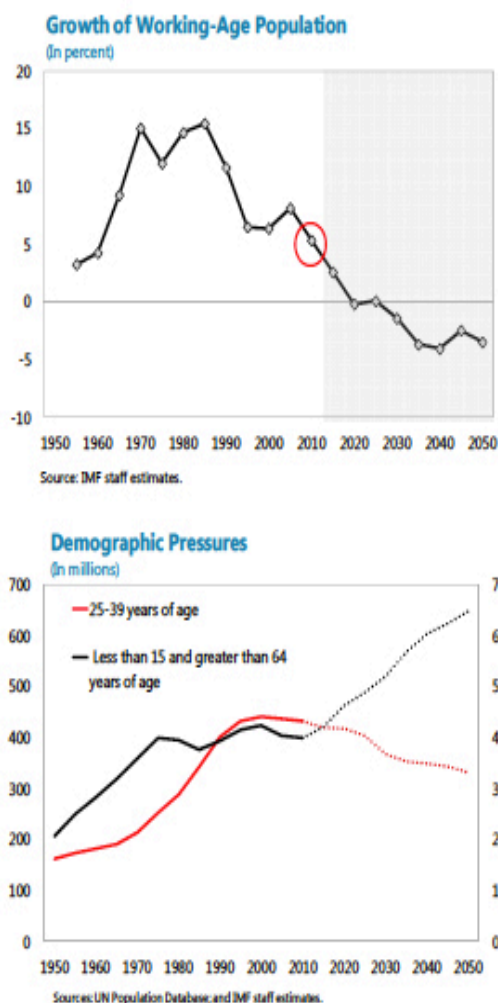
**Figure 3.8: July 2013 IMF Assessment of China's Demographic Changes**

#### Box 4. China's Looming Demographic Changes

China is at the dawn of a demographic shift as the economy will soon start to be weighed down by a shrinking workforce and aging population. The working-age (15–64) population will start to fall in less than a decade due to declining fertility, reflecting the one-child policy. The cohort of 25–39 year olds—the core industrial workers—will shrink even faster, with implications for the pattern of growth reliant on building new factories and finding a ready supply of workers. The dependency ratio (population younger than 15 and older than 64 as a share of the working-age population), which declined for decades, is projected to increase from 13½ percent in 2010 to around 30 percent by 2030.

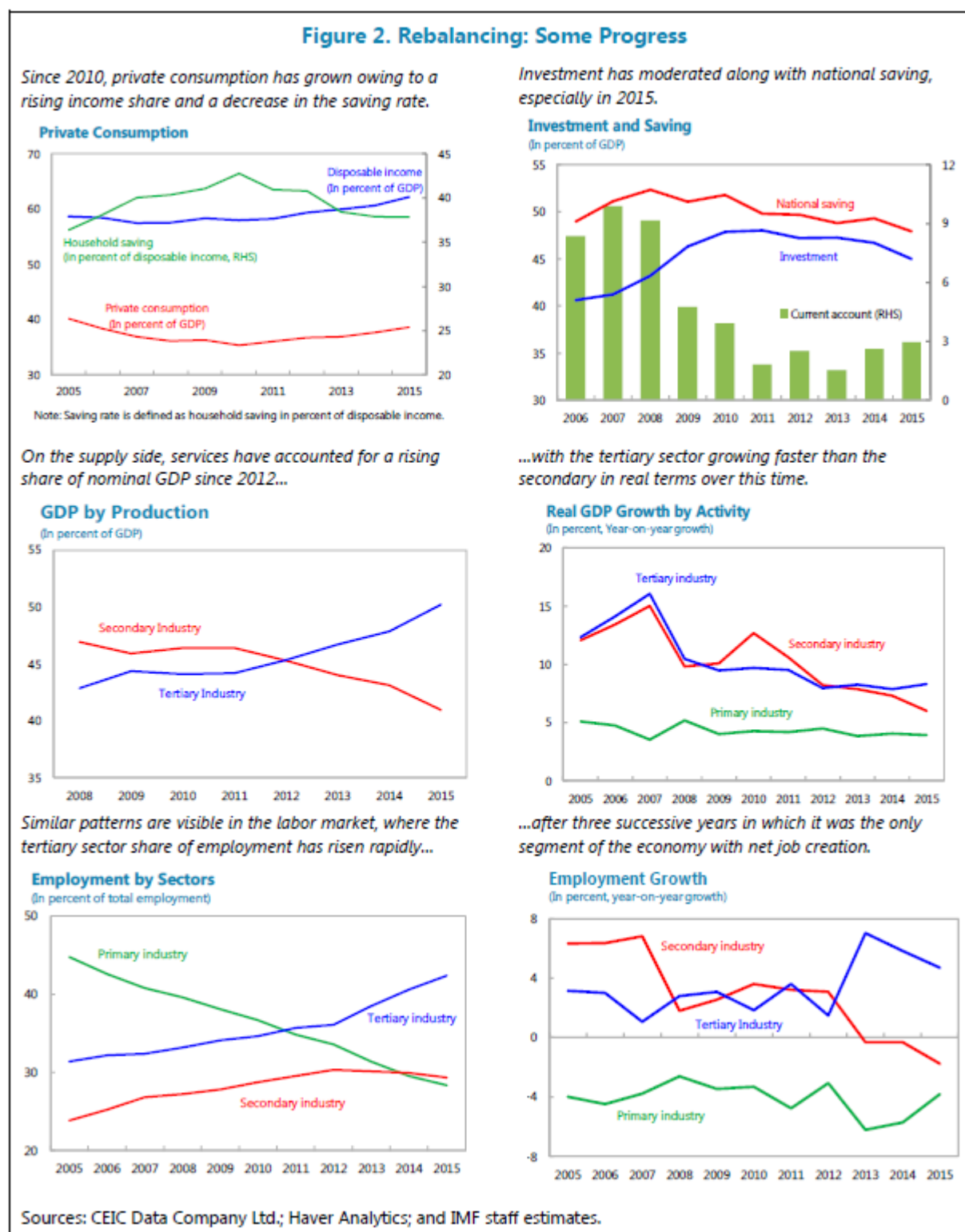
These demographic changes imply that China will meet the Lewis Turning Point—when the supply of plentiful low-cost labor is exhausted—toward the end of the decade.<sup>1</sup> As the surplus labor dwindles, labor cost will rise, which would affect prices, incomes, and corporate profits in China and would have implications for trade, employment, and price developments in key trading partners. For China, this transformation makes it even more important to switch from an extensive to an intensive growth model.

<sup>1</sup> See Das and N'Diaye (2013), "Chronicles of a Decline Foretold: Has China Reached the Lewis Turning Point," IMF Working Paper 13/26.



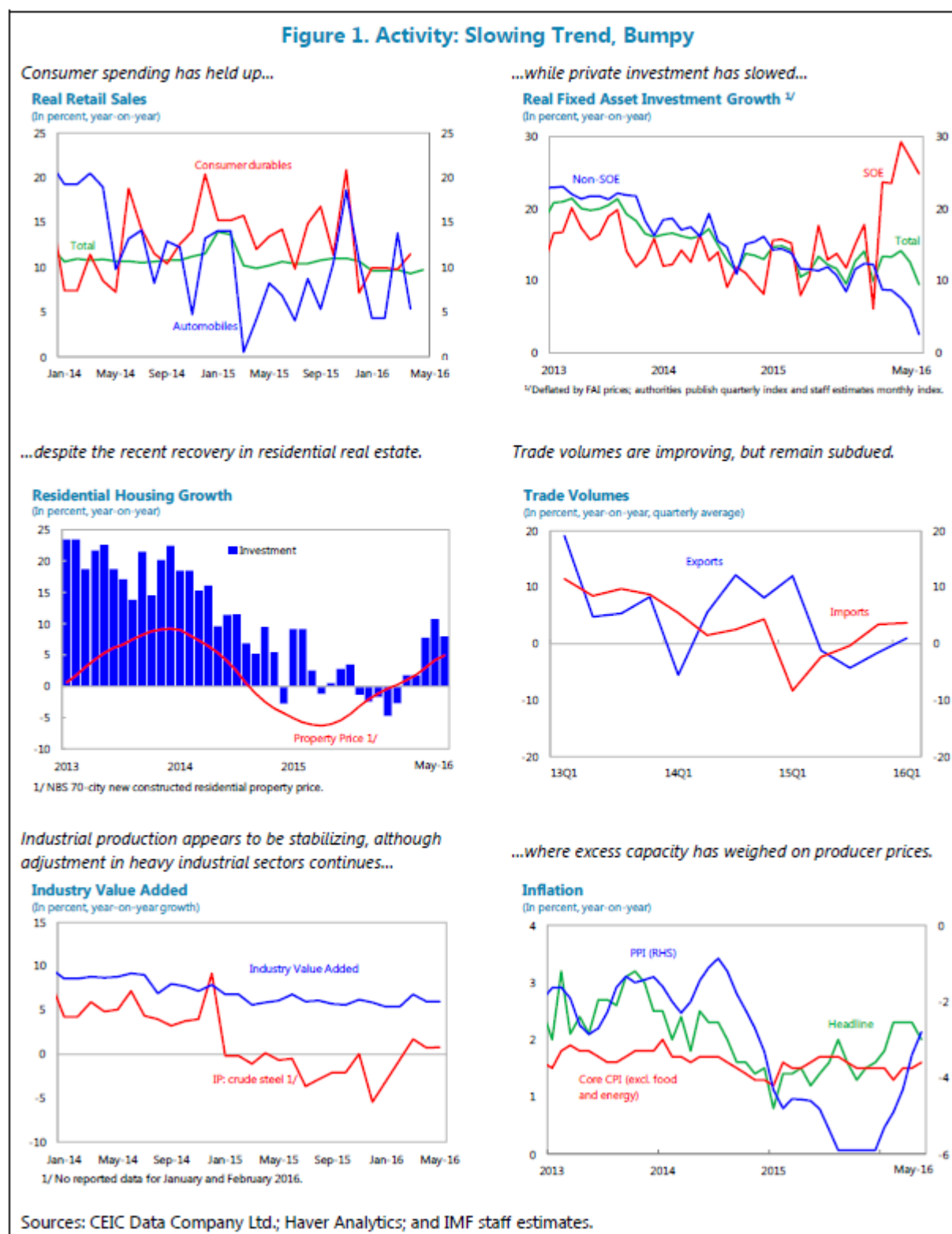
Source: IMF, *People's Republic of China 2013 Article IV Consultation [Country Report 13/211]*, July 2013, 20.

**Figure 3.9: August 2016 IMF Assessment of China Pt. 1**



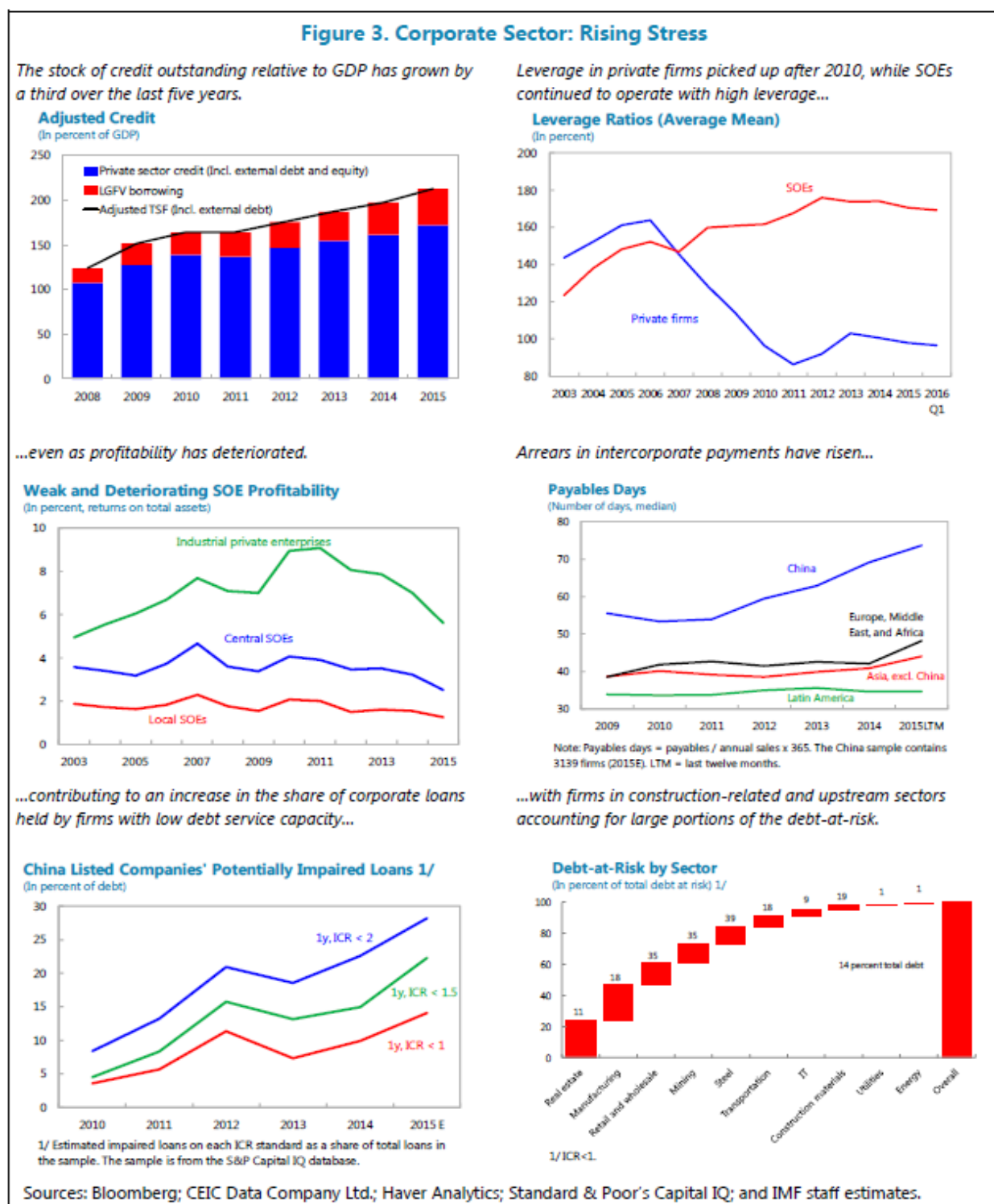
Source: IMF, *People's Republic of China 2016 Article IV Consultation [IMF Country Report 16/270]*, August 2016, 34.

**Figure 3.9: August 2016 IMF Assessment of China Pt. 2**



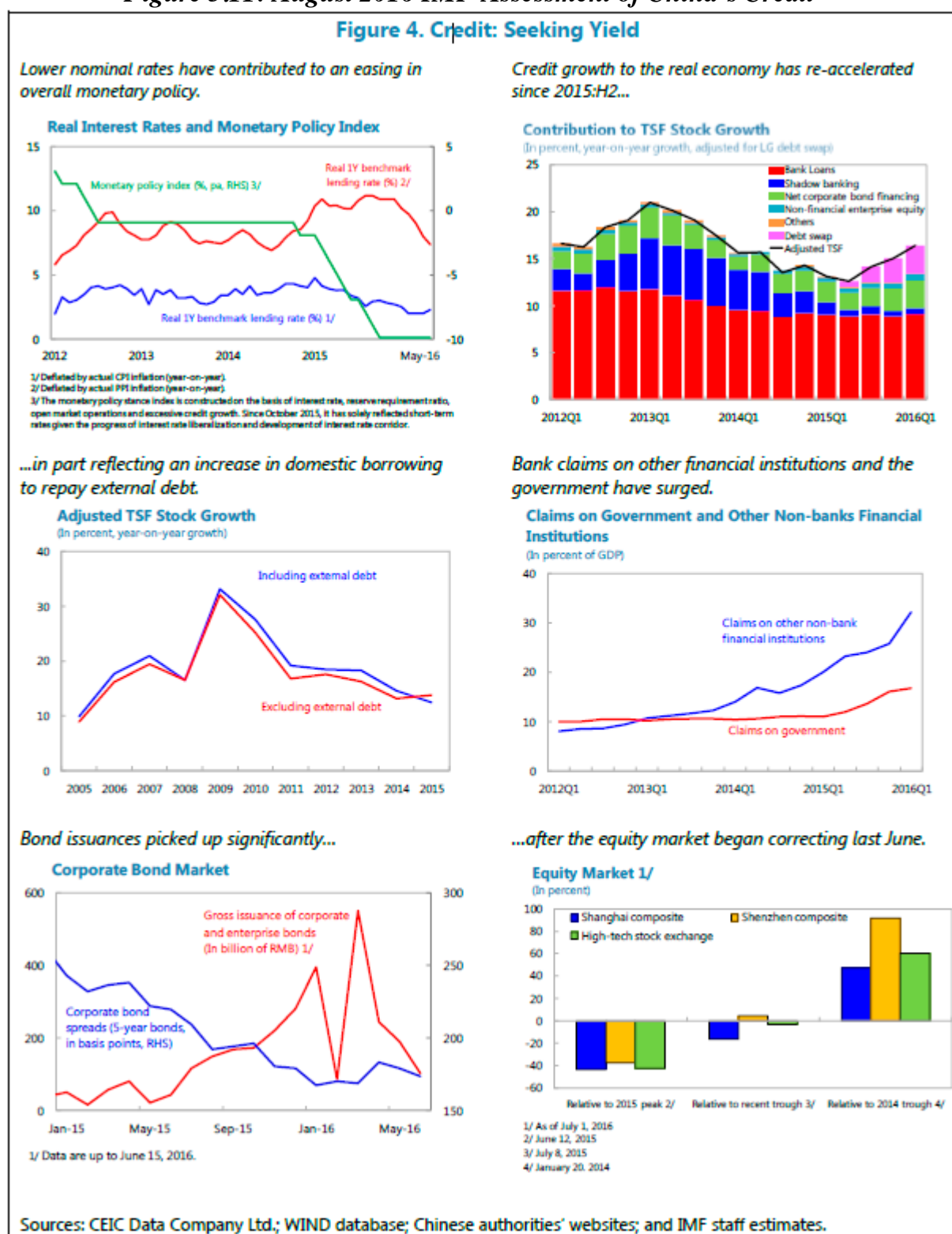
Source: IMF, *People's Republic of China 2016 Article IV Consultation [Country Report 16/270]*, August 2016, 33.

**Figure 3.10: July 2014 IMF Assessment of China's Financial Sector**



Source: IMF, *People's Republic of China 2016 Article IV Consultation [Country Report 16/270]*, August 2016, 35.

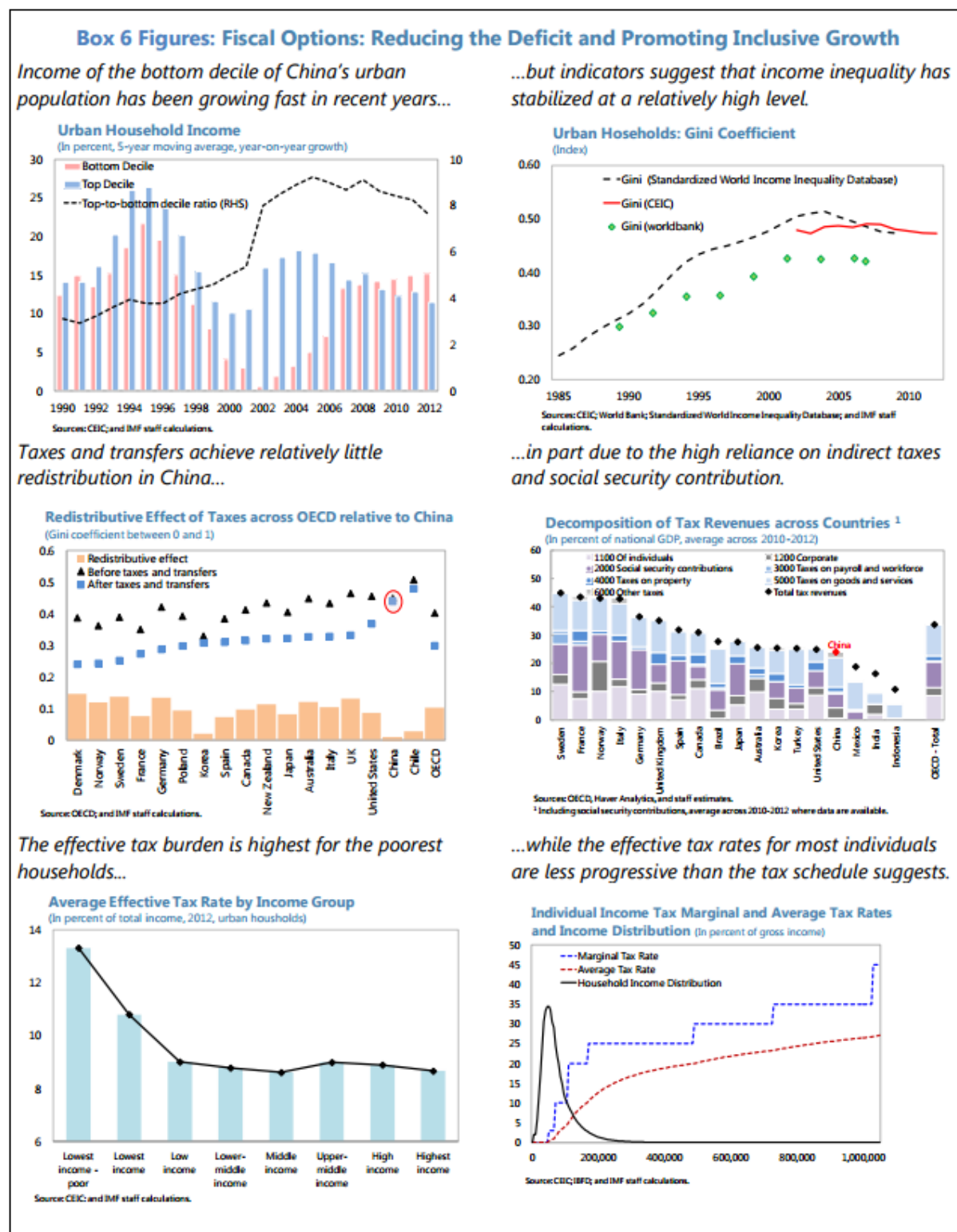
**Figure 3.11: August 2016 IMF Assessment of China's Credit**



Source: IMF, *People's Republic of China 2016 Article IV Consultation [Country Report 16/270]*, August 2016, 36.

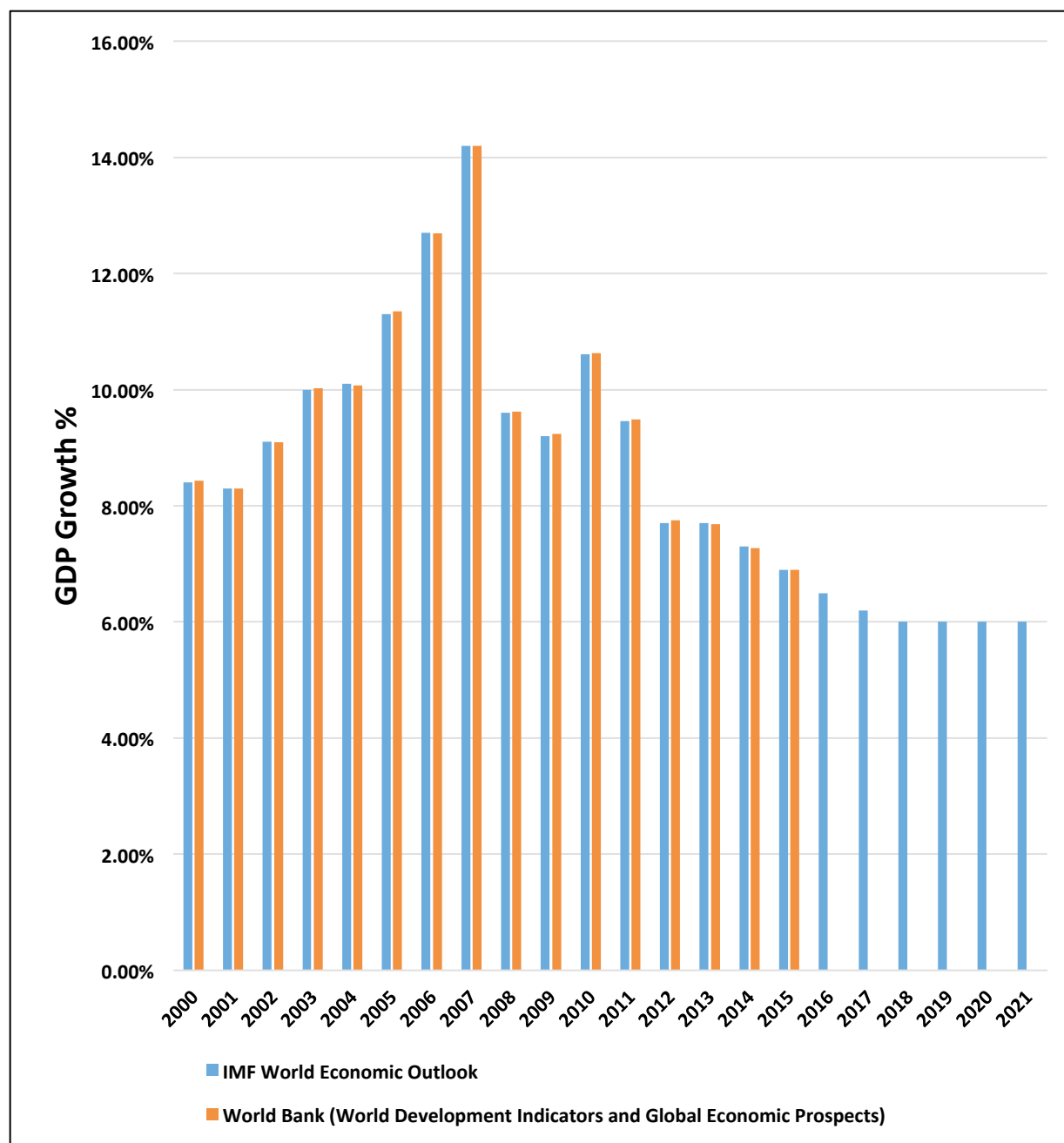


**Figure 3.11: July 2014 IMF Assessment of China's Economic Growth and Inequality**



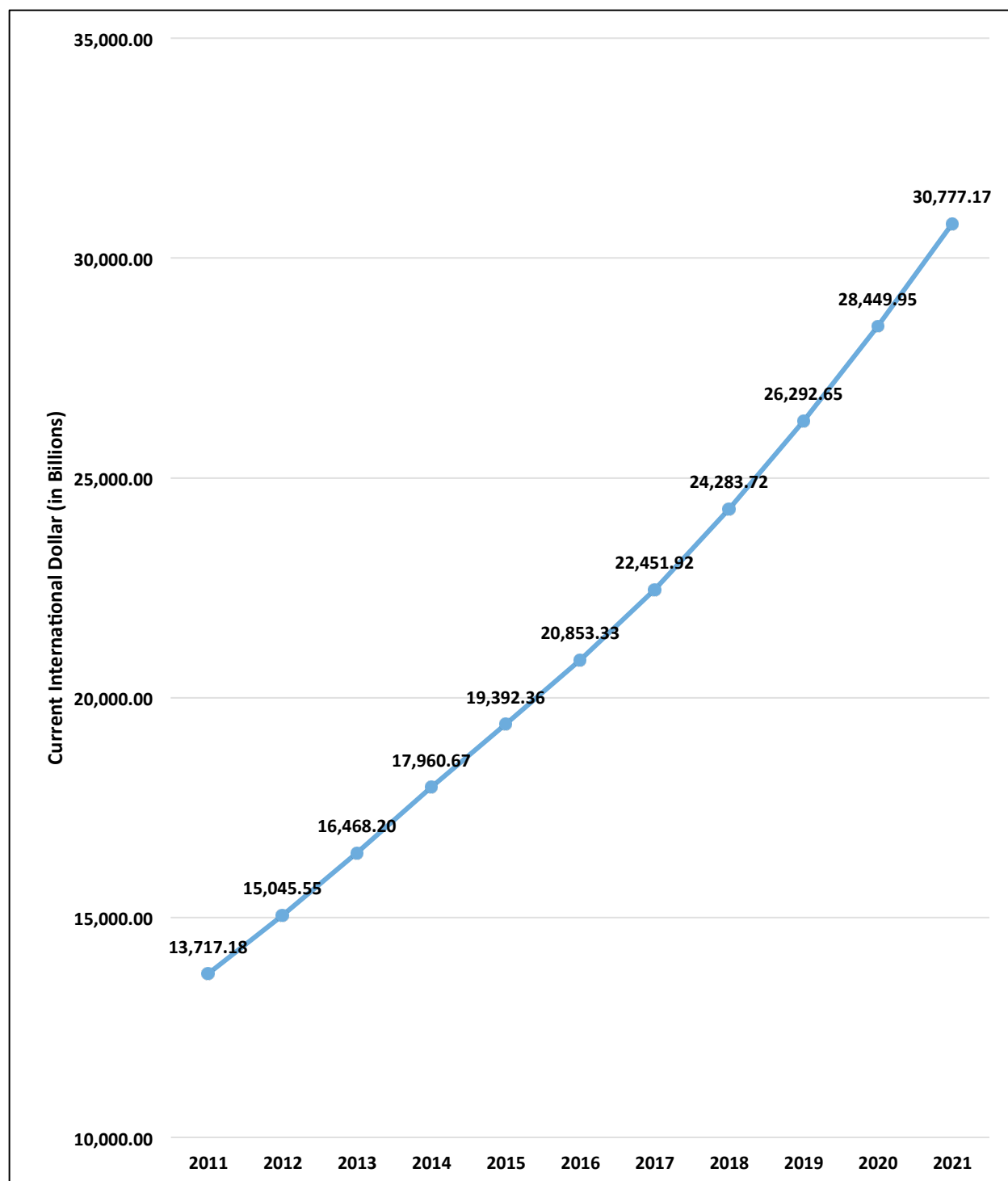
Source: IMF, *People's Republic of China 2014 Article IV Consultation [Country Report 14/235]*, July 2014, 32.

**Figure 3.12: Different Estimates of Chinese GDP Growth Rates (Market Prices): 2000-2020**



Sources: World Bank, "World Development Indicators," 2016, accessed September 2016 (for data 2000-2016), <http://data.worldbank.org/indicator>; IMF, *World Economic Outlook Database*, April 2016, accessed September 26, 2016. <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx> adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.13: China's GDP (PPP) (Billions of Current International Dollars)**



Source: IMF, *World Economic Outlook Database*, April 2016, accessed April 30, 2015, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.



## Chinese Economic Growth Relative to Increases in Military Spending

It is hard to make meaningful comparisons of the trends in China's economy and the trends in its military spending. There is no expert consensus over how much China is spending on its military forces, and unclassified estimates of such spending are often inconsistent year to year even when they come from the same sources.

Moreover, the fact that China can select how to define the military expenditures it reports, and price key military expenditures as it wants within its state sector means it is difficult to know what aspects of China's security forces and expenditure are being included in its reporting and how they are priced – problems that exist to some extent in all outside estimates because their lack of full transparency as to their methodology.

**Figure 3.14** and **Figure 3.15** are almost certainly broadly correct, however, in showing a strong correlation between the GDP growth and the rise in official military expenditures, as an acceleration in GDP growth is matched by a constant defense expenditure-to-GDP ratio. These figures also need to be kept in mind when interpreting the level of Chinese military spending.

The US DoD annual report on *Chinese Military Power*, issued in April 2016, stated that:<sup>69</sup>

In March 2015, China announced a 9.2 percent inflation-adjusted increase in its annual military budget to \$144 billion, continuing more than two decades of annual defense spending increases and sustaining its position as the second-biggest military spender in the world after the United States. Analysis of data from 2006 through 2015 indicates China's officially-disclosed military budget grew at an average of 9.8 percent per year in inflation-adjusted terms over that period. China has the ability to support defense spending growth at comparable levels for the foreseeable future.

The Japanese Defense White Paper for 2014 did not attempt to make an independent estimate, but did describe the uncertainties involved in more detail, and put them in a broader context:<sup>70</sup>

China has been sustaining large increases in its defense spending and broadly and rapidly reinforcing its military forces, mainly its nuclear and missile force as well as its Navy and Air Force. As part of such efforts, it is understood that China is strengthening its so-called "A2/AD" capabilities. In addition, China is working to improve joint operational capabilities, enhance capabilities for extended-range power projection, conduct practical exercises, cultivate and acquire highly-capable personnel for administering operations of informatized forces, and improve the foundation of its domestic defense industry. Furthermore, China has been rapidly expanding and intensifying its activities in the seas and airspace, including the East China Sea and South China Sea.

In particular, China has adopted so-called assertive measures, including attempts to alter the status quo by coercive measures, in response to issues involving conflicting maritime interests. Japan has great concerns over such Chinese military activities, etc., together with the lack of transparency in its military affairs and security issues, and needs to pay utmost attention to them. These activities also raise security concerns for the region and the international community.

China has not disclosed specific information on possession of weapons, procurement goals and past procurements, organization and locations of major units, records of main military operations and exercises, and a detailed breakdown of the national defense budget. Moreover, China has not set out a clear, specific future vision of its military strengthening. The transparency of its decision-making process in relation to military and security affairs is not enough either.

China has released defense white papers including China's National Defense every two years since 1998, and it conducts numerous dialogues with national defense authorities of other countries. Furthermore, in August 2007, China expressed its will to return to the United Nations Register of Conventional Arms and to participate in the United Nations Instrument for Reporting Military Expenditures, and has submitted annual reports based on each framework. The Chinese Ministry of National Defense has been giving monthly press conferences by a spokesperson since April 2011. In addition, in November 2013, the position of

spokesperson was newly established at seven departments, including the Navy and Air Force<sup>6</sup>, and the spokesperson disseminates information regarding developments related to the People's Liberation Army (PLA). Such moves by China can be perceived on the one hand as efforts that contribute to the improvement of the transparency of military forces, and on the other as efforts to strengthen "Media Warfare."

However, with regard to national defense spending, China has not provided a detailed breakdown of the procurement expenses of major equipment and other details. In the past, China used to disclose the total amounts and general purposes for the following three categories: personnel; training and maintenance; and equipment. Nonetheless, such explanations have not been offered in recent years. Moreover, in China's defense white paper titled, "The Diversified Employment of China's Armed Forces," released in April 2013, its contents were limited to selective topics. While on some topics it gave more details than in the past, there was no reference to national defense spending that was described in previous defense white papers. Thus, transparency is declining in regard to national defense spending, and China has not yet achieved the levels of transparency expected of a responsible nation in the international community.

China announced that its national defense budget for FY2014 was approximately 808.2 billion yuan. The initial budget amount announced represented a growth of approximately 12.2% (approximately 88.1 billion yuan) compared to the initial budget amount for the previous fiscal year. This shows that the Chinese national defense budget continues to increase at a rapid pace. The nominal size of China's announced national defense budget has grown approximately 40-fold over the past 26 years and almost quadrupled in size over the past ten years. China positions the buildup of defense capabilities as important a task as economic development, and it is believed that China is continuing to invest resources in the improvement of its defense capabilities in tandem with its economic development.

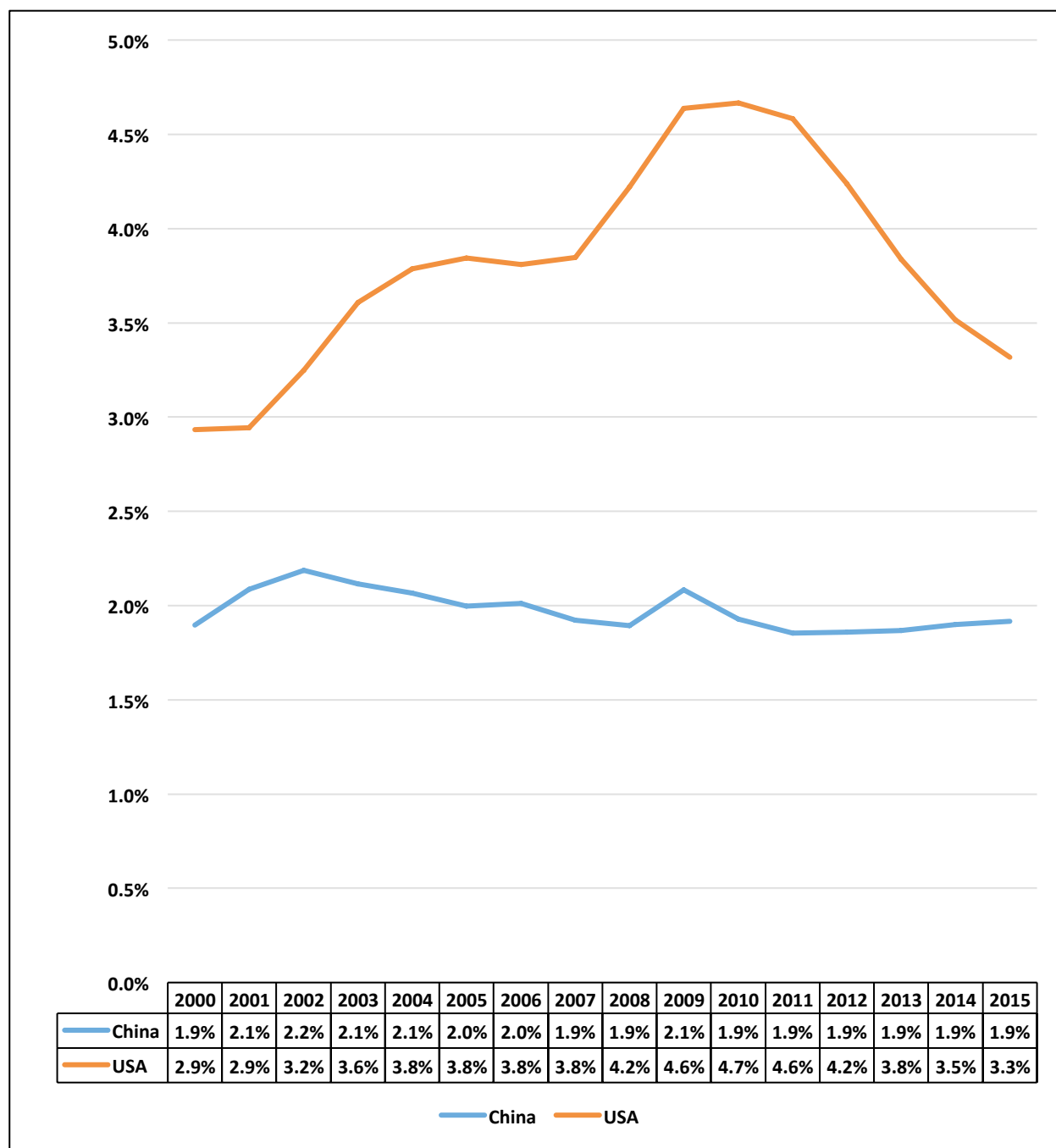
In addition, it must be noted that the amount of the defense budget announced by China is considered to be only a part of its actual military expenditures. For example, it is believed that the announced defense budget does not include all the equipment procurement costs and research and development expenses.

It is important to note, however, that some of the foreign reaction to the shifts in Chinese military strategy, modernization, defense spending, tends to assume that increase military spending is a sign of aggressiveness, and ignores the fact that most nations increase their military power as their economic strength increases, and as they become more sensitive to strategic concerns beyond their borders and more competitive with other states. U.S. comments on Chinese military spending sometimes ignores U.S. history and past particular of British and other European fears of the growth of US power.

Moreover, few countries have suffered as much as China over the last two centuries from outside exploitation and invasion – and from a long series of outside attacks and occupations. Chinese nationalism is shaped by anger at a history that dates back to the Opium Wars of 1839-1860, followed by European and Japanese zones of exploitation, wars with Japan, and an American role that sometimes aided China but also joined outside states in exploiting China during the siege of Beijing in 1900.<sup>71</sup>

China suffered some of its worst moments in modern history during the Japanese invasions that began in the 1930s and lasted through World War II. China sees the "Cold War" as a period where the US supported the Kuomintang and Taiwan until the shift in US policy during the Nixon Administration, and sees the Korean War to some extent as an extension of outside threats and challenges. While it does not currently face serious military threats from its Asian neighbors, that has scarcely always been the case, and China fought a border war with Vietnam as recently as 1979. It also faces serious territorial and maritime disputes with many of these same neighbors – several of which have begun their own military build-up and expanded their ties with the US. While China's overt diplomatic and military strategy may focus on peace and good relations with all outsider states, no nation can ignore either its history or its current strategic situation.

**Figure 3.14: Comparing Percentage of GDP spent on Military Expenditures – Part One**



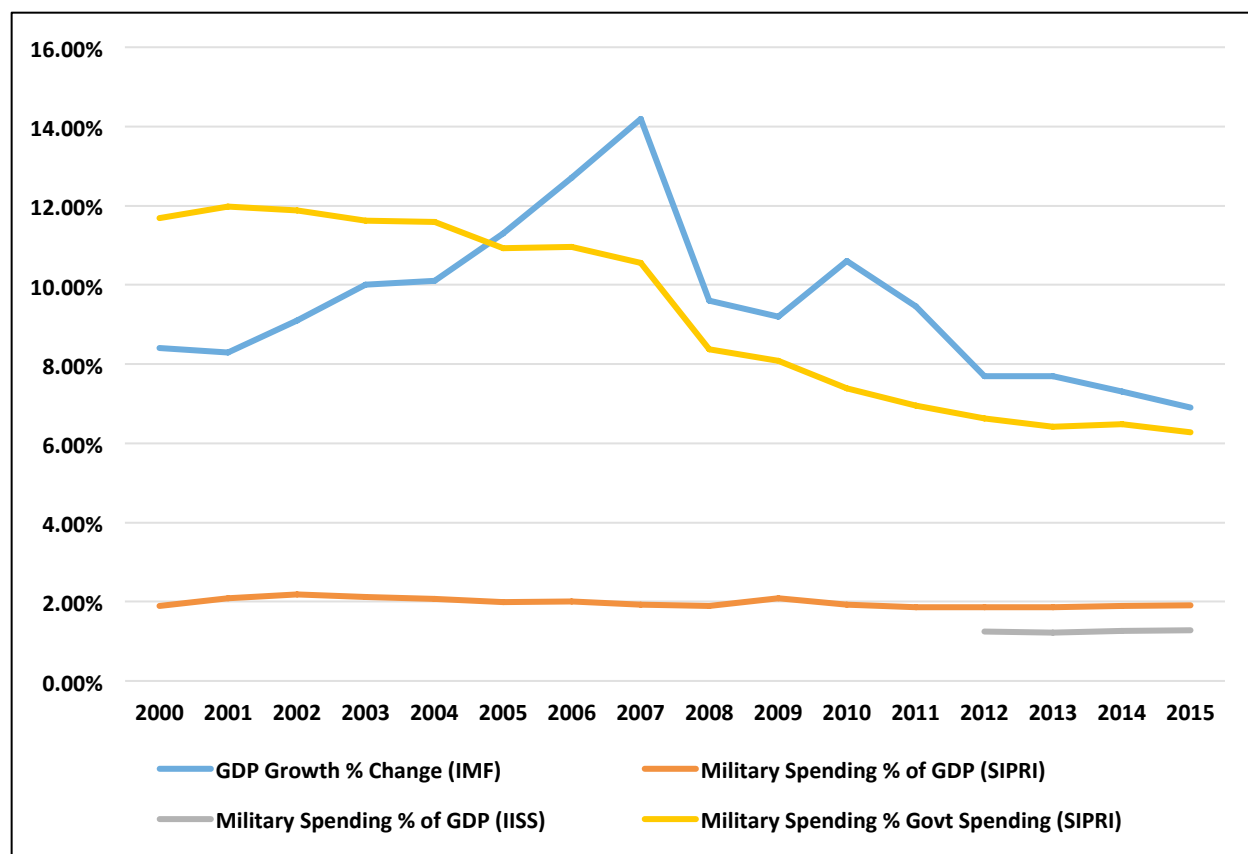
Sources: Stockholm International Peace Research Institute, 2015 SIPRI Military Expenditure Database, <http://www.sipri.org/databases/milex>; accessed September 23, 2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.14: Comparing Percentage of GDP spent on Military Expenditures – Part Two**

	China's GDP (In Billions \$USD)	SIPRI Index (In Billions \$USD)	China Mil %	USA GDP (In Billions \$USD)	SIPRI Index (In Billions \$USD)	US Mil %
2000	\$1,208.85	\$22.93	1.90%	\$10,284.75	\$301.68	2.93%
2001	\$1,336.92	\$27.87	2.09%	\$10,621.83	\$312.74	2.94%
2002	\$1,468.86	\$32.14	2.19%	\$10,977.53	\$356.72	3.25%
2003	\$1,660.71	\$35.13	2.12%	\$11,510.68	\$415.22	3.61%
2004	\$1,952.64	\$40.35	2.07%	\$12,274.93	\$464.68	3.79%
2005	\$2,291.45	\$45.73	2.00%	\$13,093.70	\$503.35	3.84%
2006	\$2,751.92	\$55.34	2.01%	\$13,855.90	\$527.66	3.81%
2007	\$3,542.56	\$68.09	1.92%	\$14,477.63	\$556.96	3.85%
2008	\$4,564.95	\$86.41	1.89%	\$14,718.58	\$621.13	4.22%
2009	\$5,071.46	\$105.63	2.08%	\$14,418.73	\$668.57	4.64%
2010	\$6,005.25	\$115.70	1.93%	\$14,964.40	\$698.18	4.67%
2011	\$7,422.03	\$137.97	1.85%	\$15,517.93	\$711.34	4.58%
2012	\$8,471.36	\$157.45	1.86%	\$16,115.25	\$684.78	4.25%
2013	\$9,518.58	\$177.85	1.87%	\$16,663.15	\$639.70	3.84%
2014	\$10,430.71	\$199.65	1.91%	\$17,348.08	\$609.91	3.50%
2015	\$10,981.83	\$214.79	1.91%	\$17,947.00	\$596.02	3.32%

Sources: IMF, *World Economic Outlook Database*, April 2016, accessed June 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies; and SIPRI Indexes for military spending.

**Figure 3.15: Chinese GDP Growth and Defense Spending – Part One**



Sources: Based primarily on material from International Institute for Strategic Studies, *The Military Balance 2016* (London: Routledge, 2015) using current dollar; 2015 SIPRI Military Expenditure Database, *Stockholm International Peace Research Institute*, <http://www.sipri.org/databases/milex>; and IMF, “World Economic Outlook,” using current dollar, April 2015, accessed April 30, 2015, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 3.15: Chinese GDP Growth and Defense Spending – Part Two**

	GDP % (IMF)	Growth Change	Military Spending % of GDP (SIPRI)	Military Spending % of GDP (IISS)	Military Spending % Govt Spending (SIPRI)
2000	8.40%		1.90%		11.69%
2001	8.30%		2.09%		11.98%
2002	9.10%		2.19%		11.87%
2003	10.00%		2.12%		11.63%
2004	10.10%		2.07%		11.59%
2005	11.30%		2.00%		10.93%
2006	12.70%		2.01%		10.96%
2007	14.20%		1.92%		10.55%
2008	9.60%		1.89%		8.38%
2009	9.20%		2.08%		8.08%
2010	10.61%		1.93%		7.39%
2011	9.46%		1.85%		6.96%
2012	7.70%		1.86%	1.25%	6.62%
2013	7.70%		1.87%	1.22%	6.41%
2014	7.30%		1.91%	1.27%	6.49%
2015	6.90%		1.92%	1.28%	6.28%

Sources: Based primarily on material from International Institute for Strategic Studies, *The Military Balance 2016* (London: Routledge, 2016) using 2015 dollar; 2015 SIPRI Military Expenditure Database, *Stockholm International Peace Research Institute*, <http://www.sipri.org/databases/milex>; and IMF, “World Economic Outlook,” April 2016, accessed June 29, 2016, <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## ***Factors that May Impact China's Military Spending, Strategy and Modernization***

While China's future economic growth seems unlikely to limit its military expenditures in ways that will prevent it from achieving its strategic objectives, its ability to fund the necessary military expenditures may still be influenced by several key factors that augment or impede GDP growth.

### **Inflation**

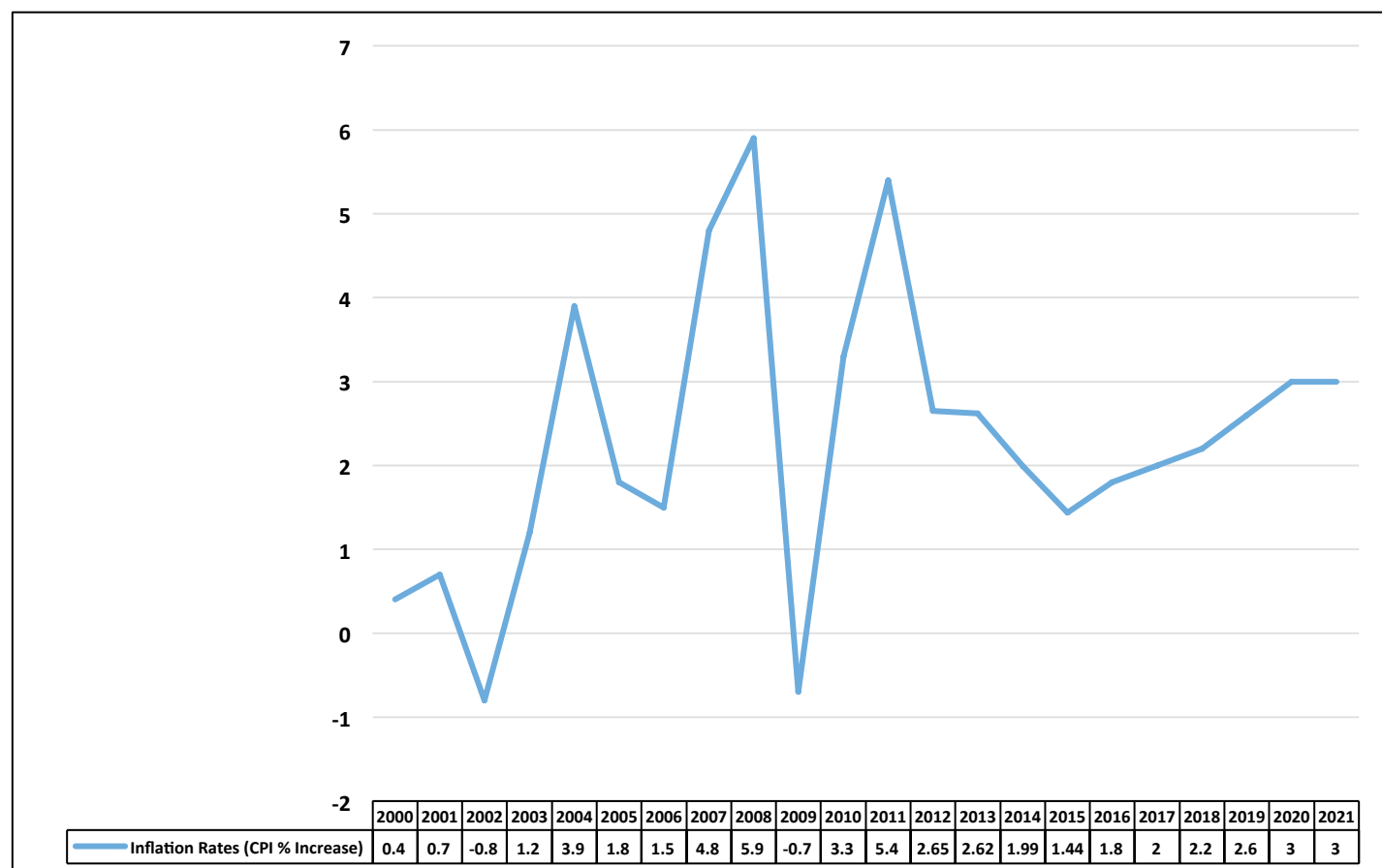
Inflation is one such factor. During the last several years, inflation rates in China have been high enough – the inflation rates for 2010 and 2011 were 3.3% and 5.4%, respectively, while inflation was reduced to 2.6% in 2012 – that the PRC has taken steps to prevent “overheating.”<sup>72</sup> In response to these relatively high rates of inflation, former PRC Premier Wen Jiabao announced on March 5, 2012, that the PRC would seek a relatively moderate growth rate of 7.5% in order to achieve “higher-level, higher-quality development over a longer period of time,”<sup>73</sup> though the country achieved a 7.8% growth rate for 2012. According to the World Bank's Chief Economist, Justin Yifu Lin, China lowered its growth rate because “there are some overheating in certain sectors,” and “there are some inflation pressure[s].”<sup>74</sup>

Such trends could continue in the near term: *Xinhua* reported a statement from Zhang Ping, minister in charge of the National Development and Reform Commission and the country's top economic planner, in which he said that the government would not relax its efforts to manage inflation even though inflation trends were currently stabilizing.<sup>75</sup> As a result, the Chinese government set a target consumer price increase at 4% for 2012, though prices only rose 2.6% in 2012, while incomes rose approximately 10%. The 2013 economic growth target remained 7.5%,<sup>76</sup> while the inflation target was set at 3.5%.<sup>77</sup>

Inflation-control will continue to be a priority for Beijing and may act as a break on GDP growth, and possibly on military expenditure. Inflation in 2016 is averaging 1.8%. The 2016 IMF *World Economic Outlook* notes, “In China, inflation is forecast to remain low at about 1.8 percent in 2016, reflecting lower commodity prices, the real appreciation of the renminbi, and somewhat weaker domestic demand.”<sup>78</sup>

**Figure 3.16** displays Chinese inflation rates for the years 2000-2021.

**Figure 3.16: Estimates of Chinese Inflation Rates (CPI % increase)**



Note: World Bank figures were only available through 2010 but were the same as the IMF figures and so were not included as a comparison, <http://data.worldbank.org/indicator>.

Source: IMF, *World Economic Outlook Database*, April 2016, accessed September 23, 2016, <http://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.



## FDI and Current Account Balance

Foreign investment has been another key factor. The inflow of foreign direct investment (FDI) has provided a critical boost to Chinese economic development over the past decade. FDI reached a new record in 2011 as the country took in \$116 billion – though FDI fell 4% in 2012, to \$111.7 billion.<sup>79</sup> Outside estimates for China's FDI differ, as the EU, China's biggest trading partner, is currently experiencing a protracted financial crisis. FDI from Europe was \$6.1 billion in 2012, a 3.8% decrease from 2011.<sup>80</sup> Despite the consequences of Euro-zone economic instability for FDI in China, the PRC Ministry of Commerce has targeted the years 2012-2015 for a four-year average of \$120 billion in FDI.<sup>81</sup>

As of 2010, approximately 47% of all FDI was invested in the manufacturing sector, with services making up a roughly equivalent amount.<sup>82</sup> FDI in the services industry was larger than that of the manufacturing sector in 2012. In April 2013, it was reported that FDI rose 1.44% in the first three months of the year, compared to the first three months of 2012 – totaling \$29.9 billion. Of that, the service sector received \$14.4 billion, while the manufacturing sector received \$13.2 billion.<sup>83</sup>

According to PRC statistics, US direct investment in China in 2012 increased 4.5% to \$3.13 billion, accounting for roughly 2.8% of China's annual FDI total. However, the top Asian countries investing in China – Hong Kong, Japan, Singapore, Taiwan, and the ROK – accounted for 84.5% of FDI, or \$94.46 billion. Hong Kong represented \$71.29 billion of this, with Japan second at \$7.38 billion; the US was the fifth-largest investor in China.<sup>84</sup>

FDI outflows from China are smaller, but still substantial; the PRC Ministry of Commerce's figures for outward non-financial direct investment overseas in 2012 show that China invested \$77.22 billion, up 28.6% from 2011.<sup>85</sup> In 2010, China was credited with \$68.81 billion in total FDI (\$8.63 billion financial and \$60.18 billion non-financial).<sup>86</sup> China's fast-growing economic ties with countries in Latin America and Africa have the potential to make China a considerable investor in many regions of the world. However, it should also be noted that much of the current ODI is directed towards Hong Kong and Caribbean off-shore tax havens, such as the Cayman Islands.<sup>87</sup>

In light of these trends, China's current account balance has generated significant surpluses during the first decade of the 21<sup>st</sup> century. Ranked first in the world, China's 2012 current account balance stood at \$213.8 billion and accounted for roughly 2.6% of China's nominal GDP and 1.7% of its PPP GDP.<sup>88</sup> Reserves of foreign exchange and gold in China have surpassed \$3.3 trillion, and China has indicated an interest in diversifying its portfolio by targeting corporate equity assets abroad.<sup>89</sup>

The exact implications of these trends for the defense sector are unclear, although they give China steadily greater resources on which to draw and have led to a sustained modernization of China's personnel and industrial base. While China's military-industrial complex almost certainly does not attract as much FDI as other industries, other hard to quantify benefits from FDI must be kept in mind.

The Chinese government has also sought to encourage Chinese innovation and business practices through transfer (*kaifang zhengce*), state-led dual-use production, and access to technology by acquisition of foreign companies. The end result is unclear, and sometimes complicated by the limits China enforces on foreign companies operating in China. However, there does seem to be a divergence between those defense enterprises which have “benefited from integration with a

rapidly expanding civilian economy and science and technology sector, particularly elements that have access to foreign technology” and lesser performing defense companies producing goods which have “limited counterparts in the PRC civil-industrial sector.”<sup>90</sup>

### *Demographic Trends*

Population is another factor that will have a growing influence on China’s economy and military development. China will remain the world’s most populated nation – or be a close second – until the end of the twenty-first century. Sheer population size may be one of the foundations of China’s power and prestige in international affairs, but much will be determined by how the country will develop its pool of labor and deal with the strain of a massive and aging population.

China now relies less on manpower for its military strength. Population growth and a better-educated population will have a major impact on its ability to create and sustain a modern military. China is the most populous nation on Earth, with approximately 1.35 billion inhabitants. India ranks second, and has more than 1.2 billion citizens. The US is the third most populous country, with only has a quarter of China’s population.<sup>91</sup>

Chinese population growth rates have been slowing for most of the past 30 years. The official population growth rate for 2011 was 4.79%, although such numbers may undercount growth in rural areas.<sup>92</sup> It is difficult to estimate whether China’s net population growth will be positive or negative in the years to come. However, the US Census Bureau predicts that the Chinese population will peak around 2025 and begin shrinking afterward.

Given the decline in the birth rate and Chinese preference for male children, age will be a bigger factor on the Chinese economy than sheer population size. As the trend depicted in **Figure 3.18** indicates, birthrates in China have been steadily decreasing and are projected to decrease further in the coming decades. Currently, the fertility rate is approximately 1.6 children per woman; at the same time, life expectancy is rising, and has reached an estimated average of 75 years for the population.<sup>93</sup>

- **Figure 3.19** illustrates these birth and fertility rate trends.
- **Figure 3.20** compares the shift in the relative rate of births versus deaths.
- **Figure 3.21** provides a rough estimate Chinese shifts in gender distribution toward a more male-majority society – most prominently in age groups under 50 – and of the combined impact of a one child policy, an aging population and declining birth rate on the size of the Chinese work force.

Given this data, China’s aging population will have a major impact on China’s manpower pool.<sup>94</sup> Some reports also indicate the skewed ratio in recent years of approximately 120 males born for every 100 females will also contribute to slower population growth and have other social ramifications.<sup>95</sup> According to the US Census Bureau’s International Database, this trend will peak in 2030 when the number of males aged 15-39 will be 13% larger than the corresponding number of females.<sup>96</sup>

Population projections do, however, indicate that the number of young women and men available for conscription will be more than sufficient to meet recruiting demands. This will be especially true if cuts in personnel strength of the armed forces persist or even if the number of security forces remains steady. The real issue will be the size and cost of China’s work force, the cost of dealing with an aging population, a high dependency ratio, and medical costs.

## ***Societal Trends and Economic Transformation***

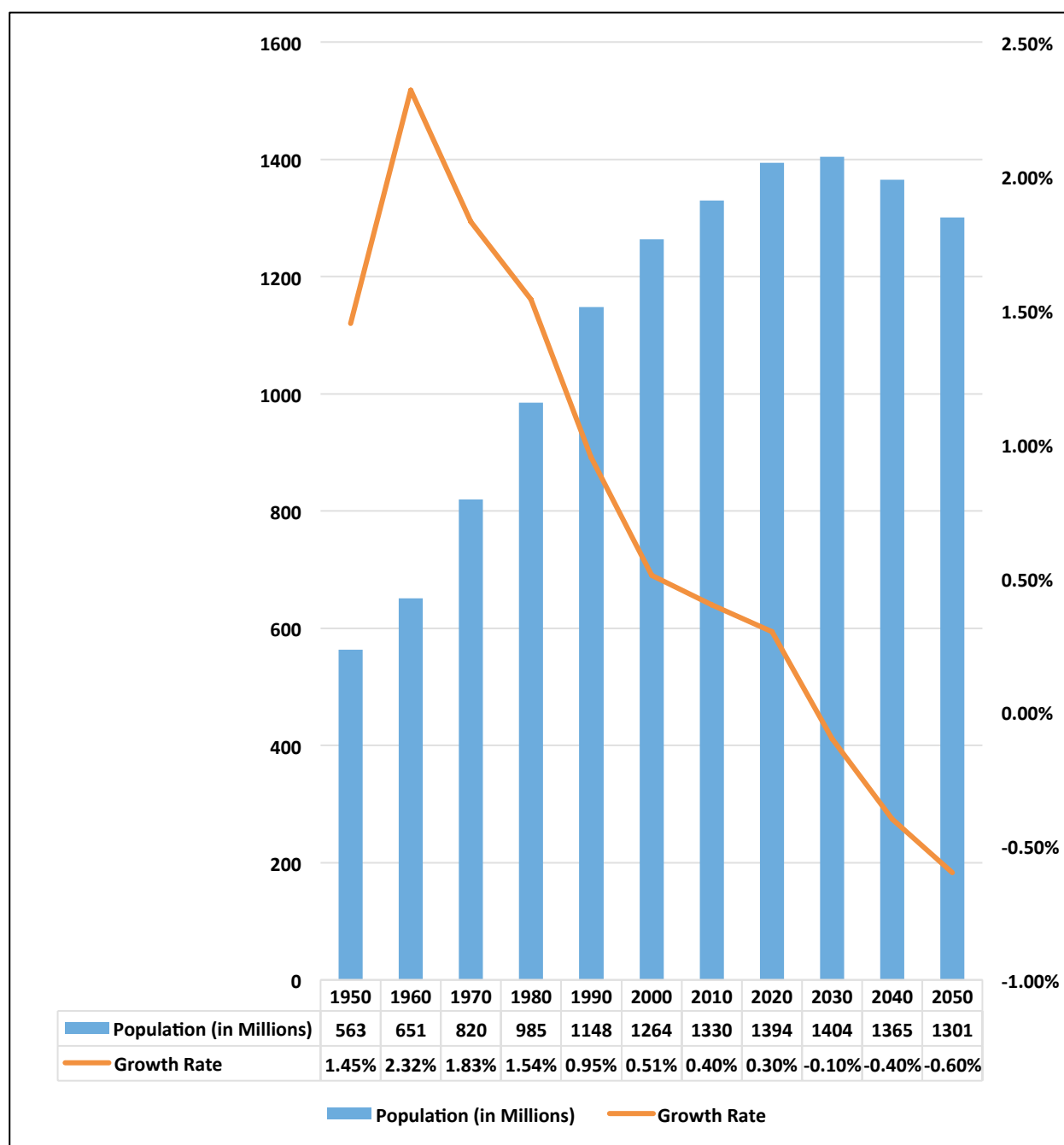
China's future personnel pool and economic growth will also be affected by the combined societal impact of population change and economic transformation. The erosion of traditional social security networks in rural China has already introduced difficulties in the recruitment of soldiers and absorption of veterans. The PLA will also have to attract increasingly well-trained specialists and maintain a corps of noncommissioned and commissioned officers, and will have to compete with a steadily more sophisticated civil economy for skilled labor.

If demographic and economic trends cause a shortage of skilled labor in the future, the security forces could face challenges in recruiting and retaining qualified personnel under constrained budgets. One report notes that beginning the net Chinese working-age population will begin to decline in 2017.<sup>97</sup> Such circumstances would complicate military recruitment and limit economic growth.

Political pressure could also push Beijing to move from selective conscription towards a volunteer army. Due to the One Child Policy, which was originally implemented in 1979 as a means of population control, China's current fertility rate of 1.55 is well below the replacement rate of 2.1 children per woman.<sup>98</sup> This demographic trend is causing an acceleration in the greying of China and will eventually lead to a sharp population decline after its projected peak in 2020. This policy has also generated a significant gender imbalance.

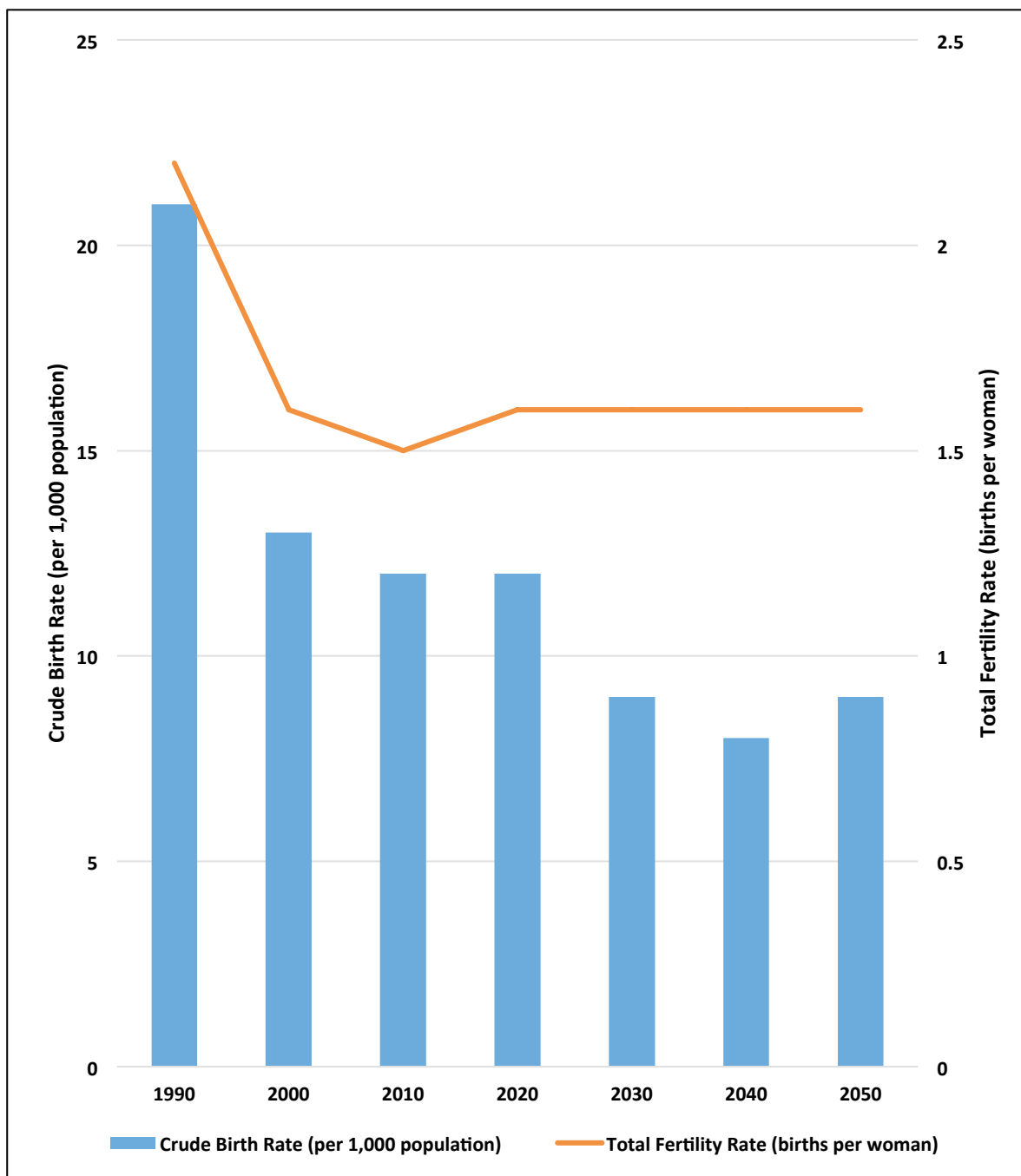
The cultural preference for male children in conjunction with the One Child Policy has led to an increase in female infanticide, sex selection abortion and abandonment, creating an unnatural gap between the two sexes. Currently there are 1.06 males per female; there are projected to be 30 million more males than females by 2020. The government has recently been relaxing the restrictions of the One Child Policy, allowing for couples who are only-children themselves to have up to two children.

**Figure 3.17: Chinese Population Projection (in millions)**



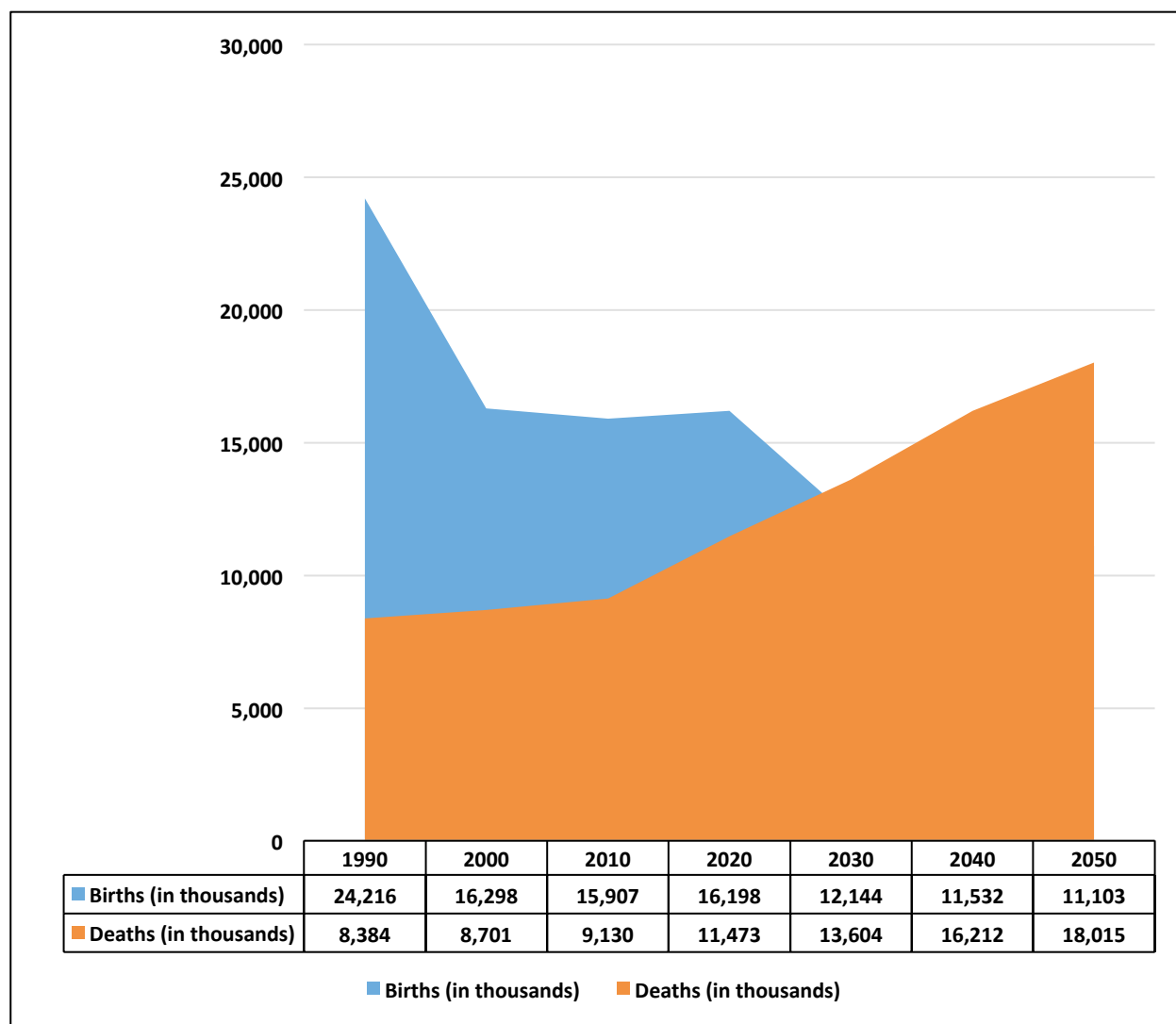
Source: US Census Bureau, International Programs, International Database, accessed September 2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.  
<http://www.census.gov/population/international/data/idb/informationGateway.php>

*Figure 3.18: Chinese Population Growth Indicators*



Source: US Census Bureau, International Programs, International Database, accessed September 2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.  
<http://www.census.gov/population/international/data/idb/informationGateway.php>.

**Figure 3.19: Chinese Births vs. Deaths over Time**

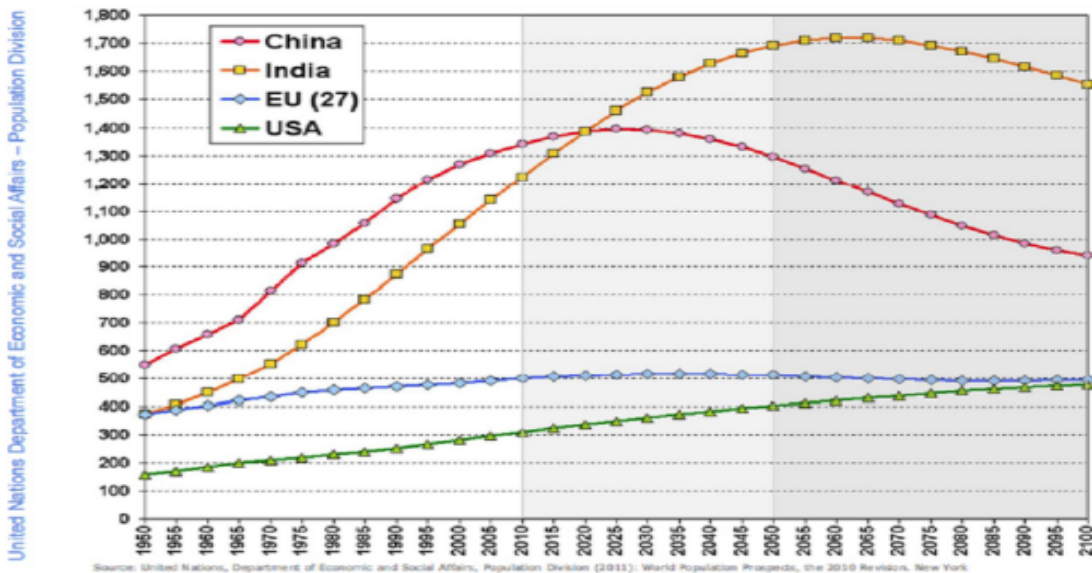


Source: US Census Bureau, International Programs, International Database, accessed September 2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.  
<http://www.census.gov/population/international/data/idb/informationGateway.php>.

**Figure 3.20: The Impact of Population, Control, Age and Shifts in Gender on China's Work Force – Part I**

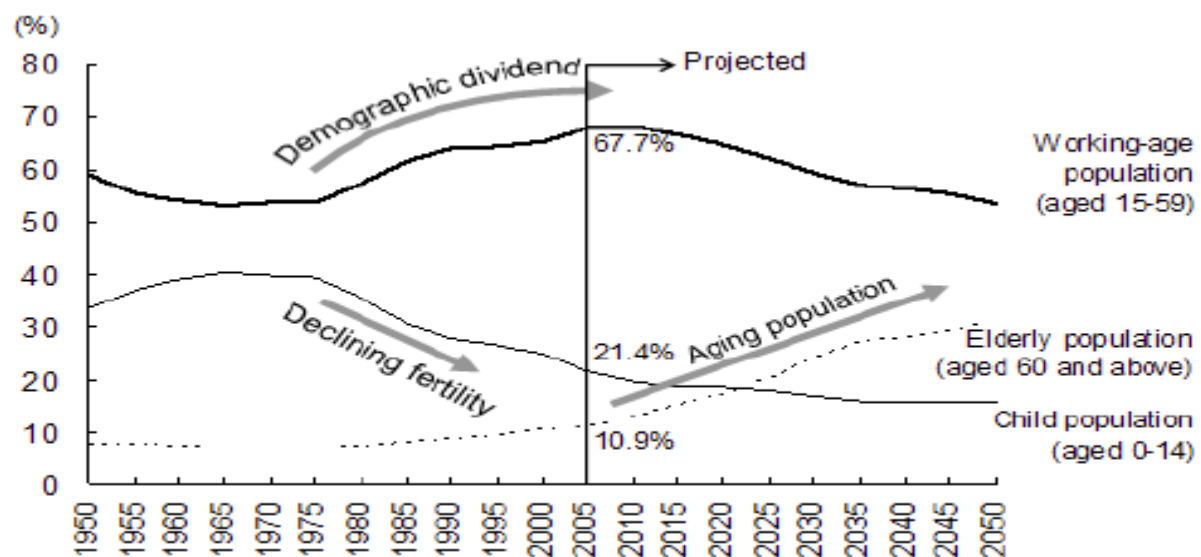
(Note: Graphics are Dates and Data Shift with Time)

**China's Total Population: 1950-2010 in Millions**



Source: Adapted from the K2P Blog: Posts Tagged 'Chinese government,' *China relaxes highly successful one-child policy*, November 15, 2013, <http://ktwop.com/tag/chinese-government/>.

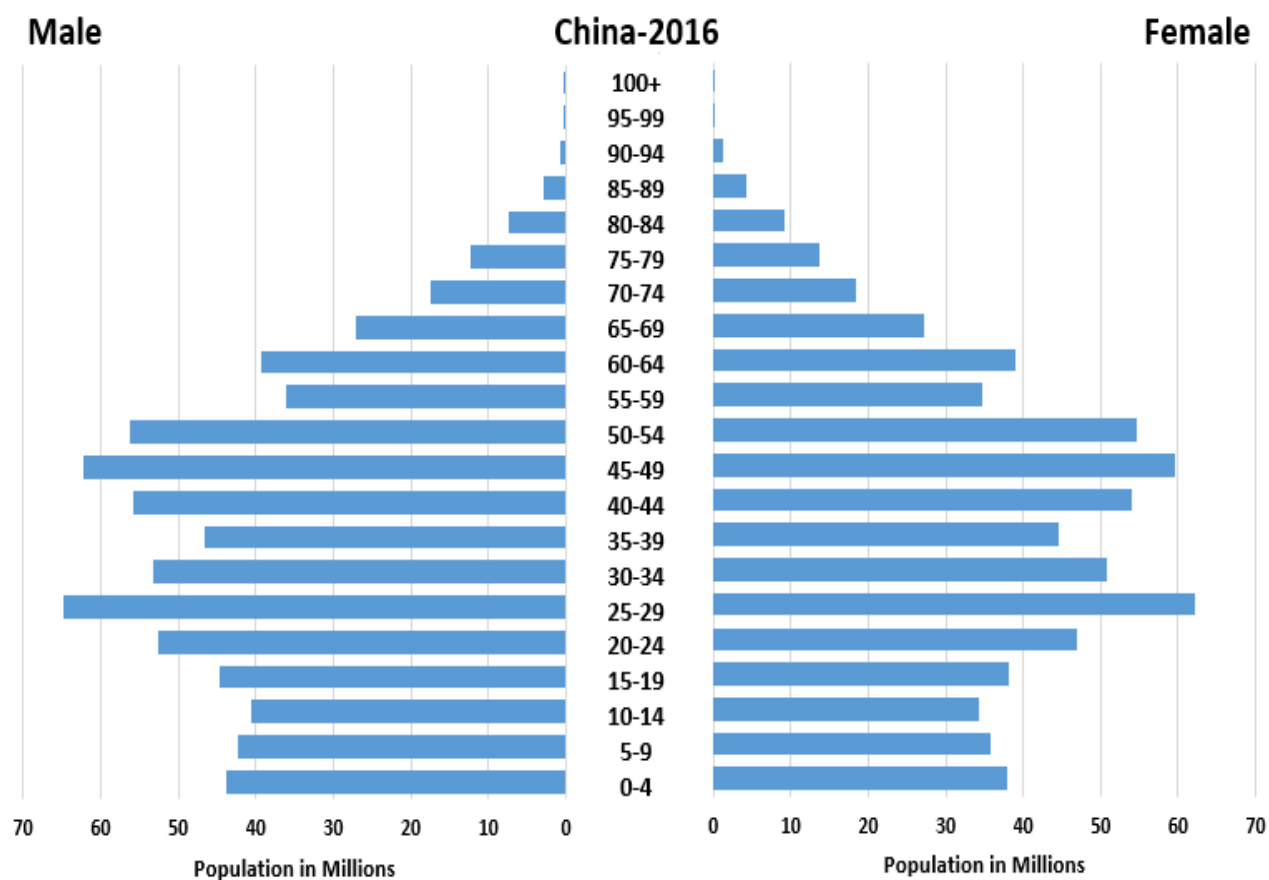
**Impact on Labor Force and Youth and Aged Dependency**



(Note) United Nations projections

Source: Adapted from RIETI, "China Facing the Challenge of Aging Population," <http://www.rieti.go.jp/en/china/06112801.html>.

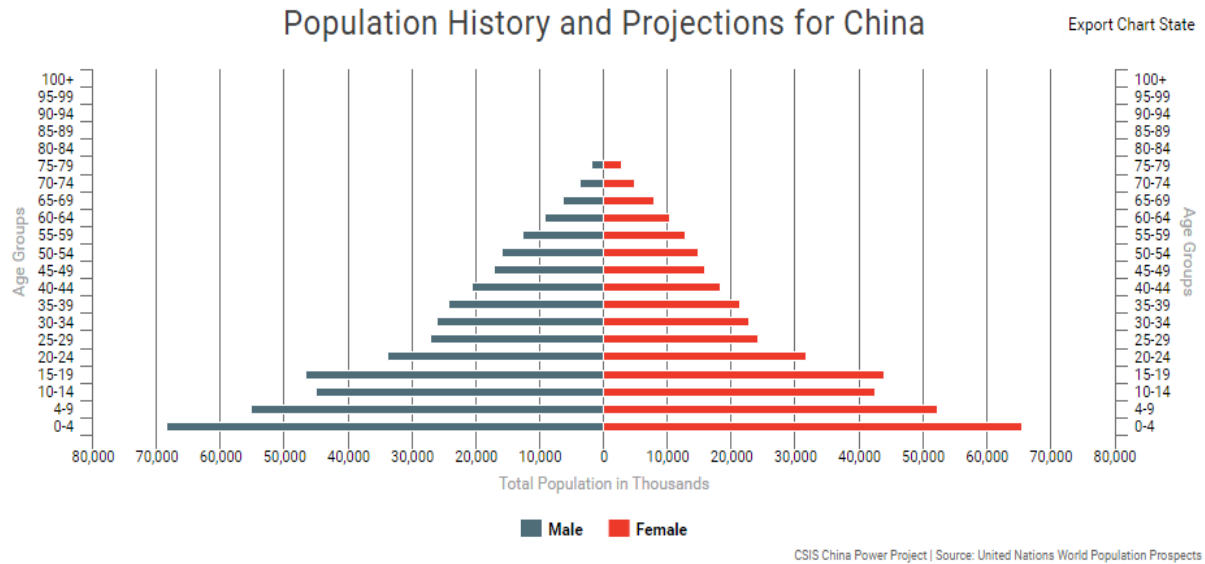
**Figure 3.20: The Impact of Population, Control, Age and Shifts in Gender on China's Work Force – Part II**



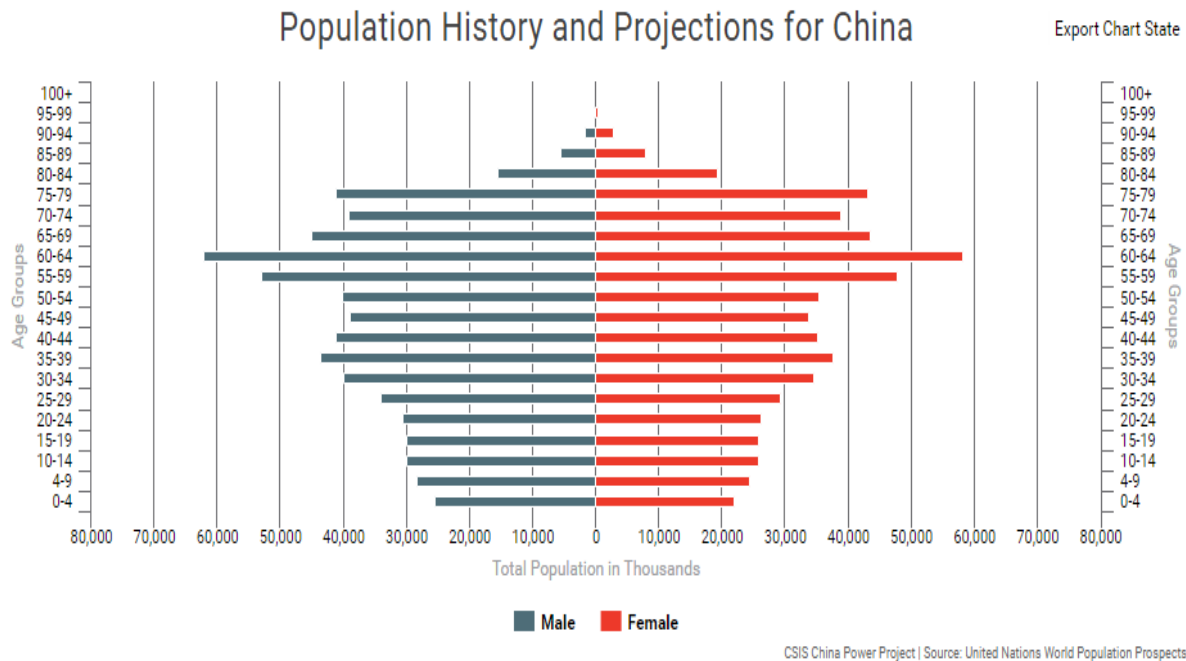
Source: US Census Bureau, International Programs, International Database, accessed September 2016, Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.  
<http://www.census.gov/population/international/data/idb/region.php?N=%20Results%20&T=12&A=separate&RT=0&Y=2015&R=-1&C=CH>.



**Figure 3.21: China's Demographics in 1970 and Projection for 2050**



1970



2050

Source: CSIS China Power Project, "Does China Have an Aging Problem?", <http://chinapower.csis.org/aging-problem/>

## CHAPTER 4: ESTIMATES OF CHINESE MILITARY SPENDING

There is no clear way to determine how much Chinese strategy shapes military spending versus how Chinese resources shape strategy; the two are always interdependent. An assessment of China's defense spending does indicate, however, that Chinese economic growth has allowed it to finance a massive modernization program, and radically improve every aspect of its conventional and asymmetric warfare capabilities, including sea-air-missile-nuclear capabilities.

Although estimates of Chinese defense spending vary sharply, there is little controversy that China now dominates Asian military spending and is becoming the premier military power in Asia. This is partly driven by China's perception of the potential threat from the U.S. and other Asian powers, but is also driven by the fact that China can now afford such efforts, support them largely with its own technology base, and cannot forget its recent past.

As Western analyst, Richard Bitzinger, pointed out in a March 2015 article in *Foreign Affairs* that:<sup>99</sup>

The simple fact is that Beijing is committed, at least publically, to sizable defense spending increases because China's leadership, from the hardliner to the reformer, is united around the central idea that the PLA must become a modern, twenty-first century fighting force.

Moreover, this view appears to be widely shared among the general populace. A recent poll undertaken by the Australian think tank Perth USAsia Center found that the Chinese, by a solid majority, backed Beijing's claims over the disputed islands in the East and South China Seas. In addition, a sizable number (greater than 70 percent) believed that the PLA could prevail in any conflict in those regions, even if the United States were to intervene (although most felt it would not be in China's interest to pursue a military solution.)

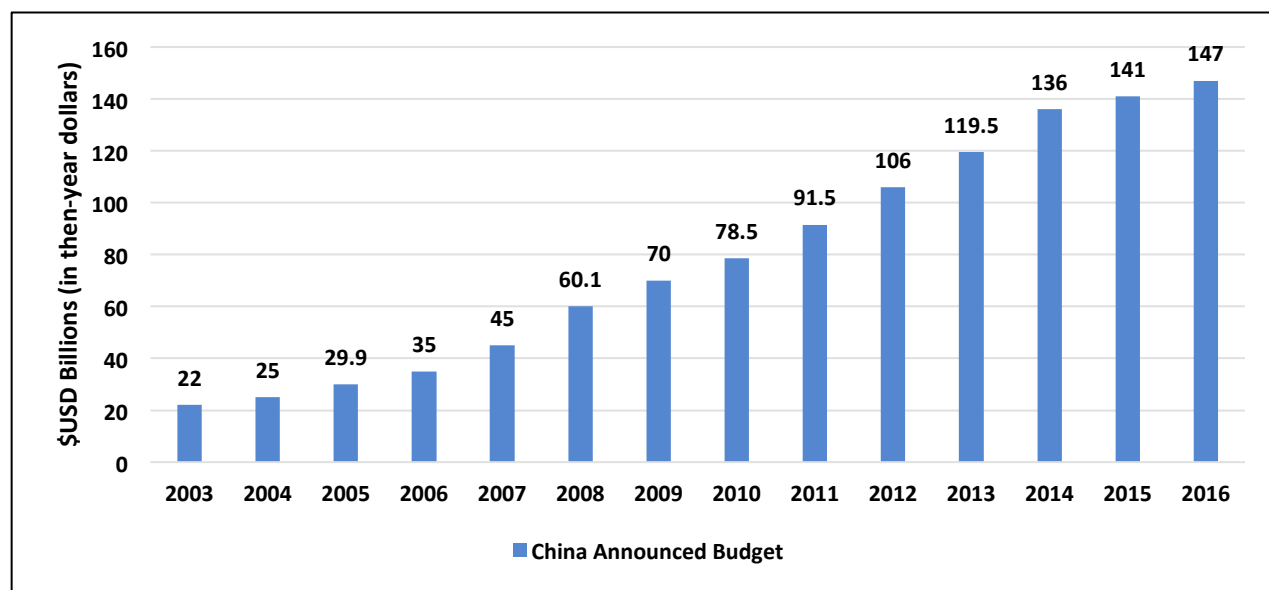
This support is driven by two factors: growing nationalism and the government's active promotion of historical victimization and ongoing vulnerability—particularly through its 20-year-long “patriotic education” campaign, which downplays the faults of the country's leaders and emphasizes the brutality committed against China by “evil” foreign powers.

As one Chinese official, when defending the most recent defense budget increase, put it, “our lesson from history—those who fall behind will get bullied—this is something we will never forget.” In this regard, too, a modernized PLA dovetails well with Chinese leader Xi Jinping's “China dream,” a vision of a “rejuvenated” and “revitalized” China. If China wants to be a great power, it requires a powerful military. Consequently, the “rich nation, strong army” ideal resonates with much of China's population.

### *Chinese Statements on Military Spending*

The actual levels of Chinese military spending, however, are unclear. The last time China provided a detailed explanation of its military spending was in their 2010 Defense White Paper. Since then, its refusal to report specific aspects of its military spending and how it prices military goods and services within its state sector has made any comparison with the military spending of the US or other military powers very unreliable. China has also released an official number on their defense spending every spring at the annual meeting of the national legislature. However, specific details are not provided and there is no way to confirm the accuracy of the numbers being reported. Most observers are skeptical about the official numbers released by the Chinese government for a variety of reasons.

**Figure 4.1: Announced Chinese Defense Budget**



Source: Years 2003-2015 taken from DoD, *Military and Security Developments Involving the People's Republic of China 2003-2016*. 2016 announced budget number taken from Andrew S. Erickson and Adam P. Liff, "The Limits of Growth: Economic Headwinds Inform China's Latest Military Budget", *Wall Street Journal*, March 5, 2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

The most extensive official outline of Chinese military spending is provided in a brief historical statement on the website of the Ministry of National Defense of the PRC:<sup>100</sup>

Guided by the principle that defense expenditure should grow in line with the demands of national defense and economic development, the Chinese government decides on the size of defense expenditure in an appropriate way, and takes a road of national defense and armed forces modernization featuring lower cost and higher efficiency.

In the past three decades of reform and opening up, China has insisted that defense development should be both subordinated to and in the service of the country's overall economic development, and that the former should be coordinated with the latter. As a result, defense expenditure has always been kept at a reasonable and appropriate level. From 1978 to 1987, as the nation shifted its focus to economic development, national defense received a low input and was in a state of bare sustenance. During this period the average annual increase of defense expenditure was 3.5 percent, while that of GDP was 14.1 percent and that of the state financial expenditure was 10.4 percent. The shares of China's annual defense expenditure in its GDP and in the state financial expenditure dropped respectively from 4.6 percent and 14.96 percent in 1978 to 1.74 percent and 9.27 percent in 1987.

From 1988 to 1997, to make up for the inadequacy of defense development and maintain national security and unity, China gradually increased its defense expenditure on the basis of its sustained economic growth. During this period the average annual increase of defense expenditure was 14.5 percent while that of GDP was 20.7 percent and that of the state financial expenditure was 15.1 percent. The shares of China's annual defense expenditure in its GDP and in the state financial expenditure continued to drop.

From 1998 to 2007, to maintain national security and development and meet the requirements of the RMA with Chinese characteristics, China continued to increase its defense expenditure steadily on the basis of its rapid economic growth. During this period, the average annual increase of defense expenditure was 15.9 percent, while that of GDP was 12.5 percent and that of the state financial expenditure was 18.4 percent. Although the share of China's defense expenditure in its GDP increased, that in the state financial expenditure continued to drop on the whole.

China's GDP was RMB 21,192.3 billion in 2006 and RMB 25,730.6 billion in 2007. The state financial expenditure was RMB 4,042.273 billion in 2006 and RMB 4,978.135 billion in 2007, up 19.1 percent and 23.2 percent respectively over the previous year. China's defense expenditure was RMB 297.938 billion in 2006 and RMB 355.491 billion in 2007, up 20.4 percent and 19.3 percent respectively over the previous year. The shares of China's annual defense expenditure in its GDP and in the state financial expenditure in 2006 were roughly the same as those in 2007, being 1.41 percent and 7.37 percent in 2006 and 1.38 percent and 7.14 percent in 2007. China's defense expenditure mainly comprises expenses for personnel, training and maintenance, and equipment. Expenses for personnel and training and maintenance account for two thirds of the defense expenditure. In 2007, the defense expenditure was used to cover the expenses of the active force (RMB 343.439 billion), the reserve force (RMB 3.693 billion) and the militia (RMB 8.359 billion). China's defense budget for 2008 is RMB 417.769 billion.

In the past two years, the increased part of China's defense expenditure has primarily been used for the following purposes:

- (1) Increasing the salaries and benefits of servicemen. Along with the rise of the income of civil servants and the living standards of both urban and rural residents, China has increased the relevant allowances and subsidies of servicemen to ensure the parallel improvement of their living standards.
- (2) Compensating for price rises. With the rise of the prices of food, building materials, fuel, etc., China has accordingly increased the boarding subsidies and other funds closely related to servicemen's life as well as the expenses on education, training, petroleum, oils and lubricants for the armed forces, and improved the working and living conditions of border and coastal defense forces, units in remote and tough areas, and grass-roots units.
- (3) Pushing forward the RMA. China has augmented the input into military informationization and moderately increased the funds for equipment and supporting facilities, so as to raise the defense capabilities in conditions of informationization.

Both the total amount and per-service-person share of China's defense expenditure remain lower than those of some major powers. In 2007 China's defense expenditure equaled 7.51 percent of that of the United States, 62.43 percent of that of the United Kingdom. China's defense expenses per service person amounted to 4.49 percent of that of the United States, 11.3 percent of that of Japan, 5.31 percent of that of the United Kingdom, 15.76 percent of that of France and 14.33 percent of that of Germany. As for the share of defense expenditure in GDP, that of China was merely 1.38 percent, while that of the United States was 4.5 percent, that of the United Kingdom 2.7 percent, and that of France 1.92 percent.

The Chinese government has established defense expenditure reporting and publishing mechanisms. Since 1978 the Chinese government has submitted a financial budget report to the NPC and published the total amount of the defense budget each year. The relevant data of China's defense expenditure has been made public in the China Economy Yearbook since 1981, and in the China Finance Yearbook since 1992. And since 1995 the composition and main purposes of China's defense expenditure have been published in the form of government white papers.

## **2010 Defense White Paper**

Recent Chinese official statements and defense white papers do help provide insights into Chinese spending. China's 2010 Defense White Paper provides both a rationale for the current trends in Chinese military spending and some possible insights into its future military expenditures.<sup>101</sup>

China adheres to the principle of coordinated development of national defense and economy. In line with the demands of national defense and economic development, China decides on the size of defense expenditure in an appropriate way, and manages and uses its defense funds in accordance with the law.

With the development of national economy and society, the increase of China's defense expenditure has been kept at a reasonable and appropriate level. China's GDP was RMB 31,404.5 billion in 2008 and RMB 34,090.3 billion in 2009. State financial expenditure was RMB 6,259.266 billion in 2008 and RMB 7,629.993 billion in 2009, up 25.7 percent and 21.9 percent respectively over the previous year. China's defense expenditure was RMB 417.876 billion in 2008 and RMB 495.11 billion in 2009, up 17.5 percent and 18.5 percent respectively over the previous year. In recent years, the share of China's annual defense

expenditure in its GDP has remained relatively steady, while that in overall state financial expenditure has been moderately decreased.

China's defense expenditure mainly comprises expenses for personnel, training and maintenance, and equipment, with each accounting for roughly one third of the total. Personnel expenses mainly cover salaries, allowances, housing, insurance, food, bedding and clothing for officers, non-ranking officers, enlisted men and contracted civilians. Training and maintenance expenses mainly cover troop training, institutional education, construction and maintenance of installations and facilities, and other expenses on routine consumables. Equipment expenses mainly cover R&D, experimentation, procurement, maintenance, transportation and storage of weaponry and equipment. Defense expenditure covers costs to support the active forces, reserve forces, and militia. It also covers part of the costs to support retired servicemen, servicemen's spouses, and education of servicemen's children, as well as national and local economic development and other social expenses.

In the past two years, the increase in China's defense expenditure has primarily been used for the following purposes: (1) Improving support conditions for the troops: Along with the economic and social development and the improvement of people's living standards, the PLA has adjusted servicemen's salaries and allowances, increased funding for education and training, water and electricity supplies and heating, upgraded logistics support for grass-roots units in a comprehensive and coordinated way, and improved the on-duty, training and living conditions of border and coastal defense forces and units in remote areas and harsh environments. (2) Accomplishing diversified military tasks: China has increased investment in improving MOOTW capabilities, in supporting earthquake rescue and disaster relief operations, in escort operations in the Gulf of Aden and waters off Somalia, in flood control and emergency rescue operations, and in international rescue operations. (3) Pushing forward the Revolution in Military Affairs (RMA) with Chinese characteristics. In view of the upward trend in purchasing prices and maintenance costs, China has moderately increased the funds for high-tech weaponry and equipment and their supporting facilities.

In 2010, confronted by the residual impact of the global financial crisis and other uncertainties, the tension between revenue and expenditure in China's finances persists. Giving priority to socially beneficial spending in agriculture, rural areas and farmers, as well as in education, science and technology, health, medical care and social security, China has increased its defense expenditure moderately as needed. China's defense budget for 2010 is RMB532.115 billion, up 7.5 percent over 2009. The growth rate of defense expenditure has decreased.

China practices a strict system of financial supervision of defense funds. The annual defense budget is incorporated into the annual financial budget draft of the central government, and then submitted to the NPC for review and approval. The auditing offices of the state and the PLA conduct audit and supervision of the defense budget and its enforcement. In recent years, the Chinese government has strengthened systematic and meticulous management of defense expenditure, reformed and innovated financial management systems, pressed forward with reforms in asset management, reinforced budget implementation, supervision and management, and organized auditing of economic responsibilities of military leaders and special auditing of the use of funds and materials. In this way, transparency and standardization of defense expenditure are enhanced, and the proper and effective use of defense funds is ensured.

The 2010 White Paper stated that the defense budget was split approximately equally between personnel, training and maintenance, and equipment expenditures. It also provides the chart shown in **Figure 4.1**, which supports these government statements by providing a breakdown of the PRC's 2009 military budget: spending for personnel, training and maintenance, and equipment is almost equal, with equipment expenses slightly higher. A more detailed Chinese breakdown of spending allocations was not made available.

**Figure 4.2: Official PRC Defense Budget Allocation for 2009 (in RMB billion)**

	Active Force	Reserve Force	Militia	Total	
				Amount	Percentage
<b>Personnel</b>	167.063	1.465	0	168.528	34.04
<b>Training &amp; Maintenance</b>	152.171	1.965	12.859	166.995	33.73
<b>Equipment</b>	157.426	1.431	0.73	159.587	32.23
<b>Total</b>	476.66	4.861	13.589	495.11	100.00

Source: *China's National Defense in 2010*, March 30, 2011, chapter 8, [http://english.gov.cn/official/2011-03/31/content\\_1835499\\_10.htm](http://english.gov.cn/official/2011-03/31/content_1835499_10.htm).

### 2013 Defense White Paper

China's 2013 Defense White Paper did not discuss military spending in detail. However, the Chinese Ministry of Finance did announce in 2013 that there had been a 11.2% increase in the 2012 military budget that had been "used to improve living and training conditions for our troops, support the military in promoting IT application, strengthen development of new- and high-technology weapons and equipment, and enhance the country's modern military capabilities."<sup>102</sup>

According to the Twelfth National People's Congress, the 2013 budget was to "be used to support efforts to improve the working and living conditions of officers and enlisted personnel, make the armed forces more mechanized and information-based, and safeguard national security."<sup>103</sup> In early March 2013, China released its 2013 national budget, forecasting a military expenditure of 720.2 billion Yuan (\$114.3 billion), a 10.7% increase. Official military spending in 2012 was approximately \$106 billion, an 11.2% rise over 2011.

### 2015 Defense White Paper and Official Statements

Like the 2013 White Paper, the 2015 white paper only provide limited detail on Chinese military expenditures. It provided a brief strategic overview of its security situation, "active defense" concept, and guidelines for its military forces<sup>104</sup>.

Months before China published its latest defense white paper, a spokeswoman for China's National People's Congress announced that the defense appropriation for 2015 increase 10.1% from the previous year, roughly placing spending at \$141.5 billion and making China the second largest military spender in the world.<sup>105</sup>

Shortly after this announcement, the Premier of the State Council Li Keqiang delivered the "Report on the Work of the Government" at the Third Session of the 12<sup>th</sup> National People's Congress on March 5, 2015. Among a cautious tone that targeted sustained economic growth rate of 7%, he briefly mentioned the national defense priorities from the National Committee of the Chinese People's Political Consultative Conference:<sup>106</sup>

Building a solid national and strong armed forces is fundamental to safeguarding China's sovereignty, security, and developmental interests. We must keep to the Party's goal of strengthening the armed forces under the new conditions, uphold the fundamental principle of the Party's absolute leadership over the armed forces, strengthen our efforts in all areas in a coordinated way to maintain military preparedness, and ensure border, coastal, and air defense security and stability. We will comprehensively strengthen modern logistics, step up national defense research and development of new- and high-technology weapons and equipment, and develop defense-related science and technology industries.

We will deepen the reform of national defense and the armed forces, and increase the level of rule of law in their development. We will strengthen efforts to modernize the armed police forces. We will raise public awareness of the importance of national defense, and improve mobilization for national defense and the building of reserve forces. We will coordinate national defense development and economic development and deepen the integration of the military and civil sectors. Governments at all levels must always take an active interest in and support the strengthening of our national defense and armed forces, and remain committed to consolidating and increasing the unity between the government and the armed forces and between the people and the armed forces.<sup>107</sup>

The 2015 Defense White Paper did, however, provide an official explanation of the strategic guidelines of the Chinese military branches and critical security domains:<sup>108</sup>

In the implementation of the military strategic guideline in the new situation, China's armed forces must closely center around the CPC's goal of building a strong military, respond to the state's core security needs, aim at building an informationized military and winning informationized wars, deepen the reform of national defense and the armed forces in an all-round way, build a modern system of military forces with Chinese characteristics, and constantly enhance their capabilities for addressing various security threats and accomplishing diversified military tasks.

*Development of the Services and Arms of the People's Liberation Army (PLA) and the People's Armed Police Force (PAPF)*

In line with the strategic requirement of mobile operations and multi-dimensional offense and defense, the PLA Army (PLAA) will continue to reorient from theater defense to trans-theater mobility. In the process of building small, multi-functional and modular units, the PLAA will adapt itself to tasks in different regions, develop the capacity of its combat forces for different purposes, and construct a combat force structure for joint operations. The PLAA will elevate its capabilities for precise, multi-dimensional, trans-theater, multi-functional and sustainable operations.

In line with the strategic requirement of offshore waters defense and open seas protection, the PLA Navy (PLAN) will gradually shift its focus from "offshore waters defense" to the combination of "offshore waters defense" with "open seas protection," and build a combined, multi-functional and efficient marine combat force structure. The PLAN will enhance its capabilities for strategic deterrence and counterattack, maritime maneuvers, joint operations at sea, comprehensive defense and comprehensive support.

In line with the strategic requirement of building air-space capabilities and conducting offensive and defensive operations, the PLA Air Force (PLAAF) will endeavor to shift its focus from territorial air defense to both defense and offense, and build an air-space defense force structure that can meet the requirements of informationized operations. The PLAAF will boost its capabilities for strategic early warning, air strike, air and missile defense, information countermeasures, airborne operations, strategic projection and comprehensive support.

In line with the strategic requirement of being lean and effective and possessing both nuclear and conventional missiles, the PLA Second Artillery Force (PLASAF) will strive to transform itself in the direction of informationization, press forward with independent innovations in weaponry and equipment by reliance on science and technology, enhance the safety, reliability and effectiveness of missile systems, and improve the force structure featuring a combination of both nuclear and conventional capabilities. The PLASAF will strengthen its capabilities for strategic deterrence and nuclear counterattack, and medium- and long-range precision strikes.

In line with the strategic requirement of performing multiple functions and effectively maintaining social stability, the PAPF will continue to develop its forces for guard and security, contingency response, stability

maintenance, counter-terrorism operations, emergency rescue and disaster relief, emergency support and air support, and work to improve a force structure which highlights guard duty, contingency response, counter-terrorism and stability maintenance. The PAPF will enhance its capabilities for performing diversified tasks centering on guard duty and contingency response in informationized conditions.

#### *Force Development in Critical Security Domains*

The seas and oceans bear on the enduring peace, lasting stability and sustainable development of China. The traditional mentality that land outweighs sea must be abandoned, and great importance has to be attached to managing the seas and oceans and protecting maritime rights and interests. It is necessary for China to develop a modern maritime military force structure commensurate with its national security and development interests, safeguard its national sovereignty and maritime rights and interests, protect the security of strategic SLOCs and overseas interests, and participate in international maritime cooperation, so as to provide strategic support for building itself into a maritime power.

Outer space has become a commanding height in international strategic competition. Countries concerned are developing their space forces and instruments, and the first signs of weaponization of outer space have appeared. China has all along advocated the peaceful use of outer space, opposed the weaponization of and arms race in outer space, and taken an active part in international space cooperation. China will keep abreast of the dynamics of outer space, deal with security threats and challenges in that domain, and secure its space assets to serve its national economic and social development, and maintain outer space security.

Cyberspace has become a new pillar of economic and social development, and a new domain of national security. As international strategic competition in cyberspace has been turning increasingly fiercer, quite a few countries are developing their cyber military forces. Being one of the major victims of hacker attacks, China is confronted with grave security threats to its cyber infrastructure. As cyberspace weighs more in military security, China will expedite the development of a cyber force, and enhance its capabilities of cyberspace situation awareness, cyber defense, support for the country's endeavors in cyberspace and participation in international cyber cooperation, so as to stem major cyber crises, ensure national network and information security, and maintain national security and social stability.

The nuclear force is a strategic cornerstone for safeguarding national sovereignty and security. China has always pursued the policy of no first use of nuclear weapons and adhered to a self-defensive nuclear strategy that is defensive in nature. China will unconditionally not use or threaten to use nuclear weapons against non-nuclear-weapon states or in nuclear-weapon-free zones, and will never enter into a nuclear arms race with any other country. China has always kept its nuclear capabilities at the minimum level required for maintaining its national security. China will optimize its nuclear force structure, improve strategic early warning, command and control, missile penetration, rapid reaction, and survivability and protection, and deter other countries from using or threatening to use nuclear weapons against China.

#### *Military Force Building Measures*

Strengthening ideological and political work. China's armed forces always treat ideological and political building as the first priority, and have endeavored to reinforce and improve their political work in the new situation. They will continue to practice and carry forward the Core Socialist Values, cultivate the Core Values of Contemporary Revolutionary Service Personnel, and carry forward their glorious traditions and fine styles. Moreover, the armed forces will uphold a series of fundamental principles for and institutions of the CPC's absolute leadership over the military, enhance the creativity, cohesion and combat effectiveness of their CPC organizations at all levels, make great efforts to cultivate a new generation of revolutionary service personnel of noble soul, competence, courage, uprightness and virtue, and ensure that the armed forces will resolutely follow the commands of the CPC Central Committee and the CMC at all times and under all conditions, and consistently retain the nature and purpose of the people's armed forces.

Pushing ahead with logistics modernization. China's armed forces will deepen logistics reform in relevant policies, institutions and support forces, and optimize strategic logistics deployment. They will innovate the modes of support, develop new support means, augment war reserves, integrate logistics information systems, improve rules and standards, and meticulously organize supply and support, so as to build a logistics system that can provide support for fighting and winning modern wars, serve the modernization of the armed forces, and transform towards informationization.



Developing advanced weaponry and equipment. Persevering in information dominance, systems building, independent innovation, sustainable development, overall planning, and emphasis on priorities, China's armed forces will speed up to upgrade weaponry and equipment, and work to develop a weaponry and equipment system which can effectively respond to informationized warfare and help fulfill the missions and tasks.

Cultivating new-type military personnel. China's armed forces will continue with the strategic project for personnel training and perfect the system for military human resources. They will deepen the reform of military educational institutions and improve the triad training system for new-type military personnel - institutional education, unit training and military professional education, so as to pool more talented people and cultivate more personnel who can meet the demands of informationized warfare.

Intensifying efforts in running the armed forces with strict discipline and in accordance with the law. Aiming at strengthening the revolutionization, modernization and regularization of the armed forces in all respects, China will innovate and develop theories and practice in relation to running the armed forces in accordance with the law, establish a well-knit military law system with Chinese characteristics, so as to elevate the level of rule by law of national defense and armed forces building.

Innovating military theories. Under the guidance of the CPC's innovative theories, China's armed forces will intensify their studies of military operations, probe into the mechanisms of winning modern wars, innovate strategies and tactics featuring mobility and flexibility, and develop theories on military building in the new situation, so as to bring into place a system of advanced military theories commensurate with the requirement of winning future wars.

Improving strategic management. It is necessary to optimize the functions and institutions of the CMC and the general headquarters/departments, improve the leadership and management system of the services and arms, and adhere to demand-based planning and plan-based resource allocation. China's armed forces will set up a system and a working mechanism for overall and coordinated programming and planning. They will also intensify overall supervision and management of strategic resources, strengthen the in-process supervision and risk control of major projects, improve mechanisms for strategic assessment, and set up and improve relevant assessment systems and complementary standards and codes.

#### *In-depth Development of Civil-Military Integration (CMI)*

Following the guiding principle of integrating military with civilian purposes and combining military efforts with civilian support, China will forge further ahead with CMI by constantly bettering the mechanisms, diversifying the forms, expanding the scope and elevating the level of the integration, so as to endeavor to bring into place an all-element, multi-domain and cost-efficient pattern of CMI.

Accelerating CMI in key sectors. With stronger policy support, China will work to establish uniform military and civilian standards for infrastructure, key technological areas and major industries, explore the ways and means for training military personnel in civilian educational institutions, developing weaponry and equipment by national defense industries, and outsourcing logistics support to civilian support systems. China encourages joint building and utilization of military and civilian infrastructure, joint exploration of the sea, outer space and air, and shared use of such resources as surveying and mapping, navigation, meteorology and frequency spectra. Accordingly, military and civilian resources can be more compatible, complementary and mutually accessible.

Building a mechanism for operating CMI. At the state level, it is necessary to establish a mechanism for CMI development, featuring unified leadership, military-civilian coordination, abutment of military and civilian needs, and resource sharing. Furthermore, it is necessary to improve the management responsibilities of relevant military and civilian institutions, improve the general standards for both the military and the civilian sectors, make studies on the establishment of a policy system in which the government makes the investment, offers tax incentives and financial support, and expedites legislation promoting military-civilian coordinated development, so as to form a pattern featuring overall military-civilian planning and coordinated development. It is also necessary to push forward with the shared utilization of military capabilities and those of other sectors, and establish a mechanism for joint civil-military response to major crises and emergencies.

Improving the systems and mechanisms of national defense mobilization. China will enhance education in national defense and boost the awareness of the general public in relation to national defense. It will continue

to strengthen the building of the reserve force, optimize its structure, and increase its proportion in the PLAN, PLAAF and PLASAF as well as in combat support forces. The ways to organize and employ reserve forces will be more diversified. China will devote more efforts to science and technology in national defense mobilization, be more readily prepared for the requisition of information resources, and build specialized support forces. China aims to build a national defense mobilization system that can meet the requirements of winning informationized wars and responding to both emergencies and wars.

China's reported growth in military spending of 10.7% has roughly matched China's past GDP growth rate. Outside observers estimate that similar increase in China's military spending may be affordable even if China's GDP growth rate drops. In 2015, for example, the US Department of Defense assessed that, "China will probably sustain defense spending growth at comparable levels for the foreseeable future".<sup>109</sup>

At the same time, Chinese estimates of the growth of its military budget indicate this growth has been smaller than the increases in total national financial expenditures – with both roughly correlating to China's yearly GDP growth. China's official estimate of the military budget's share of total state expenditures decreased from 9.5% in 1994 to approximately 5% in 2015.<sup>110</sup> SIPRI notes that the share of China's military spending in relation to its GDP has fallen from 2.5% in 1992 to 1.9% in 2015.<sup>111</sup> These data provide some support to official Chinese statements that China's principal objective is economic development – and thus that defense.<sup>112</sup>

### **2016 Estimates**

In March 2016 the Chinese government announced that the defense budget would be 147 billion USD, marking a 7.6% increase from 2015.<sup>113</sup> This was a relatively small percentage increase compared to the last decade. In 2015 the increase had been 10.1%.<sup>114</sup> Once again, such statements were far from definitive and often differed substantially from the estimates given by the U.S. government, IISS, and SIPRI, or were seen as more political than real.

### ***Limited Transparency and Problems in Estimating Chinese Military Expenditures***

Most China experts, foreign governments, and military expenditure publications question China's official reporting. These concerns and subsequent differing conclusions regarding budgetary estimates illustrate the lack of expert consensus regarding the real level of Chinese defense spending. Indeed, experts put forth an array of complicating factors to suggest Chinese official reporting is not reliable.

Most experts concur that Chinese government statistics do not include some outlays that are standard reporting for most other countries. The 2006 Department of Defense report on China states the following aspects of China's military spending are not accurately disclosed by Chinese officials:<sup>115</sup>

- Arms imports, foreign weapon procurement, military aid for and from foreign countries;
- Expenses for paramilitary forces;
- Expenses for strategic and nuclear forces;
- Government subsidies for military production;
- Expenses for military R&D; and

- The PLA's own fundraising.

China experts Adam P. Liff and Andrew S. Erickson have also examined the issues involved, and their list of the items excluded from the official Chinese defense budget is a notably one:<sup>116</sup>

- The budget of the 660,000-strong People's Armed Police (PAP);
- Some domestic procurement and research and development expenses;
- Overseas purchases of major weapons and platforms;
- Contributions from regional and local governments;
- Extra-budgetary revenues and resources from a limited number of military commercial enterprises (such as hospitals, and strategic infrastructure);
- Militarily- relevant portions of China's space programme;
- Central and local government defence mobilization funds;
- One-time entrance bonuses for college students;
- Authorized sales of land or excess food produced by some units;
- Personnel for motion pictures; and
- Donations of goods, services and money by local governments and enterprises to units and demobilized personnel.

The Stockholm International Peace Research Institute (SIPRI)—considered an expert source for their vast database on military expenditure—likewise note prominent Chinese budgetary exclusions:<sup>117</sup>

The items outside the official defence budget that are included in the estimates are:

- (a) spending on the paramilitary People's Armed Police (PAP);
- (b) soldiers' demobilization and retirement payments from the Ministry of Civil Affairs;
- (c) subsidies to the arms industry;
- (d) additional military research, development, testing and evaluation (RDT&E) funding outside the national defence budget;
- (e) additional military construction expenses;
- (f) Chinese arms imports; and
- (g) residual military-owned enterprises.

Of the experts, entities, and organizations that attempt to calculate Chinese there are noticeable differences in methods and final projections. However, there is a consensus that officially released Chinese budget numbers underreport the level of defense expenditure.

Some outside experts believe that China's officially stated appropriations are not enough to support an organization that maintains 2.3 million service personnel and an increasingly sophisticated and therefore expensive arsenal of weapons systems. The US government has at least implied that China is hiding information about military spending that should be made public. Others point out that pay increases and expenditures for social services among the armed forces have increased substantially in recent years. As previously noted, large pay raises have been authorized in 2006, 2008, and 2011. However, it is not clear whether pay increases have, in relative terms, outspent overall military expenditure growth.

One clear area of omission includes specific weapons and equipment procurement costs from domestic defense industries and defense-related R&D funds given to civilian defense contractors and PLA armament research institutions. These data are not publically released. Funding probably comes from several different parts of the government, such as the State Administration for Science, Technology, and Industry.

To this end, the 2016 Department of Defense report on China notes:<sup>118</sup>

However, it is difficult to estimate actual military expenses due to China's poor accounting transparency and incomplete transition to a market economy. China's published military budget omits several major categories of expenditure, such as R&D and the procurement of foreign weapons and equipment.

Although most PLA procurement is domestic, a significant percentage is imported, particularly advanced weapons technology and some weapons platforms. The PRC both imports completed weapons systems and promotes foreign-assisted development, licensed production, and reverse engineering. It is believed that these exports are paid for from special accounts controlled by the State Council and thus are not part of the official defense budget. It is likely that China will continue to rely on such imports for at least several more years.<sup>119</sup>

China's defense budget does not include provincial defense-related spending like military base operating costs. It is believed that this money comes from local governments and the Ministry of Civil Affairs. The former also contributes to militia and reserve expenses, including civilians working for some PLA departments. However, a 2010 government statistic showed that only 2.94% of defense expenditures were paid for by local governments, meaning that the exclusion of this spending from the official budget does not significantly affect the real spending numbers.<sup>120</sup>

The PAPF is sometimes cited as another major exclusion from the official Chinese military budget. However, this force's primary focus is paramilitary and domestic – with responsibilities like firefighting, border security, and natural disaster relief. In the event of a war, the PAPF would support the PLA in local defense, but neither supports the other in domestic operations during peacetime. The PAPF's budget is categorized under public security expenditures, not national defense expenditures (where the PLA's budget is located).<sup>121</sup>

As Adam P. Liff and Andrew S. Erickson note, these issues make estimating China's defense spending exceptionally difficult:<sup>122</sup>

China's general lack of transparency about how its official defence budget is calculated makes judging the validity of these Western criticisms very difficult. However, the potential significance of the above exclusions for assessing the size of China's actual defence budget is suggested in three important studies conducted by the International Institute for Strategic Studies (IISS).

In 2006, IISS estimated that including the costs of foreign weapons purchases, subsidies, R&D spending, new product expenditures, arms exports and PAP funding revealed a 72 per cent gap (in RMB terms) between China's FY2005 official defence budget and "actual" (i.e. IISS-estimated) defence spending.

In 2010, IISS estimated a roughly 39 per cent difference between the FY2008 official defence budget and "actual" (i.e. IISS-estimated) defence spending. In 2012, the estimated gap for the FY2010 budget was 41 per cent. It should be noted that, although large, the disparity between the official budget and IISS's estimates declined significantly over the initial three-year period before stabilizing. As argued in the next section, this shrinking gap, which is consistent with similar trends in estimates by the US Department of Defense, suggests that in recent years an increasing percentage of "actual" PLA funding has been placed "on the books"; that is, officially reported figures increasingly reflect actual spending.

.... Although the exclusion of major items from China's official defence budget is undoubtedly an issue of concern, less widely known is that the budget also includes some items that are not included in those of its

Western counterparts. For example, the PLA still engages in some infrastructure construction projects, although many are designed to be dual-use and paid for from local and national non-defence funds.

It provides some medical help to civilians in remote areas and provides some support to domestic security operations (e.g. during the 2008 Olympics). The PLA also engages in disaster relief, such as the dispatch of over 200,000 personnel in response to the 2008 Wenchuan earthquake – the largest deployment of Chinese armed forces since the 1979 war with Vietnam.

There are legal provisions for it to be reimbursed for these operations, but the processes, delays and extent of such reimbursements remain unclear. In Western countries, such tasks are assigned primarily to non-military organizations. The PLA also provides perquisites for retired senior officers (offices, assistants, cars, drivers, cooks, caregivers, and special hospital facilities) that their better-salaried Western counterparts do not receive.

The problem is compounded in some cases by the methods used by outside experts. Some estimates by non-Chinese analysts that indicate military expenses are several times larger than PRC figures rely on PPP models. This reliance poses several problems:

- The assumed relative buying power of Chinese government funds in PPP terms refers to buying Chinese-made goods
- The market for military equipment and services in China is highly non-transparent, and transferring average PPP assumptions to the state-run military-industrial complex almost certainly will result in skewed results, even more so as China is importing military goods manufactured abroad
- Purchasing power theory loses its descriptive value when applied to goods, which are not homogenous; weapon systems and other military purchases are artificially protected by government regulation
- The return on investment in buying Chinese-made goods is unclear, and it is not unlikely that an indigenous product that meets state-of-the-art quality may actually cost more money than arrived at by PPP conversion

Other reasons include: (1) the difficulty of defining “defense spending”; (2) conversion of China’s RMB-denominated budget into US dollars, especially because of problems with the official exchange rates, application of PPP rates, and inflation and strengthening of the RMB since 2005 – meaning that conversions based on current exchange rates make recent budget increases look larger than they really are; and (3) the lack of transparency regarding the actual costs of individual items and which specific spending categories are already included in the official budget further complicates estimates of actual PLA military expenditures, and (4) a failure to take into account the fact that military pay can differ sharply from country to country, and that conscript forces are far cheaper than an all-volunteer forces.<sup>123</sup>

Liff and Erickson note that some of these issues can have a serious impact on the quality of outside estimates:<sup>124</sup>

...[I]n 2009, the US Department of Defense estimated China’s “actual” FY2008 defence budget at US\$105–150 billion: 1.8–2.6 times the official figure of US\$57.2 billion (RMB417.8 billion) and 2.5–3.6 per cent of GDP. Meanwhile, the Stockholm International Peace Research Institute (SIPRI)’s estimate that year was much lower: US\$84.9 billion – 1.48 times the officially released figure. The difference between SIPRI’s estimate and the upper bound of the Department of Defense’s estimate was US\$65.1 billion, a difference larger than China’s entire official defence budget that year.

While significant defence-related spending is undoubtedly excluded from China’s official defence budget, some of the items included in foreign estimates of the “actual” figure are controversial. For example, some Western institutions include expenditures for the (domestically focused) PAP in their calculations, labeling it one of the largest extra-budgetary sources of defence spending. But they do so without offering explicit justification. This single line-item can inflate estimates of the budget by as much as one-fifth above the official figure. Take the 2010 figures as an example: adding only official PAP expenditures (RMB93.4

billion) to the official budget (RMB533.4 billion) results in an estimate of “actual” Chinese defence spending 18 per cent higher.

Finally, there are no standard rules for measuring security or “military” expenditures. Many other nations, including the US, have defense-related spending that is outside of their official defense budgets:<sup>125</sup>

For example, the US 051 (Department of Defense) budget excludes a significant amount of defence-related spending. In fact, one analysis of US “total defence-related spending” based on similar metrics to those regularly used by Western organizations to estimate China’s “actual” defence budget found a US\$187 billion gap between the United States’ official FY2006 defence budget and what this group of American PLA experts calculated as “actual” US defence-related spending that year.

The parallels they draw are intriguing: China is criticized for excluding some funding for officer pensions from its official defence budget, yet the Department of Veterans Affairs’ entire budget, retirement costs paid by the Department of Treasury, and veterans’ re-employment and training programs paid by the Department of Labor are not included in Department of Defense’s budget. China is criticized for excluding funding for its nuclear and strategic rocket programs from its official defence budget, yet atomic energy activities related to defence are funded by the Department of Energy and fall outside the Department of Defense’s budget. Finally, China is criticized for excluding the PAP’s budget and various defence activities that are paid for by local governments from its official defence budget, yet neither the Department of Homeland Security budget nor state funding for some US National Guard functions is included in the Department of Defense’s budget... [I]t is important to also stress that while “actual” US defence spending is larger than the official figure, most other relevant spending is relatively transparent, and can be assembled by a knowledgeable analyst. This is significantly less true of China’s defence spending.

This report relies heavily on estimates from incredibly capable sources such as the DoD, SIPRI, and IISS. However, it should not be forgotten that these estimates are, in fact, estimates. These organizations do substantial work in attempting to lift back the cover but it is impossible to know how successful they are in mitigating the opacity. Thus, it is fruitless to focus on specific data points. Instead, the defense expenditure estimates that make up this report prove most instructive in illuminating and depicting trend lines.

### ***US Analyses of Chinese Defense Budgets***

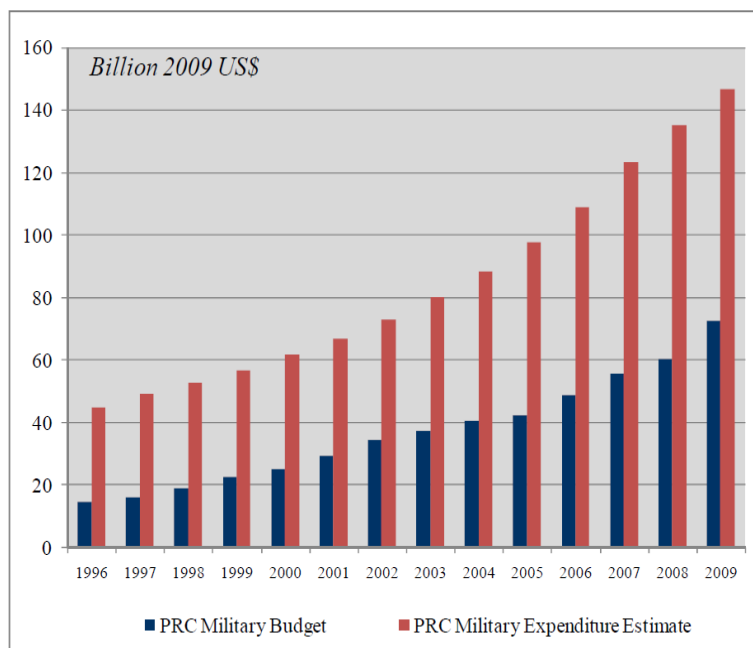
The 2016 DoD report on China “estimates that China’s total military-related spending for 2015 exceeded \$180 billion U.S. dollars (USD).”<sup>126</sup> As always, the U.S. estimate was much higher than the Chinese government report that China’s military budget increased to \$141.5 billion in 2015.<sup>127</sup> China argues that its defense budget expands in parallel with its economic growth and is not directed at any other country. One Chinese Vice-Foreign Minister remarked, “Strengthening China’s defense capability will be conducive to further stability in the region and will be conducive to world peace.”<sup>128</sup>

The DoD estimated China’s actual military spending at \$120-180 billion in 2011, compared to the official figure of \$91.5 billion.<sup>129</sup> While in 2012 the DoD estimated that the PLA budget was in between \$135-215 billion compared to the report \$114 billion. DoD reports have not reported a budget estimate in range form since the 2013 report. Considering there is no information regarding DoD estimation methodology this could indicate some sort of change in methodology.

Recently unclassified DoD and US Intelligence reports have provided some assessments of the PLA budget and expenditures. **Figure 4.3 Part 1** is taken from the now-dated 2010 DoD report on China, shows a comparison of official Chinese defense budgets and US estimates of the actual size of the Chinese budget over 1996-2009.

**Figure 4.3 Part 2** aggregates the annual Department of Defense estimates regarding actual PLA budget and expenditure. These US estimates try to take into account all military-related expenses rather than taking PLA reporting at face value. Still, the DoD estimates should also be treated with caution as a detailed explanation of the methodology used to make these estimates is not available. However, they illustrate trends that may characterize the current PLA budget and expenditures. Having come from the DoD the estimates may also take into account classified intelligence and information that organizations like IISS, SIPRI, and IHS Jane's do not have access to.

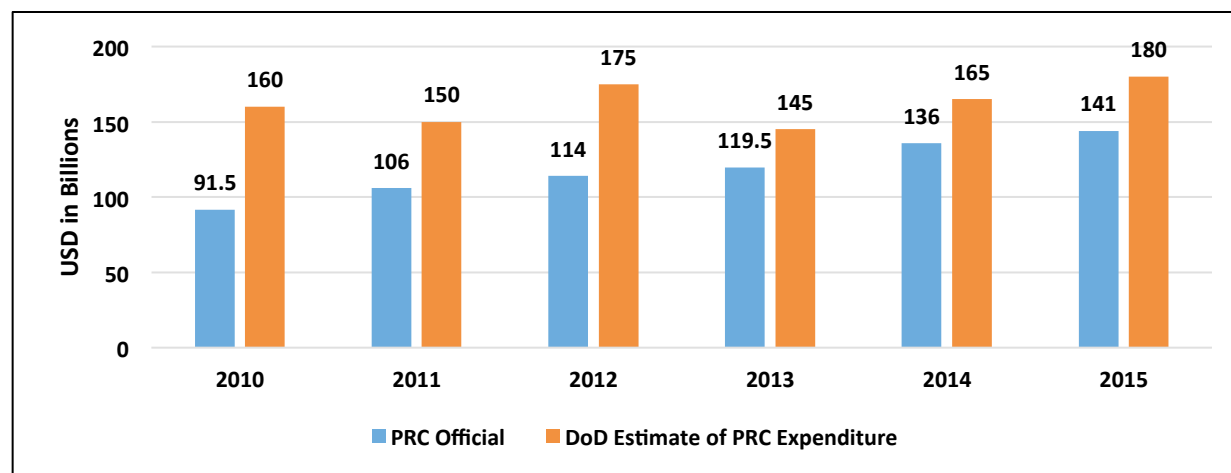
**Figure 4.3: Historical PRC Defense Budget Compared to US Estimates of Total Defense Spending- Part 1**



*China's Annual Real GDP and Military Budget Growth, 2000 - 2009.*

Source: DoD, *Military and Security Developments Involving the People's Republic of China 2010*, 42, [http://www.defense.gov/pubs/pdfs/2010\\_CMPR\\_Final.pdf](http://www.defense.gov/pubs/pdfs/2010_CMPR_Final.pdf).

**Figure 4.3: Historical PRC Defense Budget Compared to US Estimates of Total Defense Spending-Part 2**



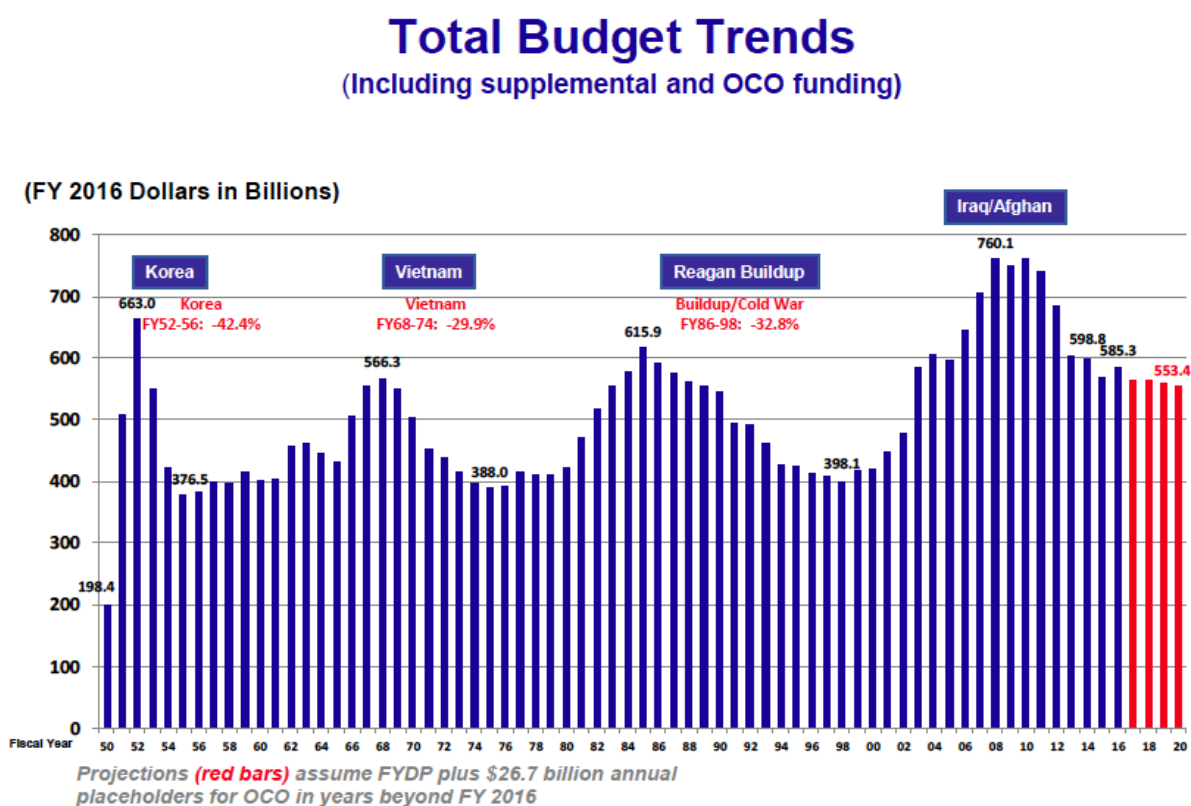
Source: DoD, *Military and Security Developments Involving the People's Republic of China 2011-2016*. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, August 2016.

Note: In the case of the 2011 and 2012 DoD reports the estimate of PRC spending was presented as a range. For statistical clarity, the ranges have been averaged and the average incorporated into the graph. Additionally, the numbers are taken from the yearly DoD reports and thus not adjusted for inflation as they are in **Figure 4.3 Part 1**.

The different US Department of Defense estimates do seem to be based partly on comparable cost – the value of Chinese military efforts in prices comparable to those in the U.S. At the same time, free market attempts to guess at the market cost of such military efforts are notoriously inaccurate and uncertain. For example, the US intelligence community found after the Cold War that its attempts to determine the economic burden of Soviet defense expenditure and the equivalent cost of Soviet forces in US terms were sometimes little more than econometric nonsense.

At the same time, both the Chinese and U.S. estimates of Chinese spending fell far below the figures for U.S. military spending. **Figure 4.4** shows the trends in U.S. defense spending from 1950-2020. The figures for U.S. spending during 2010-2014 are four to seven times larger than those of China. It would take years at a 7-10% growth for Chinese spending to rival that of the U.S. However, at a time when U.S. defense spending is restricted due to budget caps installed by the Budget Control Act of 2011, there is understandable consternation in Washington regarding China's continued defense budget growth.

**Figure 4.4: Historical US Defense Expenditures**



Source: DoD, *Fiscal Year 2016 Budget Request*, Office of the Undersecretary of Defense (Comptroller) /Chief Financial Officer, February 2015, 25,



[http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/FY2016\\_Budget\\_Request\\_Overview\\_Book.pdf](http://comptroller.defense.gov/Portals/45/Documents/defbudget/fy2016/FY2016_Budget_Request_Overview_Book.pdf)

Even more than for the U.S., Chinese military growth is undoubtedly concerning for its neighbors in Asia. **Figure 4.5** is taken from the 2016 DoD report and compares China's official 2015 defense budget to other regional powers. If such estimates are correct, Chinese defense spending has far surpassed those of its neighbors.

**Figure 4.5: DoD Comparison of Chinese and Other Regional Defense Budgets**

2015 Defense Budget Comparison (Adjusted for Inflation)	
	Billion (USD)
China (Official Budget)	\$144
Russia (National Defense Budget)	\$54.4
Japan	\$40.8
India	\$39.0
Republic of Korea	\$33.43
Taiwan	\$9.9

Source: Department of Defense, *Military and Security Developments Involving the People's Republic of China 2016*, April 2016.

While neither China nor the U.S. forecast future Chinese military spending, or provide a clear basis for doing so, the DoD did include an *IHS Jane's* projection in the 2016 China report.<sup>130</sup>

*IHS Jane's* Defense Budgets expects China's defense budget to increase by an annual average of 7 percent, growing to \$260 billion by 2020. As of March 2015, the DoD Comptroller forecasted the US defense budget will reach \$598 billion in current dollars over the same period.

Still, China has not disclosed any specifics in its more recent defense budgets nor reported any expenditures publicly, making it difficult to assess any spending trends. The *IHS Jane's* estimate is based on a reasonable educated guess of continued 7% growth in China's defense expenditures, but this is not a projection based on hard knowledge or intelligence.

The Department of Defense annual report – *Military and Security Developments Involving the People's Republic of China 2016* – did not mention China's 2016 defense appropriation, even though it was announced a month prior to the publication of the U.S. report. The 2016 DoD report did, however, provide the following overview of China's resources for force modernization and defense spending:<sup>131</sup>

China has the fiscal strength and political will to sustain increased defense spending, supporting the continued modernization of the PLA into a more professional and capable force. The PLA continues to decrease its reliance on foreign weapon acquisitions as China's defense-industrial and research bases mature. However, the PLA still looks to foreign assistance to fill some critical, near-term capability gaps. China continues to leverage foreign investments, commercial joint ventures, academic exchanges, the experience of Chinese students and researchers, and state-sponsored industrial and technical espionage to increase the level of technologies and expertise available to support military research, development, and acquisition. China's long-term goal is to create a wholly indigenous defense-industrial sector, augmented by a strong commercial

sector, to meet the needs of PLA modernization and to compete as a top-tier supplier in the global arms market. China draws from diverse sources to support PLA modernization, including domestic defense investments, indigenous defense industrial development, a growing research and development (R&D) / science and technology (S&T) base, dual-use technologies, and foreign technology acquisition.

Overall, most official U.S. assessments focus squarely on the massive growth in the Chinese defense spending in the past few decades. The 2009 DoD report on China notes:<sup>132</sup>

China's military budget doubled between 1989 and 1994, and almost doubled again between 1994 and 1999. The 2005 military budget was almost ten times the 1989 military budget. If these trends continue, China's military budget for 2009 will nearly double the 2005 figure.

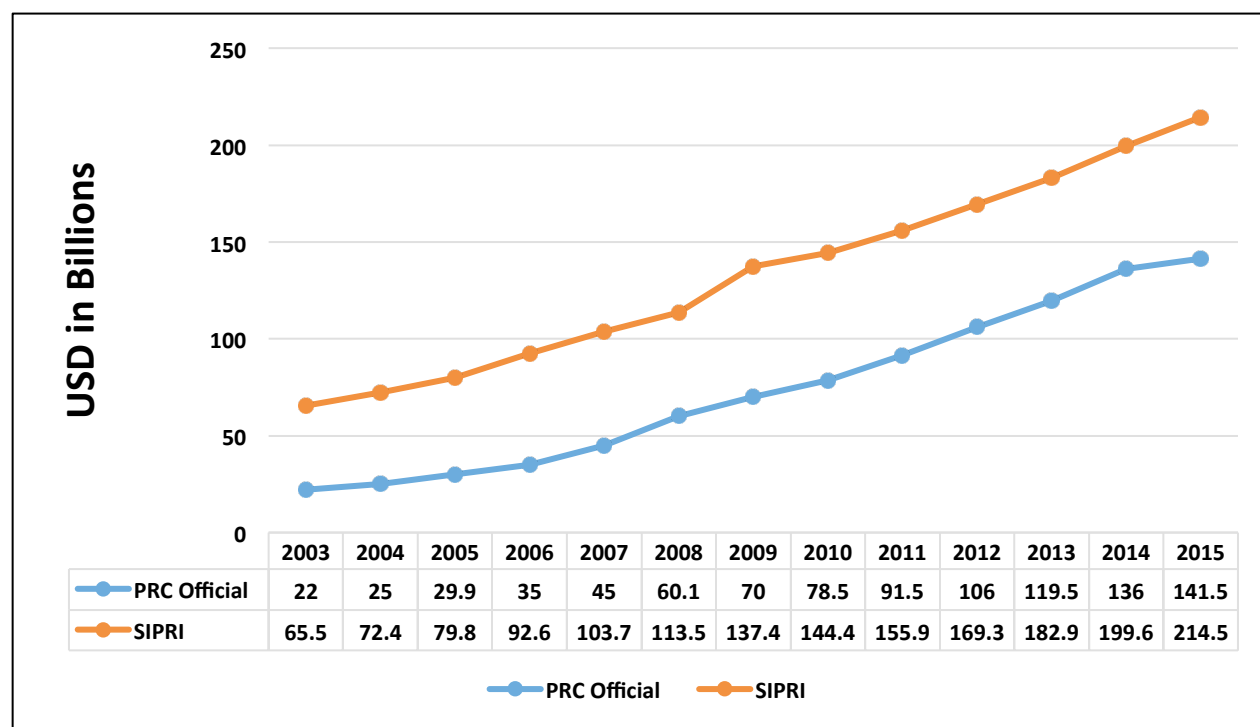
Despite this, there is no doubt that the U.S. remains the predominant military power in the world by a substantial margin. Even when comparing the DoD's 2016 expanded estimate of Chinese military expenditure to the U.S. Fiscal Year 2017 Defense Budget—struggling under the weight of budget caps—the U.S. is still out spending China threefold.

## *Other Outside Assessments of Chinese Military Spending*

### **SIPRI Estimates**

SIPRI has consistently estimated that China actually far outspends its declared budget. For 2015, SIPRI estimated China's military expenditure to be \$214.5 billion, a substantial amount higher than China's official claim of \$141.5 billion. **Figure 4.6** depicts the consistently substantial difference in SIPRI estimates compared to what Chinese government official releases.

**Figure 4.6: Official Chinese Budget Announcements versus SIPRI Estimates 2003-2015**



Source: Source: DoD, *Military and Security Developments Involving the People's Republic of China 2003-2016* for "PRC official" and SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, August 2016.

SIPRI institutionally recognizes the difficulties of calculating China's actual defense spending with precision. Consequently, on its website SIPRI provides a detailed breakdown regarding how they collect and interpret data differently in relation to China. SIPRI notes:<sup>133</sup>

In its estimates of Chinese military expenditure, SIPRI seeks to take into account a number of sources of military expenditure outside the official defence budget. Such sources of military expenditure include funding from other central government ministries (some of which is publicly available, some of which is not), funding from local government and funding from internal People's Liberation Army (PLA) sources—the latter probably represents a much smaller share of the total than in the past. SIPRI's estimate of China's military spending is based on a methodology used in a study published in SIPRI Yearbook 1999, which provides estimates of Chinese military spending from 1989–1998, based on both the official defence budget and data and estimates for a number of items outside the budget (see below). [1]

SIPRI's estimates for China continue to be based on Professor Wang's methodology, adapted over time as new information has become available, or in some cases where data series have ceased to be available. The figures come from the official defence budget, and estimates for the additional items identified by Professor Wang. These are based on additional data from various editions of the China Public Finance Yearbook, the China Statistical Yearbook and other official publications, but also in some cases require additional estimation for more recent years, where the data series used by Professor Wang are no longer available.

The items outside the official defence budget that are included in the estimates are:

- (a) spending on the paramilitary People's Armed Police (PAP);
- (b) soldiers' demobilization and retirement payments from the Ministry of Civil Affairs;
- (c) subsidies to the arms industry;
- (d) additional military research, development, testing and evaluation (RDT&E) funding outside the national defence budget;
- (e) additional military construction expenses;
- (f) Chinese arms imports; and
- (g) residual military-owned enterprises.

Professor Wang included one additional item, namely an estimate for PLA revenues from arms exports. However, to avoid the risk of double-counting, this item (which was a very small part of the total) has been removed. These figures and estimates are derived as follows:

- The figures for the PAP come from published expenditure figures up to 2014, while the figures for 2015 is estimated based on the rate of change of the Public Security budget.
- The figures for demobilization payments come from published expenditure figures up to 2012, with the figures for 2013–15 estimated based on the rate of change of the official budget.
- Estimates for subsidies to the arms industry are based on a share of the total budget for industrial subsidies. From 2005, this share is assumed to have declined due to the increasing profitability of most of the arms industry in China, and to have been zero from 2010 onwards.
- Estimates for additional military RDT&E from 2007–2015 are based on a share of total Central Government appropriations for Science & Technology (S&T). The share is based on information for 2011–2014 on the proportion of the S&T budget that is allocated to civilian agencies that disclose their spending in annual reports. The remainder is assumed to be allocated to the agencies that do not disclose annual reports, with military and security significance, and it is estimated that 90% of this is for military purposes. The estimates for 1997–2006 are based on a slightly smaller share of a previous series for Central Government S&T appropriations, which used a different classification system, giving somewhat higher figures than the new system. The estimates up to 1996 are

Professor Wang's estimates, and are based on a share of overall government Research and Development and Science and Technology budget.

- Estimates for additional military construction are based on a share of the government's capital infrastructure budget. As these figures are not published beyond 2006, estimates for 2007–2015 are based on the average growth rate of this budget over the previous 5 years; estimates for arms imports use figures provided by Russia for the value of arms transfers to China for the years where this information is available, as Russia accounts for the vast majority of Chinese arms imports. For the years where these figures are not available, the estimates are based on the rate of change of China's arms imports as measured by the SIPRI Trend Indicator Value (TIV).
- Income from commercial activities of the PLA is assumed to have declined steadily since 1999, as a policy of divestment from such activities has been followed. The figures for 1989–98 are Professor Wang's, and are based on a share of the official defence budget.

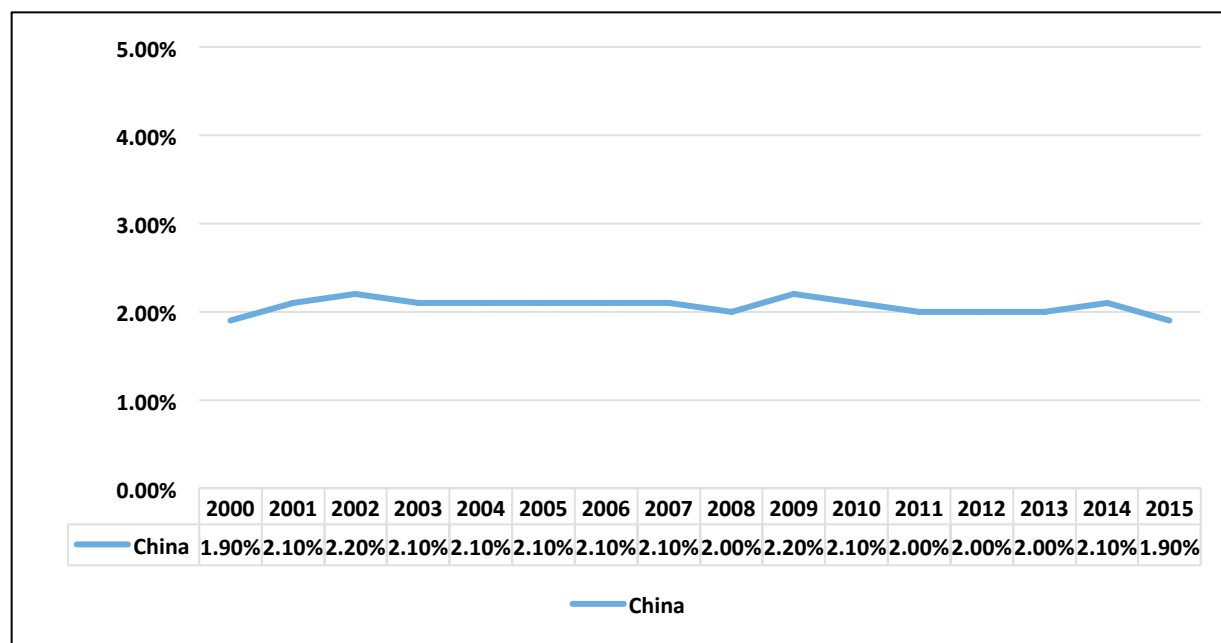
The resulting SIPRI estimates for Chinese military spending for recent years come to around 1.5 times the official defence budget for most years.

A 2006 report by the US-China Policy Foundation, based on an analysis of available Chinese-language sources, broadly concurs with the list of items included by SIPRI, but also adds various additional forms of funding to the PLA from local government, as well as some higher education expenses for PLA officers and compensation for disaster relief activities. The report concludes, however, that there is not at present enough information to make a reasonable estimate of total Chinese defence-related spending.

While details of some elements of Chinese military spending outside the official defence budget are publicly available (such as the PAP budget) others—most importantly R&D spending—are not, and can at present only be the subject of educated guesswork. Further research based on publicly available Chinese-language sources could provide improved estimates, but without greater transparency on the part of the Chinese Government, a completely accurate figure is not currently possible.

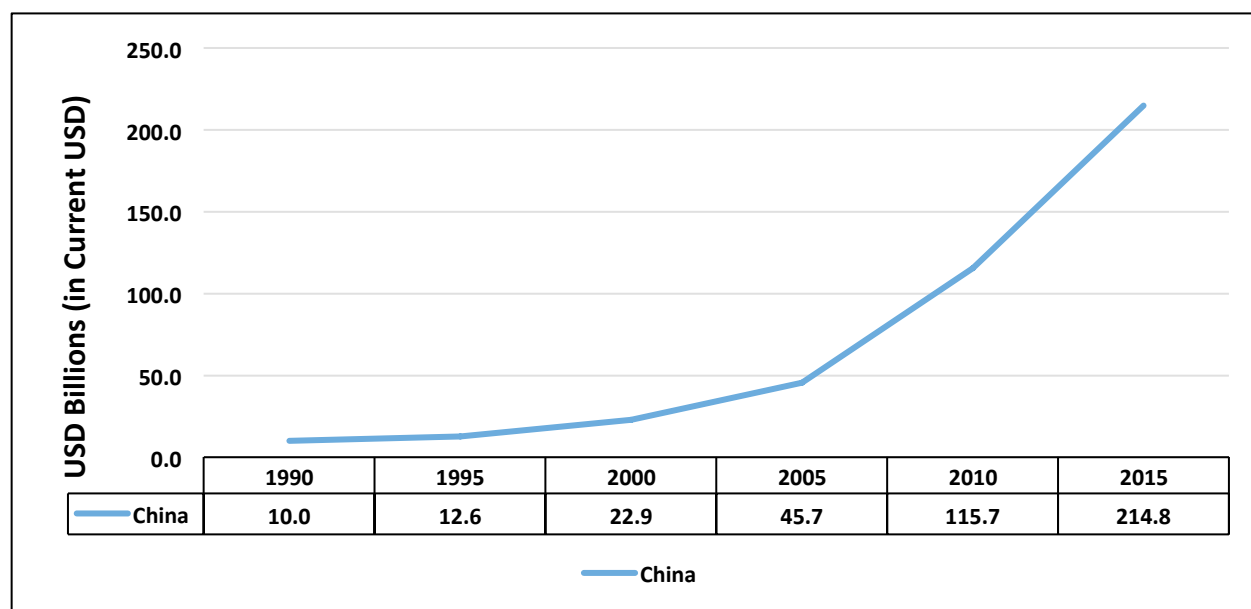
Furthermore, SIPRI's substantial database includes a wide array of other statistics which are included in **Figures 4.7–4.9**. These include statistics assessing Chinese defense spending as both a percentage of it GDP and overall government spending and addressing China's growth in spending since 1990.

**Figure 4.7: SIPRI Estimate on Chinese Defense Spending as Percentage of GDP 2000-2015**



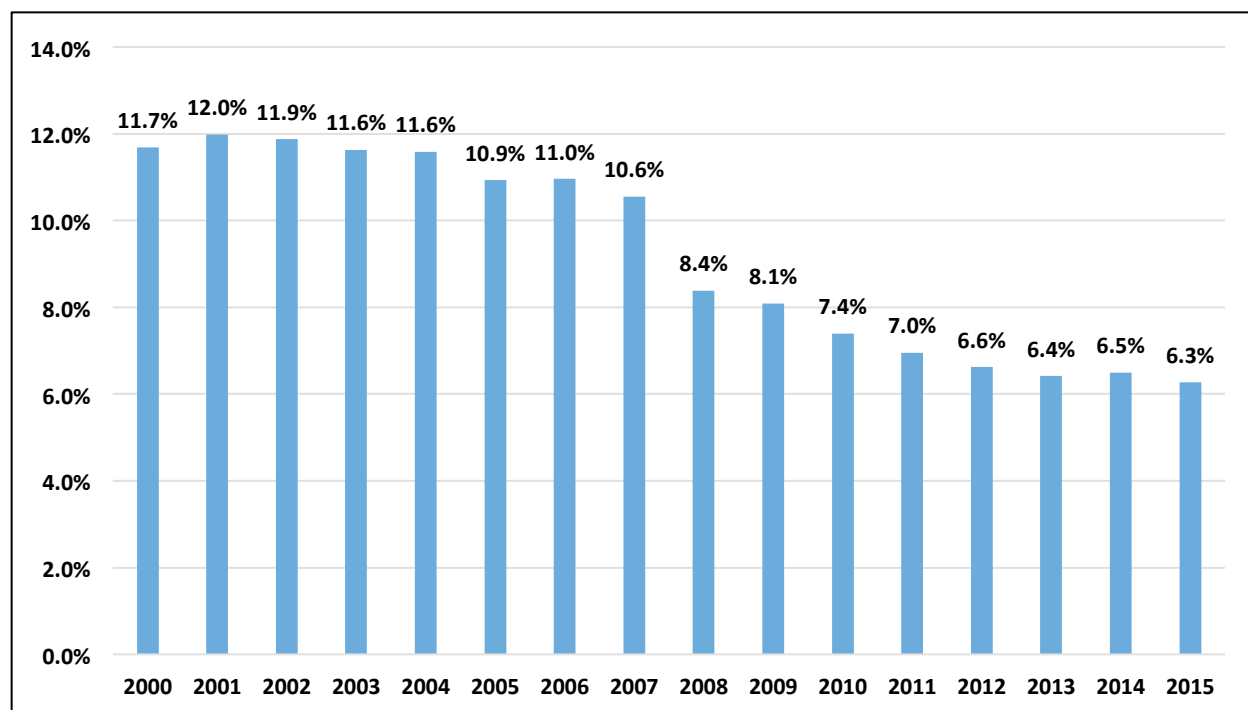
Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

**Figure 4.8: SIPRI Estimate on China's Defense Expenditure 1990-2015 (Current USD)**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

**Figure 4.9: Chinese Defense Expenditure as Percentage of Overall Government Spending (2000-2015)**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

### IISS Estimates

The International Institute for Strategic Studies (IISS) is another source for well-researched budget data. Like SIPRI, the IISS provides special qualifications in its assessment of less forthcoming countries like China. IISS predominantly relies on three statistics in regards to China: official budget as reported by China, their own defense expenditure estimate, and a defense expenditure estimate using purchasing power parity (PPP). **Figure 4.10** depicts the three IISS categories side by side from 2010-2014.

For IISS, they include the category of defense expenditure for countries that do not disclose their defense budgets or are not totally forthcoming in their release. Defense expenditure amounts to their institutional estimation of defense spending. IISS elaborates:<sup>134</sup>

Where possible, official defence budgets for the current and previous two years are shown, as well as an estimate of actual defence expenditures for those countries where true defence expenditure is thought to be higher than official budget figures suggest. Estimates of actual defence expenditure, however, are only made for those countries where there is sufficient data to justify such a measurement. Therefore, there will be several countries listed in *The Military Balance* for which only an official defence-budget figure is provided but where, in reality, true defence-related expenditure is almost certainly higher.

All financial data in the country entries is shown in both national currency and US dollars at current year – not constant – prices. US-dollar conversions are generally, but not invariably, calculated from the exchange rates listed in the entry. In some cases, a US-dollar purchasing-power parity (PPP) rate is used in preference to official or market exchange rates and this is indicated in each case.

...For those countries where the official defence-budget figure is considered to be an incomplete measure of total military-related spending, and appropriate additional data is available, the IISS will use data from a

variety of sources to arrive at a more accurate estimate of true defence expenditure. The most frequent instances of budgetary manipulation or falsification typically involve equipment procurement, R&D, defence-industrial investment, covert weapons programs, pensions for retired military and civilian personnel, paramilitary forces and non-budgetary sources of revenue for the military arising from ownership of industrial, property and land assets.

Furthermore, IISS finds unique value in utilizing PPP as a measure for defense expenditure in the case of China.<sup>135</sup>

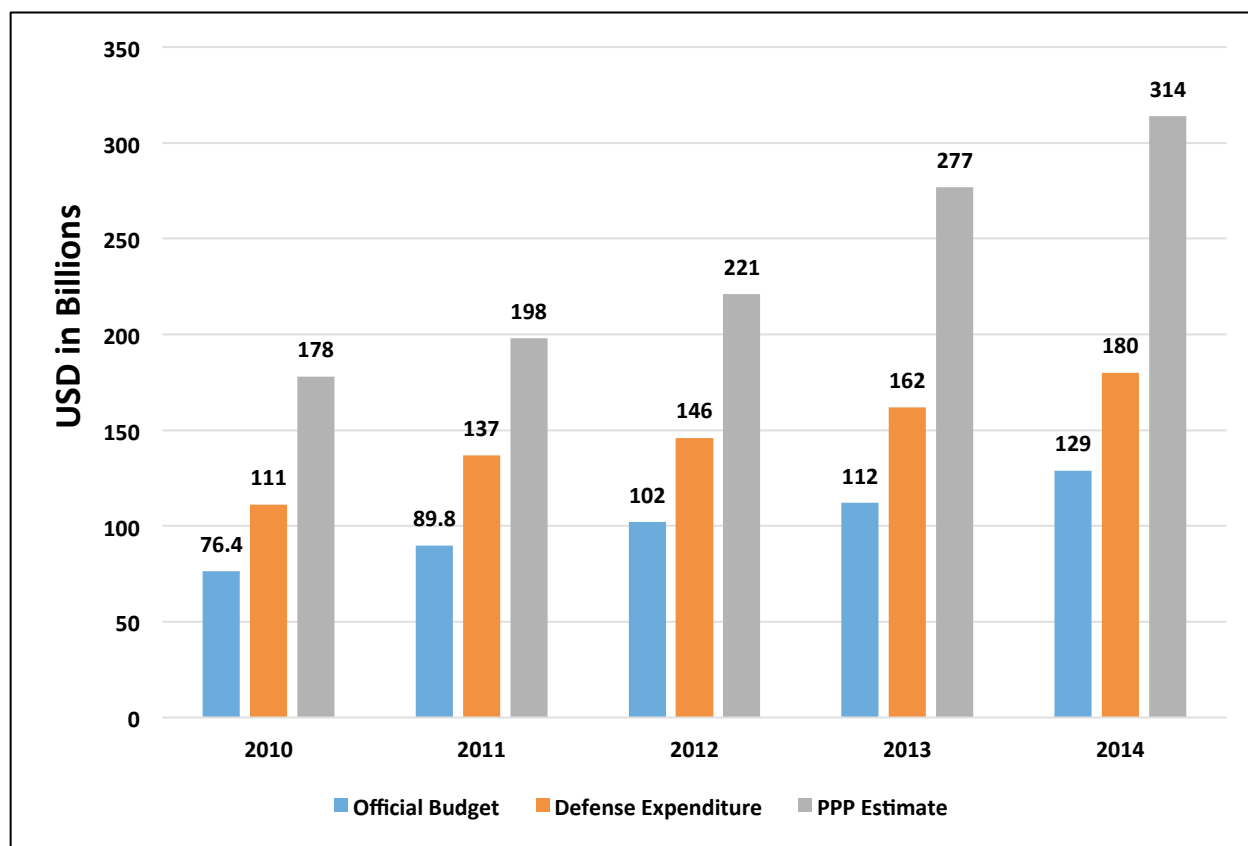
Typically, but not invariably, the exchange rates shown in the country entries are also used to calculate GDP and defence-budget and defence-expenditure dollar conversions. Where they are not used, it is because the use of exchange-rate dollar conversions can misrepresent both GDP and defence expenditure. For some countries, PPP rather than market exchange rates are sometimes used for dollar conversions of both GDP and defence expenditures. Where PPP is used, it is annotated accordingly.

The arguments for using PPP are strongest for Russia and China. Both the UN and IMF have issued caveats concerning the reliability of official economic statistics on transitional economies, particularly those of Russia, and some Eastern European and Central Asian countries. Non-reporting, lags in the publication of current statistics and frequent revisions of recent data (not always accompanied by timely revision of previously published figures in the same series) pose transparency and consistency problems. Another problem arises with certain transitional economies whose productive capabilities are similar to those of developed economies, but where cost and price structures are often much lower than world levels. No specific PPP rate exists for the military sector, and its use for this purpose should be treated with caution. Furthermore, there is no definitive guide as to which elements of military spending should be calculated using the limited PPP rates available. The figures presented here are only intended to illustrate a range of possible outcomes depending on which input variables are used.

.... On 5 March, China released its 2013 defence budget. It was set at RMB718bn (US\$112bn), an increase of 10.7% over 2012. Over the past decade, China has seen a rapid acceleration in its official defence-spending levels, with rates of increase comparable to the expansion of the Chinese economy. Additionally, as noted each year in *The Military Balance*, official Chinese defence budget figures probably underestimate true defence spending. Although official figures include personnel, operations and equipment expenditure, it is widely held that other military-related expenditures are omitted, such as R&D and overseas weapons purchases. A fuller account of China's true military spending levels should also include funding allocated to the People's Armed Police (PAP). If estimates of these extra items are included, Chinese defence spending typically rises to about 1.4 to 1.5 times official figures.

However, the after-effects of the financial and debt crises that in 2008 hit advanced Western economies, China's main export destination, call into question Beijing's export-oriented industrial growth model. China's announced growth target for 2013 is, at 7.5%, lower than the 2012 figure. Unless China can decouple from advanced economies and successfully rebalance towards a domestic-demand driven model, its GDP growth- and by extension, its defence spending growth- will in part continue to be constrained by the ill-health of advanced economies. Chinese real defence spending growth rates may have started to fall in the five years since the crisis. In 2009-13, average real defence-spending growth was 7.6% per annum, compared to an average 10.4% per annum in the five years before the crisis (2003-2007).

**Figure 4.10: IISS Estimates for China's Budget 2010-2014**



Source: *IISS Military Balance 2012-2016*.

Note: IISS releases estimates on Defense Expenditure and PPP a year after it includes official budgets. For example, *IISS Military Balance 2016* includes the officially released Chinese budget for 2015 but the Defense Expenditure and PPP estimates are from 2014.

### Erickson and Liff Estimates

A 2013 analysis by Adam P. Liff and Andrew S. Erickson puts forth a different outlook. Indeed, Erickson and Liff push back against the idea that the Chinese defense budget is wildly underreported and note:<sup>136</sup>

The growth in spending over the past two decades is driven primarily by a desire to modernize and professionalize the PLA after decades of neglect and military backwardness. Throughout much of the post-1978 reform era the real-world effects of China's nominal defence spending have been mitigated heavily by rampant inflation. Even during recent periods of relatively low inflation, rapid defence budget increases have been roughly consistent with overall GDP growth and outpaced by the growth in total state financial expenditures. Beijing's official defence budget increasingly captures actual PLA funding and the PLA's widely criticized opacity is improving gradually and is not as exceptional among countries at its stage of development as is widely believed. Defence spending growth over the past two decades has led to significantly improved military capabilities, the most significant of which are designed primarily to address contingencies in the Near Seas and their immediate approaches as opposed to further afield. Recent defence spending increases are sustainable, at least in the near-term, and could be augmented considerably and directed to support selected overseas contingencies. However, in the medium- to long-term, worsening



economic and demographic pressures may impel China's leaders to shift budget resources elsewhere and thereby limit further military spending growth

The article provided the data on Chinese defense spending shown in **Figures 4.11 and 4.12** Liff and Erickson noted that while the official Chinese defense budget nominally increased at an average annual rate that exceeded 10% since 1990, important qualifications had to be made in assessing China's real spending. One qualification was inflationary pressure in China. Liff and Erickson felt that calculating China's defense budget at real prices – and thus accounting for inflation effects – showed that China's effective defense spending growth rate was much lower, as was the burden Chinese military spending placed on the Chinese economy:<sup>137</sup>

The differences between the nominal (current price) and real (constant price) average annual growth rates are remarkable: 1.6 per cent vs. -3.2 per cent (1980–1989); 15.7 per cent vs. 7.8 per cent (1990–1999); 16.5 per cent vs. 12.5 per cent (2000–2009); and 10.4 per cent vs. 3.1 per cent over the 2010–2011 period. In other words, when calculated in real terms the average annual increases in the budget exceeded 10 per cent during only one of the ten-year periods in [see **Figure 4.12**]; 2000–2009. This all suggests that unqualified statements along the lines of “China's official defence budget has increased by double-digits since year 19XX,” while in most cases technically true in nominal terms, may exaggerate the real-world effects of these budget increases.

**Figure 4.11: PRC Defense Spending-related Comparative Statistics, 1980-2011**

	1980-1989 (annual average)	1990-1999 (annual average)	2000-2009 (annual average)	2010-2011 (annual average)
Defense budget growth rate...				
... At current prices	1.6%	15.7%	16.5%	10.4%
... At constant prices (base year of 1980)	-3.2%	7.8%	12.5%	3.1%
GDP growth rate	9.8%	10.0%	10.3%	9.8%
State financial expenditures growth rate (aggregate – central and local)...				
... At current prices	8.6%	16.8%	19.3%	19.5%
... At constant prices (base year of 1980)	3.5%	8.8%	15.1%	11.6%

Source: Adam P. Liff and Andrew S. Erickson, “Demystifying China’s Defence Spending: Less Mysterious in the Aggregate,” *China Quarterly*, March 2013, 8.

**Figure 4.12: PRC Official Defense Budget Annual Data, 2002-2012**

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012*
GDP growth rate at current prices	9.1%	10.0%	10.1%	11.3%	12.7%	14.2%	9.6%	9.2%	10.4%	9.2%	N/A
Defense budget (RMB billions)...											
... At current prices	170.8	190.8	220.0	247.5	297.9	355.5	417.9	495.1	533.3	602.7	670.0
... At 2002 constant prices	170.8	186.0	200.6	217.1	251.8	279.1	304.4	362.9	366.6	385.3	N/A
... As % of GDP	1.42%	1.40%	1.38%	1.34%	1.38%	1.34%	1.33%	1.45%	1.33%	1.28%	N/A
Defense budget growth rate...											
... At current prices	18.4%	11.7%	15.3%	12.5%	20.4%	19.3%	17.6%	18.5%	7.7%	13.0%	11.2%
... At 2002 constant prices	18.5%	11.4%	14.0%	11.0%	17.2%	15.2%	12.8%	13.6%	5.3%	8.3%	N/A

Source: Adam P. Liff and Andrew S. Erickson, “Demystifying China’s Defence Spending: Less Mysterious in the Aggregate,” *China Quarterly*, March 2013, 10.

Note: 2012 defense budget is an estimated figure reported in Xinhua.

## *The Chinese Response*

The fact remains, however, that outside critics often do criticize this lack of transparency and inclusiveness in the Chinese defense budget transparency and the exclusion of significant defense-related spending from the official budget – arguing that China deliberately underreports actual military spending to disguise its actual military efforts and intentions.

Chinese commentators respond to such criticisms of the PRC's lack of military transparency in several different ways. They:<sup>138</sup>

- (1) emphasize that there is no universal standard for military transparency;
- (2) compare the current level of transparency favorably to even greater opacity previously; or
- (3) contend that “the most fundamental and most important form of transparency” is the transparency of China's strategic intentions, as opposed to the transparency of military capabilities or doctrine.

This highlights Chinese defensiveness regarding their transparency. Yet, in their commitment to obfuscating their defense spending, the Chinese invite onto themselves external concerns about whether their rise will be peaceful. There is a vagueness regarding what China is trying to achieve through its lack of transparency, which begets mistrust. At the same time, it is important to note that other countries in the region with similar economic development levels, such as India, have similar transparency (or lack thereof) in their military spending. China is scarcely an exception.<sup>139</sup>

The Chinese also take substantial umbrage with international concern about their increased defense spending. Erickson and Liff point to Donald Rumsfeld's comment at the 2005 Shangri-La Dialogue as the type that enrages the Chinese, “Since no nation threatens China, one must wonder: Why this growing investment [in defence]? Why these continuing large and expanded arms purchases? Why these continued deployments?”<sup>140</sup>

Further exemplifying this is a March 2015 article published by state-run *Xinhua*—shortly after the announcement of the Chinese military budget increase of 10.1%—that complained about statements from the West regarding the rapidly increasing defense spending.<sup>141</sup>

The double-standard deeply rooted in some Western countries' minds makes them biased when they look at China, which, according to their imagination, should better be a giant market and concurrently a military dwarf.

No wonder the newly revealed 10.1-percent increase of Chinese military budget in 2015 draws ire from them.

However, their outcry of "concerns" and "worries" is misplaced and unfounded at least for three reasons.

First of all, comparatively speaking, the current Chinese military spending is by no means a big one for a country that has the world's largest population and a territory of over 9 million square km to defend.

Through tinted glasses, some Western countries and media could see nothing but threat regarding China's military budget. Or so to speak, they neglect on purpose the fact that the budget in 2014 was less than 1.5 percent of its GDP, and lower than the average level of 2.6 percent worldwide.

They also deliberately ignored that China's per capita military spending in 2014, a key figure that their own military experts hold as an important index in judging a nation's defense budget, is even less -- only one twenty-second that of the United States, one-ninth of Britain and one-fifth of Japan, which does not even have a regular army.

So, to portray China as a threat on the basis of its less-than-supposed military budget is nonsensical.

Second, unlike Britain and Japan that have alliance to share military technology, China's defense modernization is naturally to be more difficult, as it has to rely mostly on itself to start from scratch, which surely demands a relatively high military expenditure.

This self-dependence reality is further strengthened by a weapon embargo groundlessly forced on China by the European Union and the United States. In this sense, the West is a catalyst for China's relatively "big" military budget.

Third, the balance of power, touted by Western politicians as an iron law in their political bible, is unstable in East Asia, with Japan approving its largest ever military budget in January.

No Western countries could keep closed eyes on its neighbor's surging military ambition, for the sake of balance of power and its own national security, let alone a neighbor of recidivist trouble maker.

By the same token, a responsible and major stakeholder like China needs sufficient strength to prevent a possible conflict or war lodged by miscalculating, hot-headed neighbors, and maintain a stable and peaceful Asia-Pacific region and the world as a whole.

For all that, China's expanding military budget is a justifiable and normal uptick. Depicting it as a new story of China threat neither does any good to the mutual trust between China and the West, nor strengthens the moral high ground of the West.

There is credence to China's claims of unfair treatment. Though it is clear that China's defense expenditure has grown significantly in the last twenty-five years, it has been underpinned by massive overall economic growth. 2015 marked the first year since 1990 that China's GDP growth percentage fell below 7%. **Figure 4.13** depicts not only China's huge growth in GDP percentage but also its sustained nature stretching across three decades.

Reacting to these facts, the Xinhua article also makes the argument that China's growth in defense spending should be seen simply as an "normal uptick" resulting from overall economic growth. Indeed, it would be nonsensical to suggest that a country's expenditures should not rise to match incoming revenue.

**Figures 4.14** and **Figure 4.15** offer additional support to Chinese claims. **Figure 4.14** depicts the percentage of GDP made up of defense spending for SIPRI's top ten highest defense spenders. In 2015, China sat at the identical 1.9% that it was at in 2000, with minimal variation in between. This also marks a decrease on the 2.5% that China posted in 1990. In comparison to the other top ten spenders only Germany and Japan have lower percentages. Both those countries have long restrained defense spending—legally in the case of Japan—as a result of their World War II legacies.

**Figure 4.15** details the percentage SIPRI's top ten spenders devote to defense spending out of total government spending. Once again, China does not stand out as a reckless or aggressive spender. In 2015, China's 6.3% is sixth out of the ten countries. The 2015 number also marks a near halving in the 11.7% China devoted to defense spending in 2000.

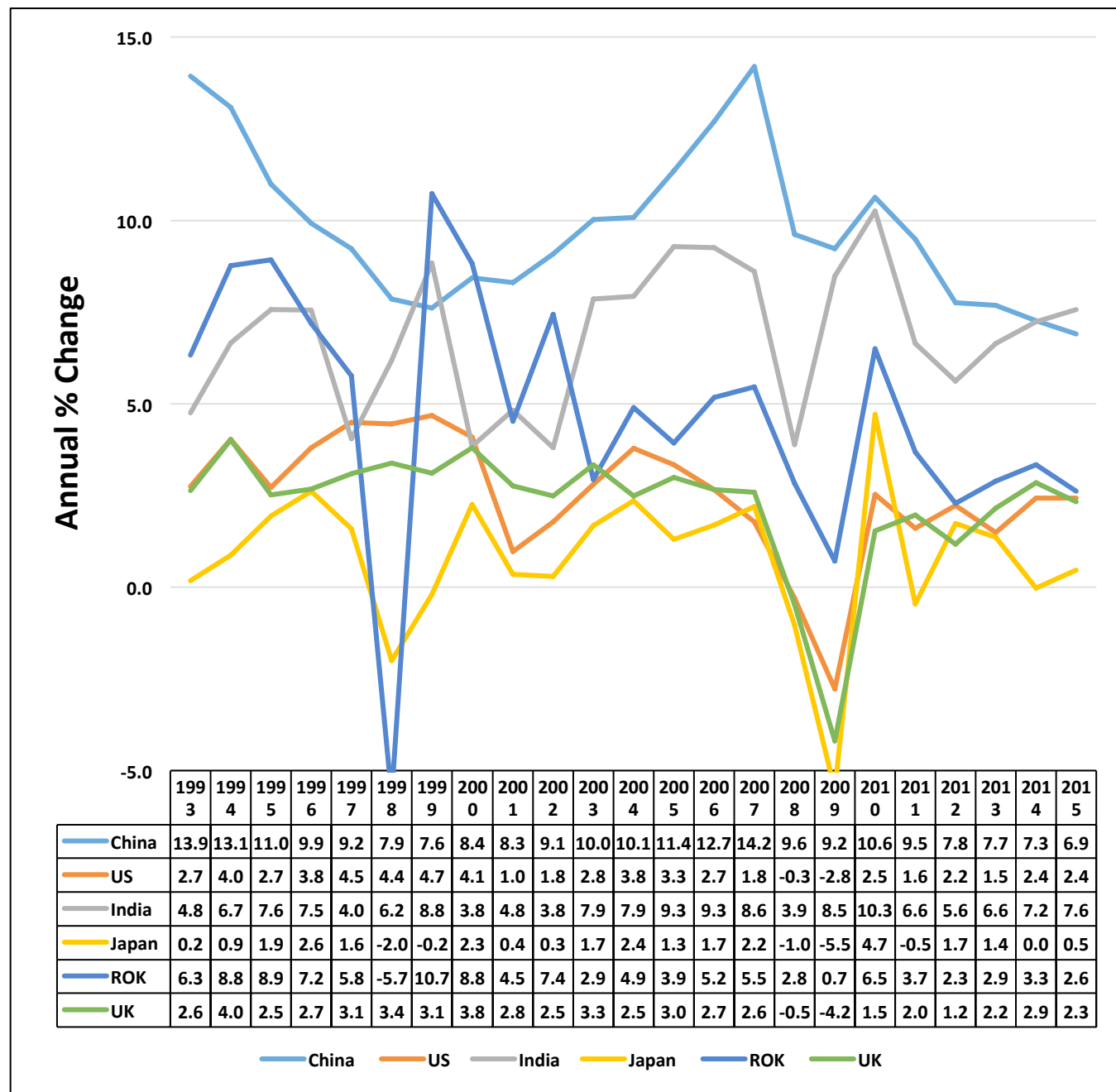
Even in Asia and compared to its neighbors China's spending as percentage of GDP and overall government spending does not look excessive. This is shown in **Figures 4.16** and **4.17**.

China's increased defense spending looks more reasonable when put in context alongside its recent massive growth. However, for concerned countries the only number that matters is annual defense expenditure. This is the money that buys real guns, aircraft, ships, and missiles. Even taking the official Chinese government number at face value, that number has increased over 6.5 times since 2003 from 22 billion USD to 147 billion. That China's defense expenditure is mostly

in line with its overall growth is of little consolation to Taiwan, the Philippines, Vietnam, Japan and the ROK.

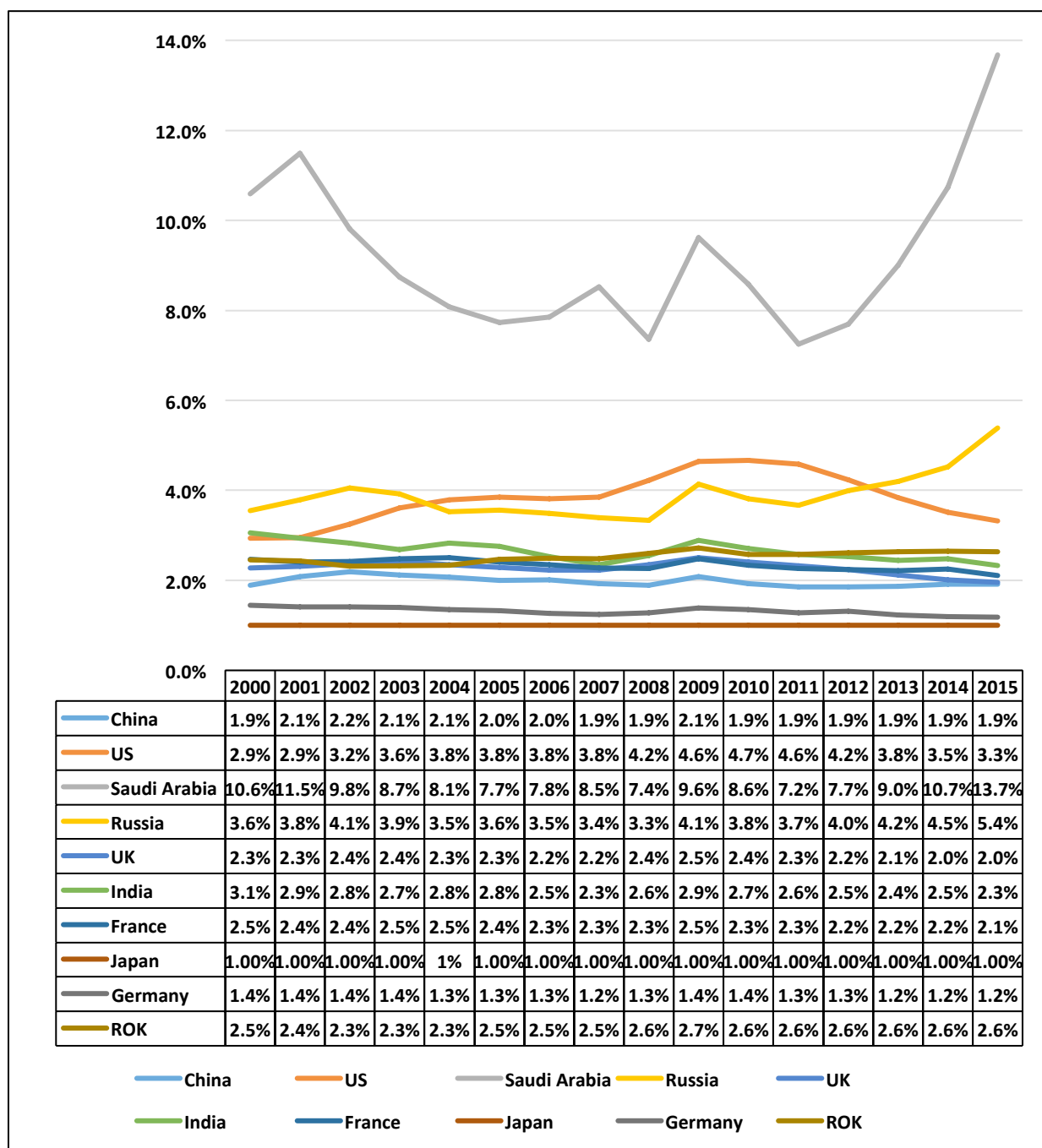
Analytically it will always be difficult to glean strategy and intent solely from budgetary numbers. However, as China's growth explosion reaches its end, the next few years of China's defense spending may prove instructive in discerning how closely China's overall economic growth is tied to defense expenditure. The restrained 7.6% increase in the announced 2016 defense budget may be the first indication that growth in defense spending will slow in step with overall growth.

**Figure 4.13: Annual GDP Percentage Growth 1991-2015**



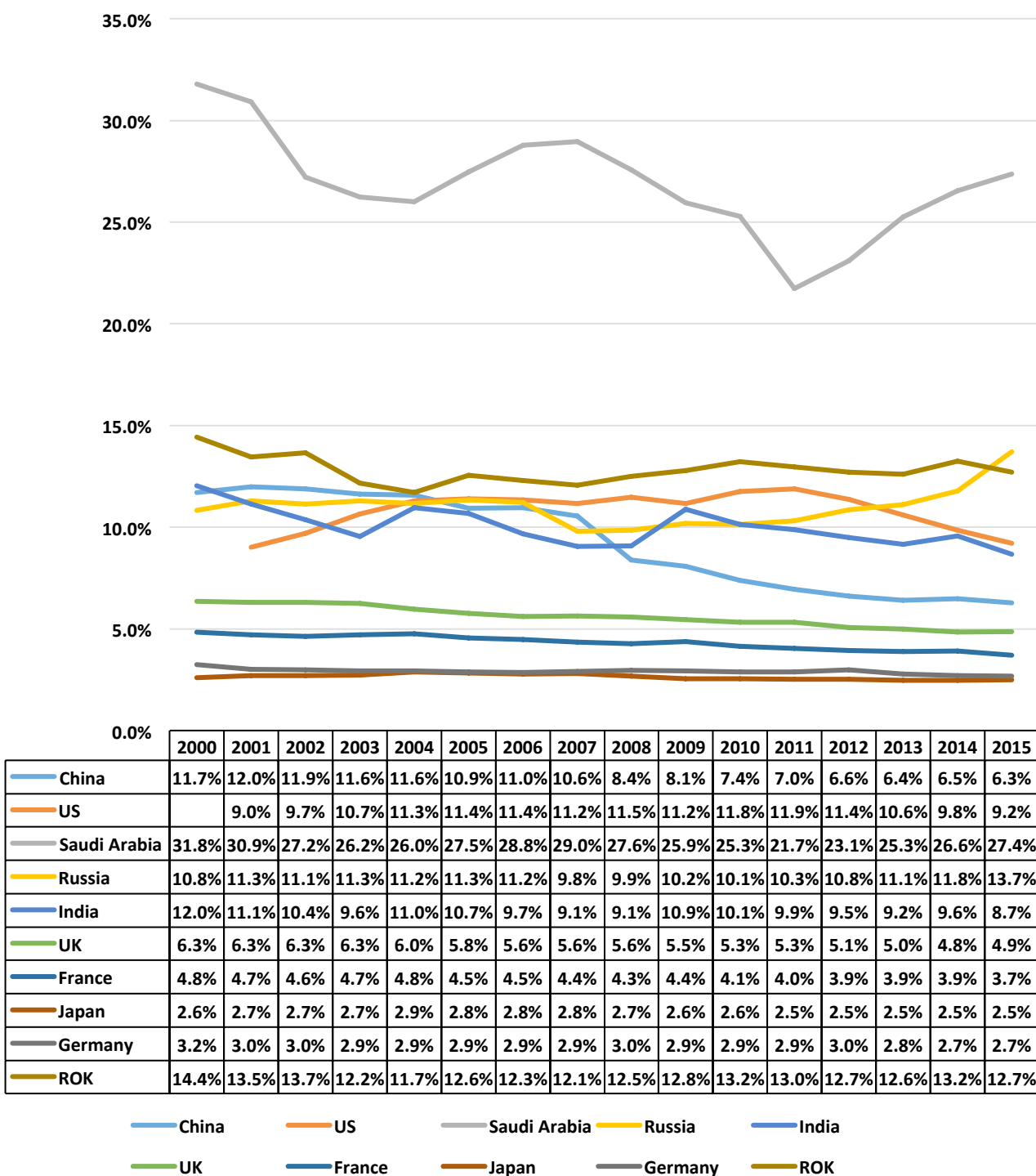
Source: World Bank. <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=CN>

**Figure 4.14: Defense Spending as Percentage of GDP among SIPRI's 2015 Top 10 Countries in Defense Expenditure from 2000-2015**



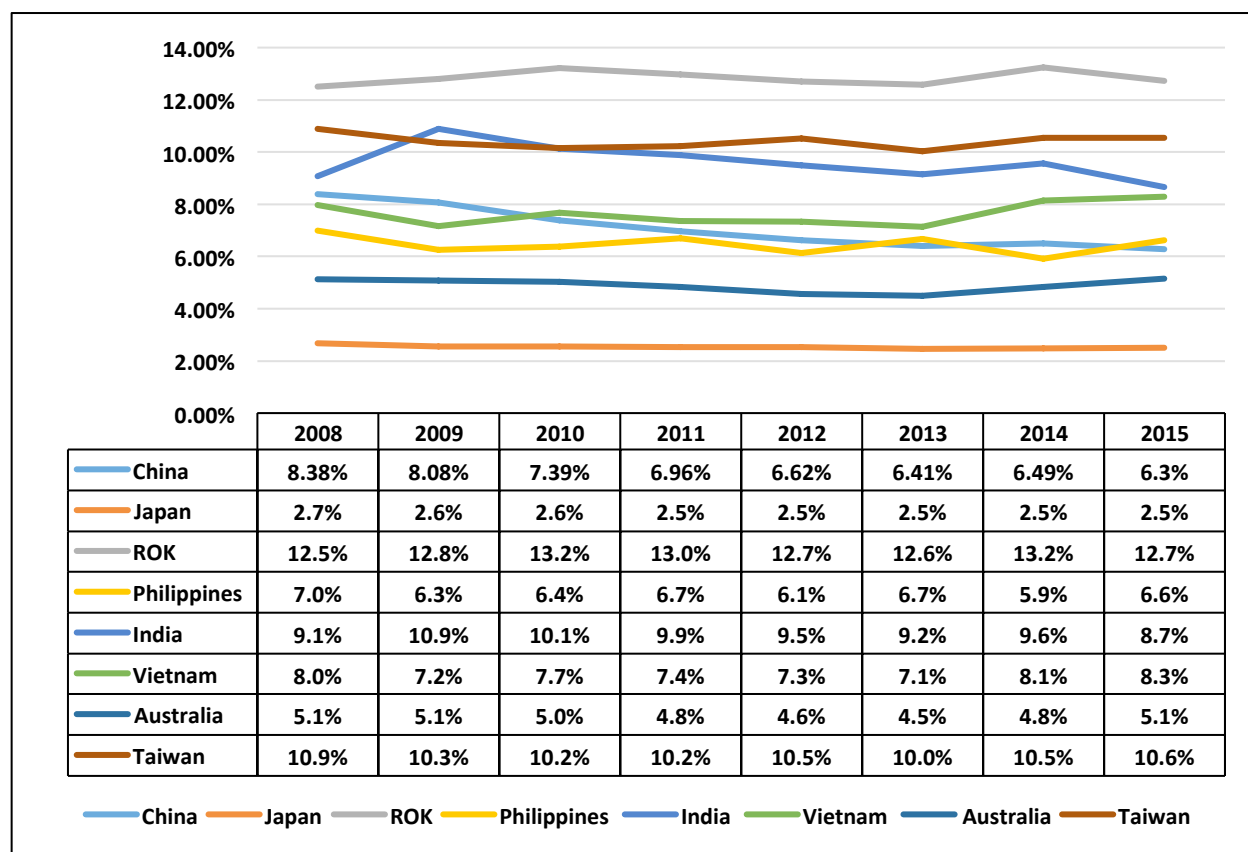
Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

**Figure 4.15: Defense Spending as Percentage of Government Spending among SIPRI's 2015 Top 10 Countries in Defense Expenditure from 2000-2015**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016

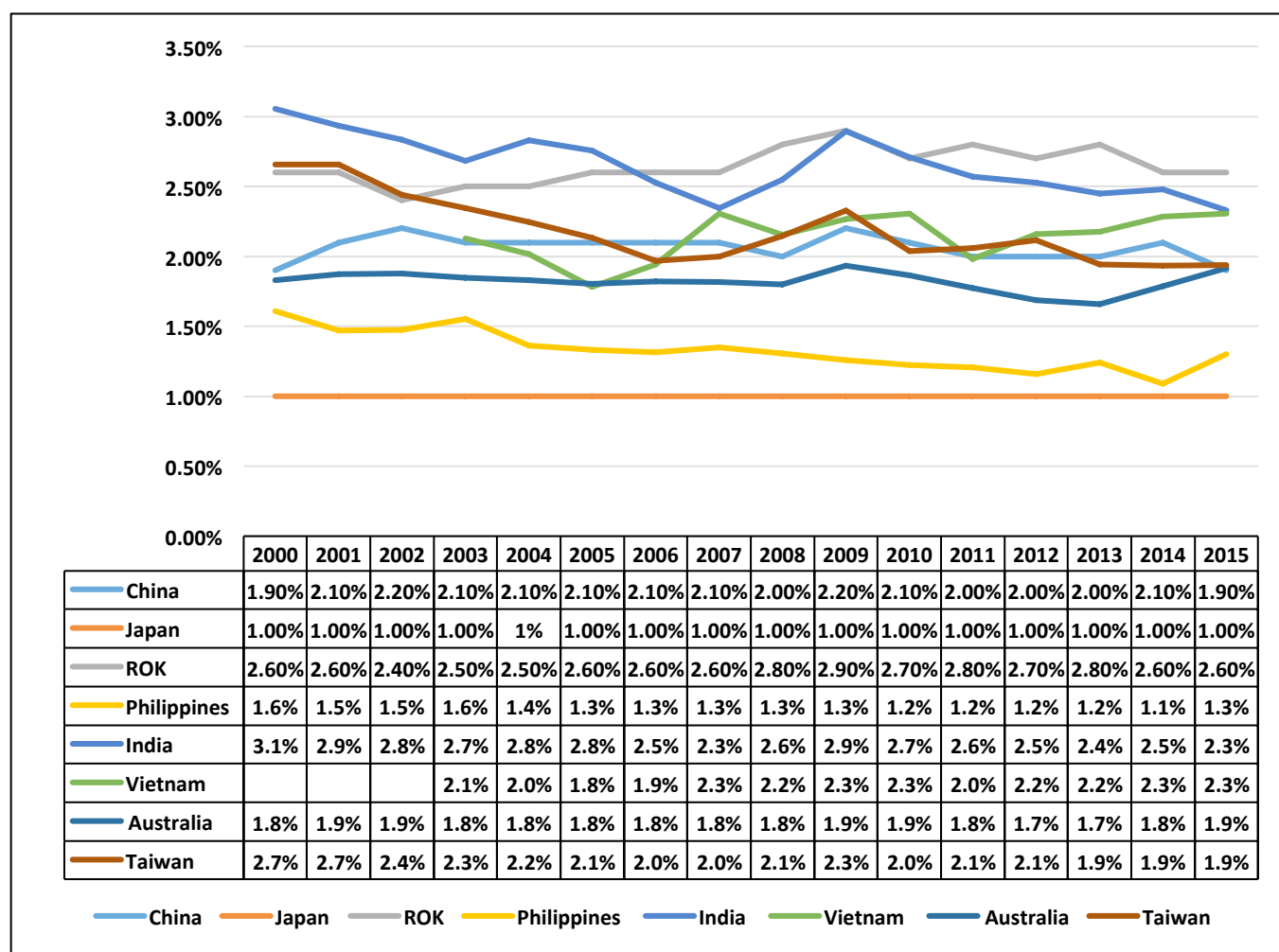
**Figure 4.16: Defense Spending as Percentage of Overall Government Spending in Asia 2008-2015**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.



*Figure 4.17: Defense Spending as % of GDP for Asia 2000-2015*



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

## *Ramifications for the United States*

The United States has history of exaggerating or overreacting to other nation's military buildups. Much of the Cold War was an exercise in this, highlighted famously by the fictional "missile gap" claims during the 1960 Presidential election. At intermittent points, countries like Japan, India, and Iran have been presented as future threats to the U.S. international dominance.

China has already become the current target of American concern. This concern is unlikely to abate going forward, especially considering the ongoing South China Sea spats and already rocky U.S.-China relations as displayed at the September 2016 G20 summit in Hangzhou.<sup>142</sup> Consequently, it is important to provide analysis and statistics to properly contextualize China's threat to the U.S.

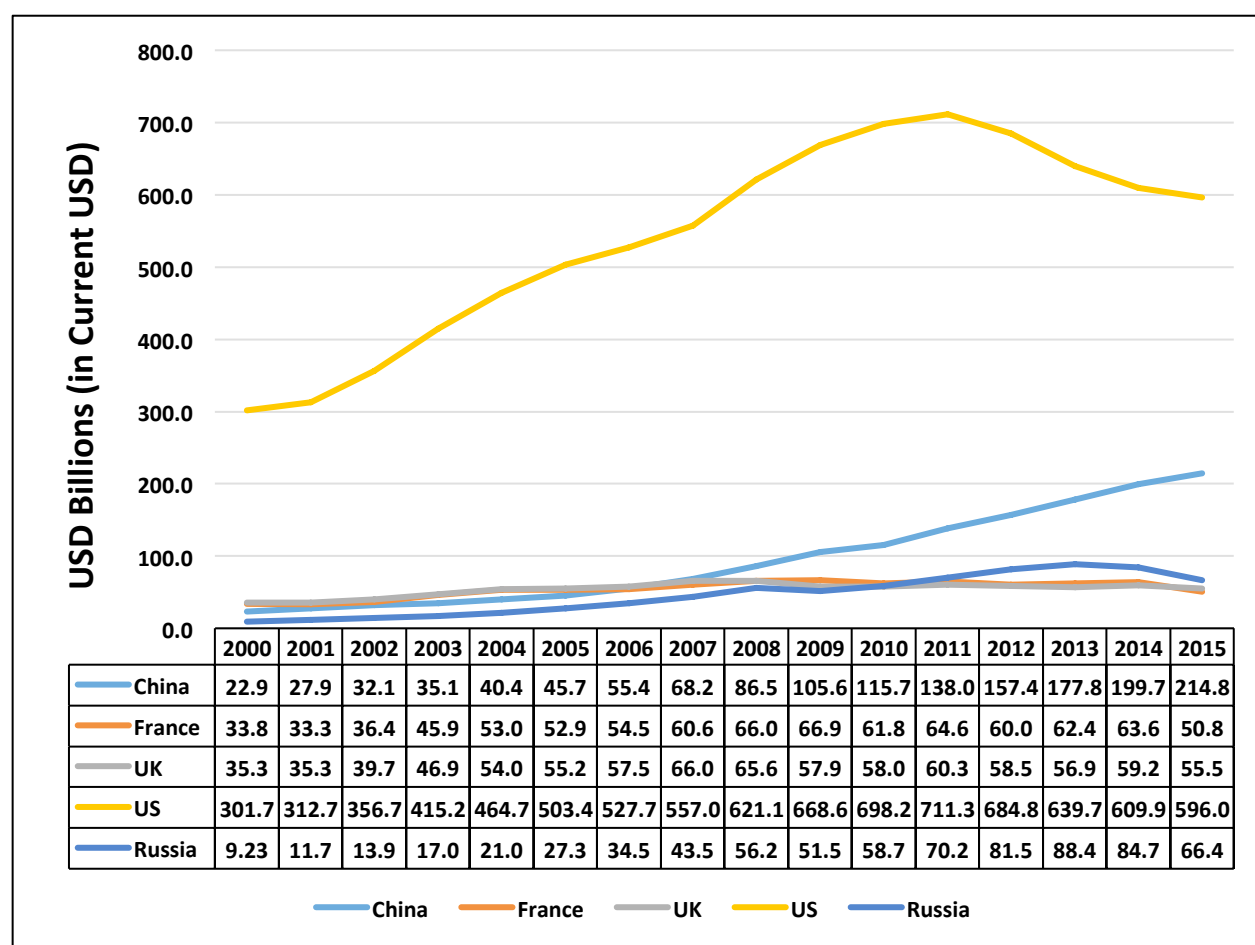
First, it bears reiterating that presently the U.S. does not currently have a legitimate competitor in military spending. **Figure 4.18** displays SIPRI's estimate of military expenditure for the five United Nations Security Council (UNSC) members. China is the closest competitor of the U.S. but

they are still being outspent by nearly threefold. In the post-Cold War era the U.S. in unchecked in terms of military spending and might.

The underlying numbers in **Figure 4.19** and **Figure 4.20** further underline U.S. dominance. In both cases, the U.S. remains well above China in both defense spending as percentage of the GDP and defense spending as the percentage of overall government spending. In terms of the other UNSC countries the U.S. was only bested by Russia starting in 2012. However, these percentages reflect the recent downturn in the Russian economy as SIPRI's overall Russian defense spending estimates fell in both 2014 and 2015.

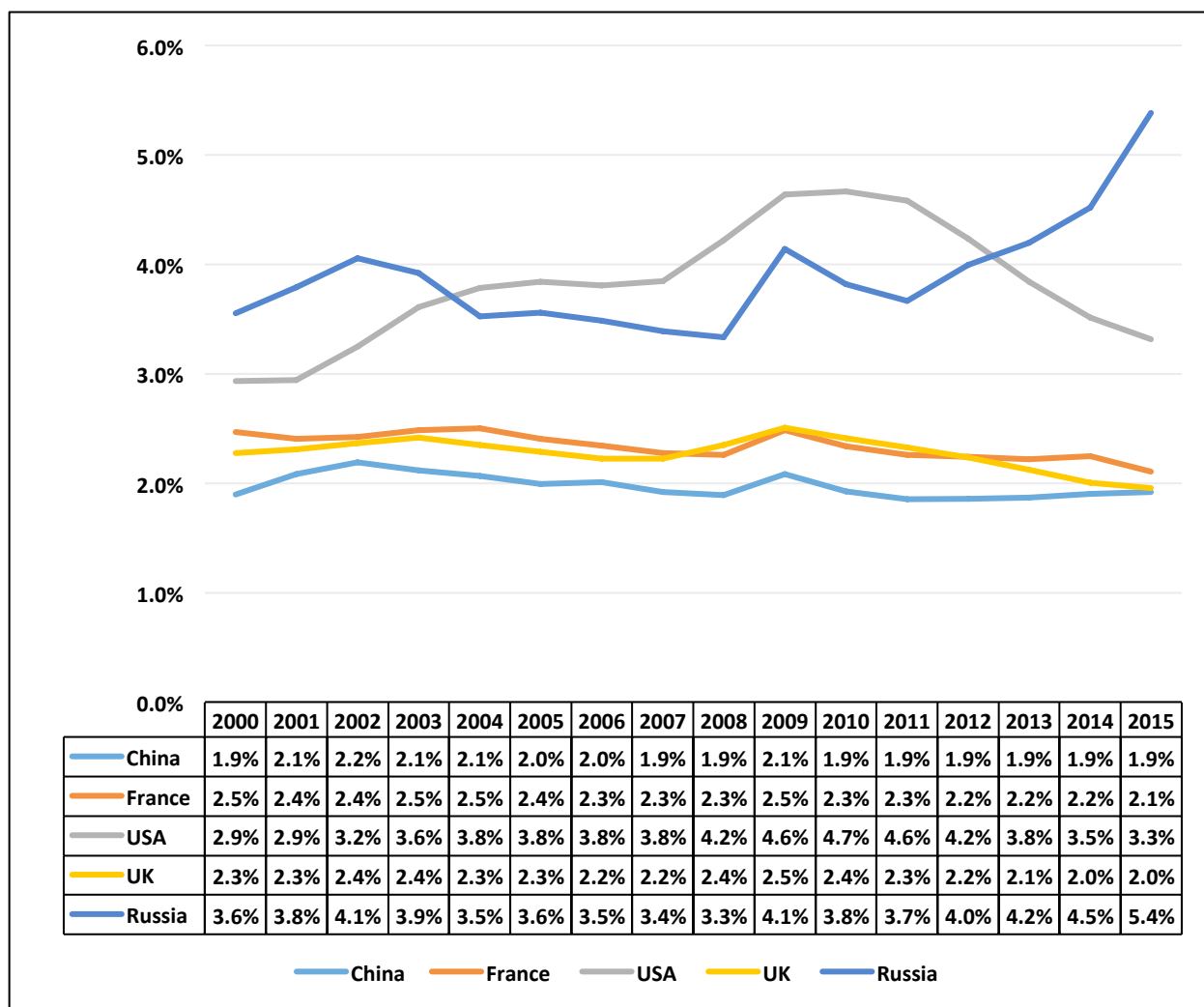
Another indication of the military dominance of the United States is the fact that China and Russia are described only as “near-peers”. In recent years, there has been substantial U.S. consternation about both Russia and China as relations have remained terse and both nations have undertaken military modernization. Still, even in an atmosphere where China and Russia are seen by the U.S. as the most threatening adversarial states, they are only labelled as “near-peers”.

**Figure 4.18: Defense Expenditure from UNSC Countries 2000-2015  
(Current USD)**



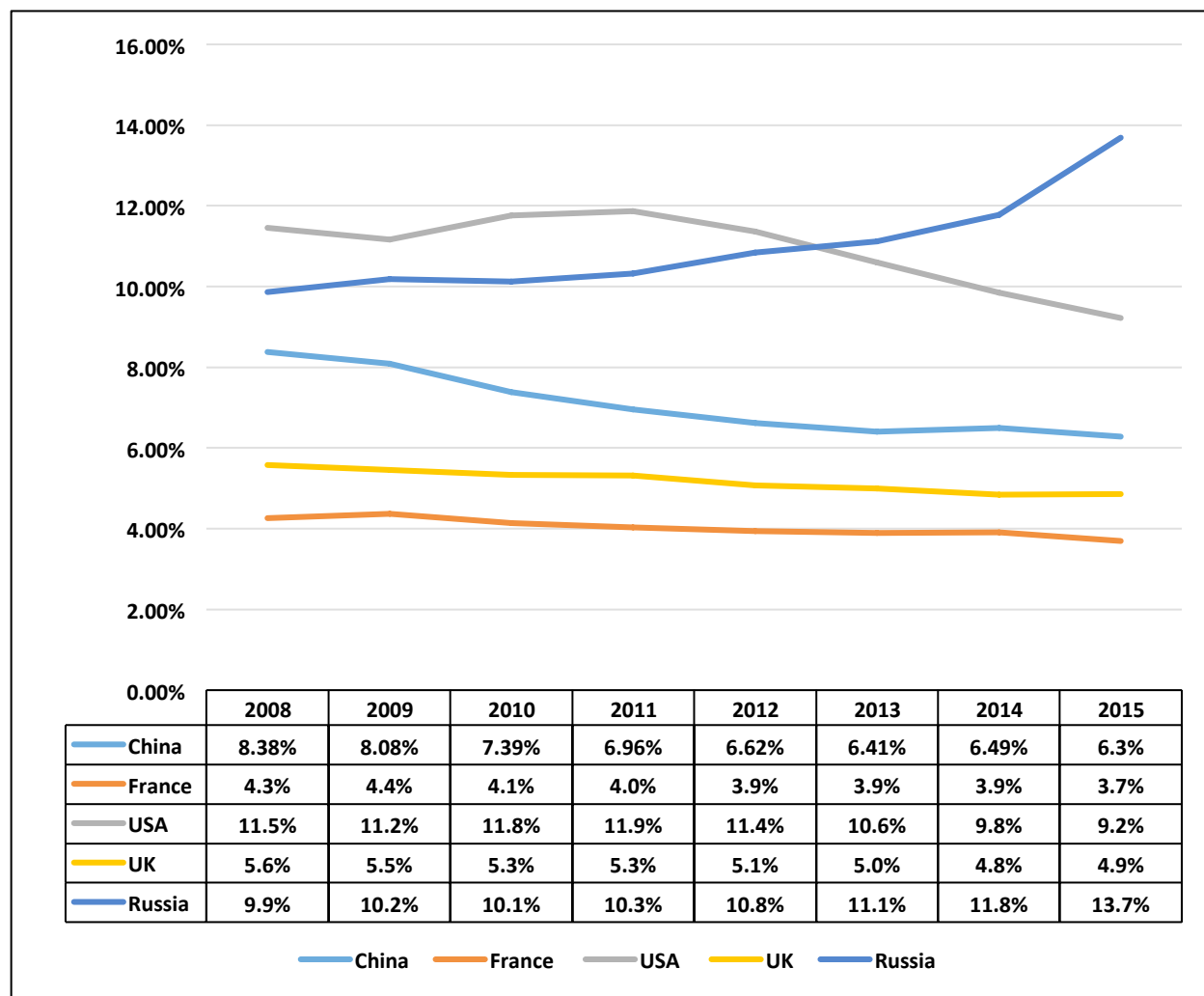
Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016

**Figure 4.19: Defense Spending as % of GDP for UNSC 2000-2015**



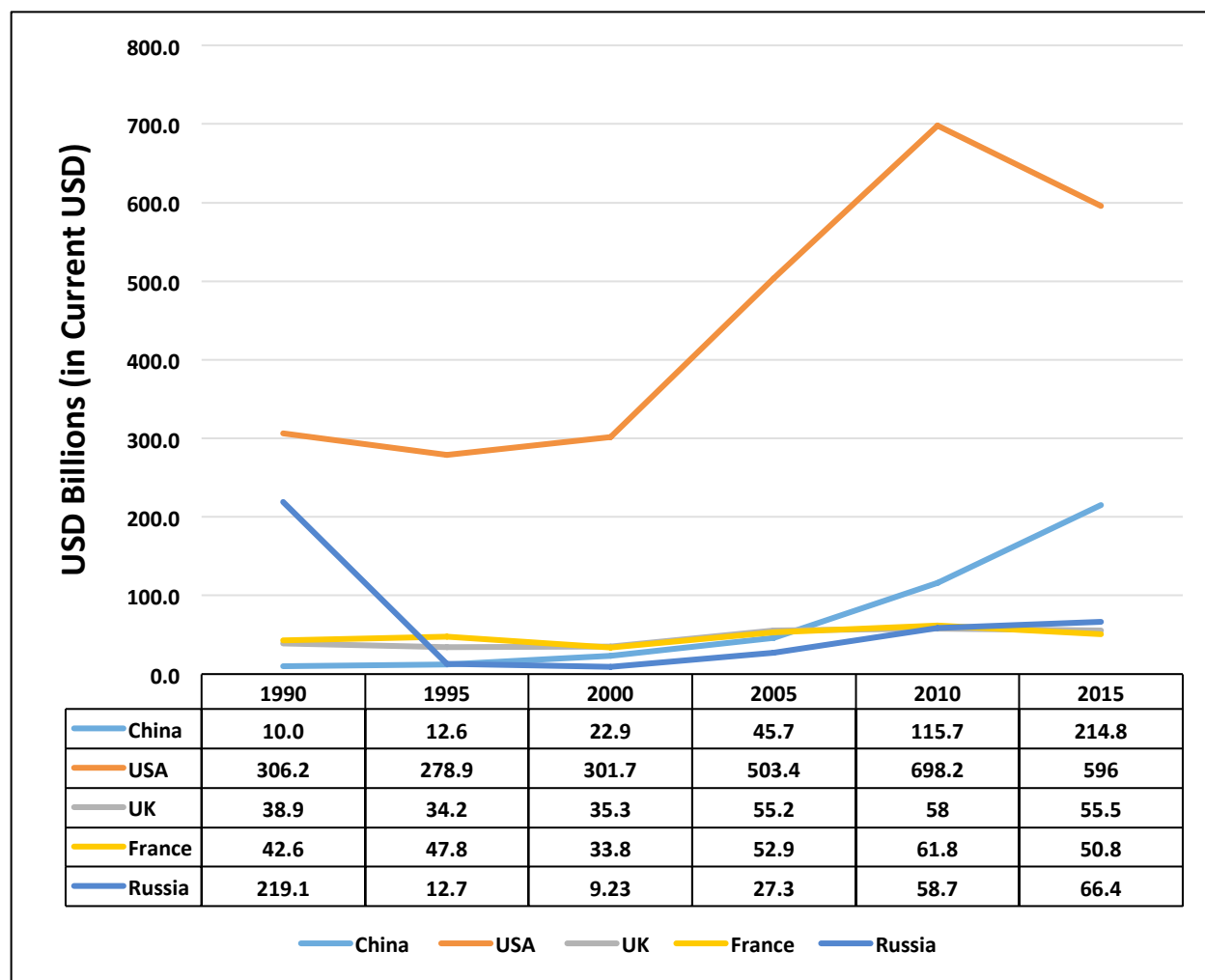
Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

**Figure 4.20: Defense Spending as Percentage of Overall Government Spending for UNSC 2008-2015**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

**Figure 4.21: Defense Expenditure from UNSC Countries 1990-2015  
(Current USD)**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

### U.S. Budget Caps and Defense Funding Instability

However, the aforementioned figures only describe the present. As **Figure 4.21** shows, China's defense expenditure has increased twenty fold since 1990 while the U.S. expenditure is just short of having doubled. Considering how small China's spending was in 1990 this is not necessarily a cause for concern. However, there are problems on the American home front in regards to defense spending.

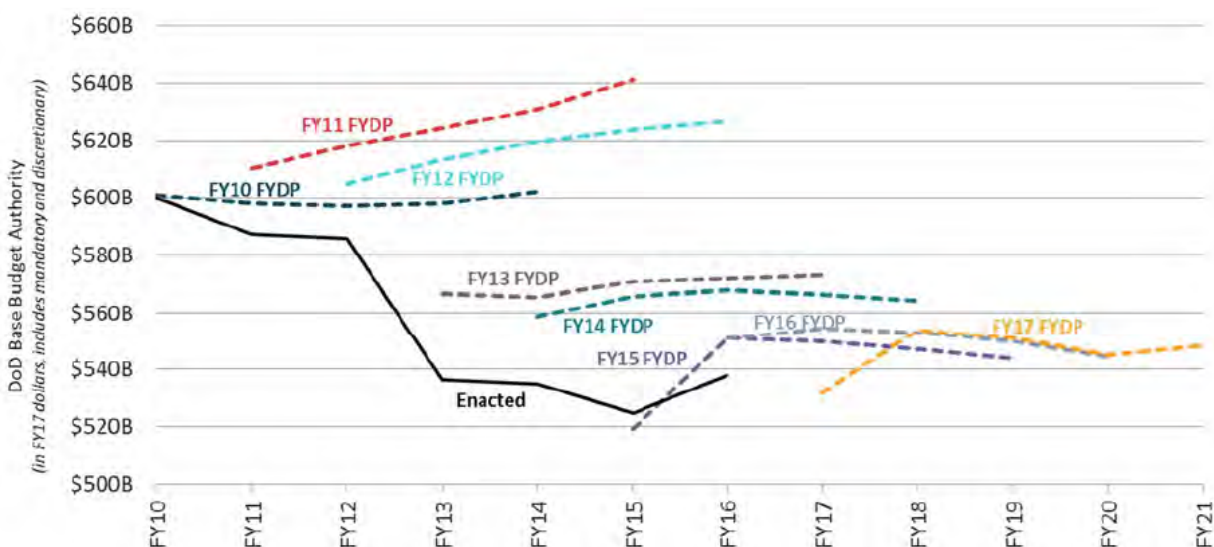
In response to the rapidly expanding federal deficit, the US Congress enacted the Budget Control Act (BCA) in August 2011. The BCA instilled budget caps on discretionary federal spending. In the President's Budget requests from FY11 to FY17 defense spending on average made up 50.65% of discretionary spending.<sup>143</sup> Consequently, U.S. defense spending has been significantly altered as a result of the 2011 BCA. The enacted ten-year budget caps were set to cut a trillion dollars in defense spending over the following ten years compared to what was proposed in the President's FY12 budget.<sup>144</sup>

Despite the apocalyptic terms in which Defense officials discussed the BCA after it was enacted, the DoD has been able to mitigate some of the projected brunt of budget capping. In both 2013 and 2015, Congress passed last minute Bipartisan Budget Acts (BBA) that minimally raised budget caps allowing the DoD more money. Furthermore, both Congress and the DoD have utilized the Overseas Contingency Operations (OCO) fund as a loophole for more funding. OCO funding is intended for necessary war funding, which allows for its exemption from budget caps. However, in the aftermath of the 2011 BCA it has been utilized for spending not directly related to war efforts.

Still, as **Figure 4.22** depicts, defense spending is still well below what was expected before the BCA was enacted.

**Figure 4.22: Comparison of Budget Requests and Enacted Budget FY10-FY17**

**Figure 2: Comparison of DoD FYDP Projections in the FY 2010 to FY 2017 Budget Requests**



Source: Todd Harrison, *Analysis of the FY 2017 Defense Budget*, CSIS, April 2016.

Budget caps create more problems than just decreasing defense funding. The BCA has led to a culture of instability and short termism that is antithetical to defense planning. The position of the U.S. military as the world's predominant power stems not only from economic mass but also constant technological innovation and strategic forethought.

Planning is particularly important for defense acquisition which has a tendency to move at a glacial pace. Take for example the Joint Strike Fighter (JSF), now known as the F-35. Lockheed Martin won the contract to develop the JSF in October 2001—the largest defense contract in U.S. history—following a competition and prototype development period that lasted much of the 1990's.<sup>145</sup> It was only in August 2016 that the USAF declared the first batch F-35s ready for battle.<sup>146</sup> The U.S. government still has to procure thousands more F-35s to complete the contract and the USAF has stated their lifespan will be until 2070.<sup>147</sup> This means that there will be almost seventy years between the award of the JSF contract and its retirement.

Simply, when the DoD is forced to depend on bills providing two-year bumps in budget caps it is detrimental to innovation and defense planning.

Assessing future U.S. defense planning is particularly important as it relates to a near-peer like China. As the U.S. has mostly extracted itself from wars in Iraq and Afghanistan, defense acquisition has moved away from things like Mine-Resistant Ambush Protected vehicles (MRAPs) and towards platforms that would be deployed in a conflict with a near-peer country.

While defense spending is capped through 2021, there is an expectation that defense spending will once again ramp under during the 2020s. Indeed, defense spending will have to increase due to the large number of modernization programs that will be ongoing throughout the decade. A select few important platforms that will be modernizing are the F-35, long-range striker bomber (LRS-B), KC-46 tanker aircraft, Ohio-class replacement submarine, and the ground-based strategic deterrent. Each of these are multi-billion dollar programs and platforms that are meant to confront a near-peer competitor.

The fact that all of these expensive platforms need to be updated at the same time has been referred to as the “modernization bow wave.”<sup>148</sup> As yet, there has been little acknowledgment from the DoD or Congress that the bow wave won’t be overcome. Equally, there has been little indication as to where the money will come from. Program instability is a serious ramification of budget caps and shortsightedness in defense planning.<sup>149</sup> If the U.S. fails in procuring the modernized platforms planned for the 2020s they could lose technological superiority to a near peer country like China.

### China-U.S. Defense Spending Convergence

As previously noted, at present China is nowhere near a military equal to the U.S. Still, even if their defense spending growth plateaus, China will continue to handily outstrip U.S. growth in defense spending due to the constraints of budget capping. This has led to discussion and prognostication regarding a convergence in defense spending between the U.S. and China.

In particular, the IISS *Military Balance 2013* puts forth a model to estimate when convergence might occur as depicted in **Figure 4.22**. Using Chinese defense budget information that was disclosed in 2010, along with other assessments of R&D and foreign weapons purchases that were likely not included, the IISS developed the analysis of China’s defense budget trends and estimates over 2009-2011.

This estimate led the IISS to project a possible future convergence between Chinese and US military spending under a variety of scenarios that could take place as early as 2022 or as late as 2050:<sup>150</sup>

Given the rapid growth in China’s military spending over the past decade, the question arises of how long it will be before China may be expected to rival the US as the world’s largest defence spender. Such projections are fraught with difficulty because they rely on assumptions about future economic growth rates and the trajectories of not just China’s defence spending, but also that of the US. While neither definitive nor clearly predictive, they can offer an indication.

Figure 19 shows the potential future convergence in Chinese and US defence spending, assuming that average defence-spending growth in both countries between 2001 and 2012 is maintained. If US base defence-budget spending figures contained in the FY12 defence budget request submitted to Congress (in February 2011) are extrapolated, these converge with projections of the official PLA budget in around 15 years, in 2028. If the lower US base defence spending contained in the FY13 budget request is used instead,

convergence with official PLA budget projects occurs slightly sooner, in 2026. Under sequestration (see pp. 59–66), this convergence would occur earlier still, in 2025.

However, as noted each year in *The Military Balance*, official Chinese defence budget figures probably underestimate the true extent of Beijing's defence spending. Although official figures include personnel, operations and equipment expenditure, it is widely held that other military-related expenditures are omitted – such as allocations for R&D and overseas weapons purchases. A fuller account of China's true military-spending levels should also include funding allocated to the People's Armed Police (PAP). As shown in Table 12, if estimates of these additional items are included, Chinese defence spending rises by a factor of approximately 1.4–1.5 relative to officially published figures, to an estimated RMB883.3bn (US\$136.7bn) using market exchange rates (MER). If these higher estimates of Chinese spending are projected into the future, convergence with US defence spending could occur as early as 2023 (if US FY13 proposed spending levels are accepted) or 2022 (if sequestration is instituted).

Of course, several factors might delay or even prevent such convergence. A lower trajectory of economic growth in China as the global economy slows, or a downshift in economic activity as the country attempts to move away from an export oriented growth model, or economic turbulence as China attempts to modernize its fledgling financial markets and uncompetitive banking sector – these are all factors that could diminish economic growth, limiting the resources available for defence and, at the very least, delaying the date of convergence.

For example, if the average nominal defence spending increase in China slowed to 7.8% (half the 15.6% average increase in nominal Chinese spending between 2001 and 2012), official PLA spending would only converge with the FY13 US base budget spending projection in 2038 (2036 under sequestration). At 5% average annual spending growth, official Chinese spending converges with the US FY13 base budget projection in 2042 (2040 under sequestration). A sharp increase in US defence spending under a future US administration would have a similar delaying effect on convergence. Alternatively, a combination of the two could occur: US spending growth increases and Chinese spending growth reduces. The estimates provided here should thus be seen as indicative projections based on current trends; and on the balance of probabilities, any convergence is more likely to occur after 2028 rather than before, should it occur at all. It should also be noted that in considering possible convergence between China's defence spending levels and the US base defence budget, this discussion excludes military expenditures on overseas contingency operations (OCO) allocated to operational military activities, such as those undertaken in Iraq and Afghanistan. OCO funding is by nature ad hoc and can vary considerably year by year.

While the IISS prediction is heavily couched and now slightly dated, the mere possibility of a convergence underlines the high priority that repealing the BCA and enacting a long-term sustainable budget should have for the next administration. However, considering the partisan politics at play in the legislature and the personal animosity both parties have towards the opposing Presidential candidate it seems like a budget agreement will be an uphill battle.



**Figure 4.22: IISS Model on U.S.-China Defense Spending Convergence**

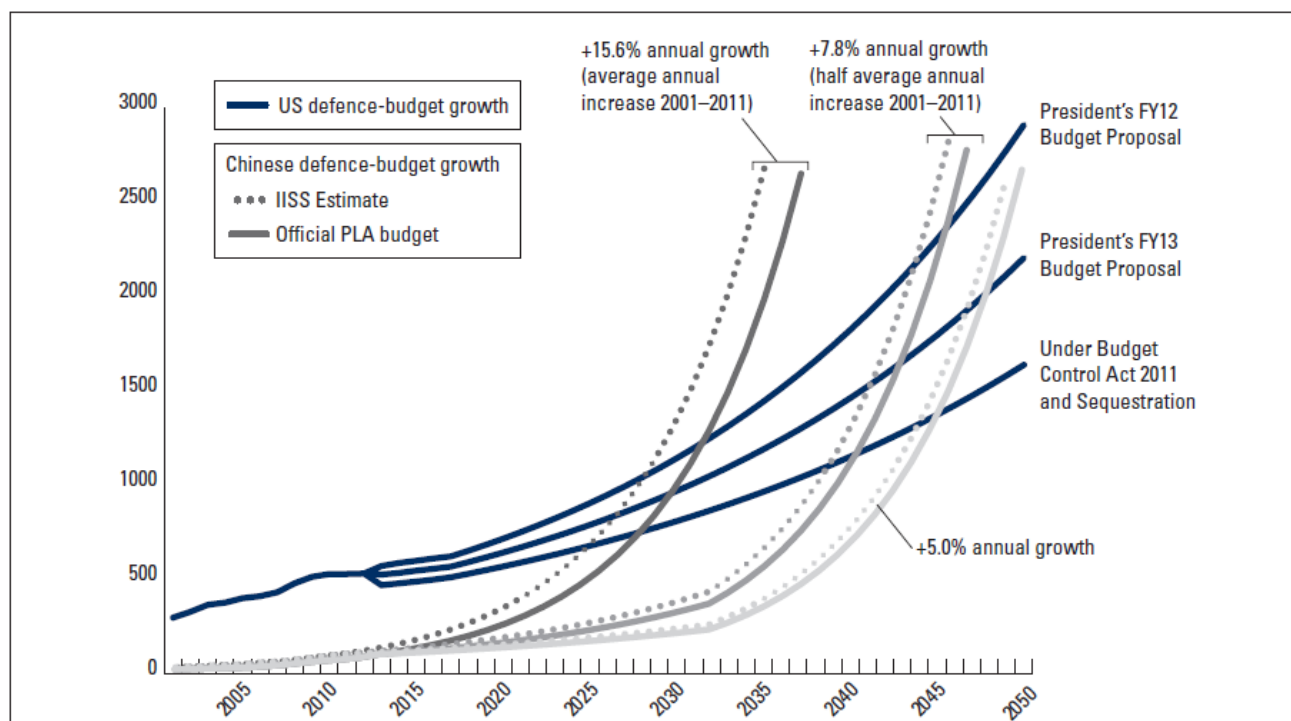


Figure 19 **China–United States Defence Expenditure Convergence 2001–2050**

Source: *IISS Military Balance 2013* p. 256.

### ***Ramifications for Asia***

The reality for Asian countries is much different than that of the United States. Not only has the last fifteen years seen China surpass all other Asian countries in defense expenditure, but China has left them in the dust. As **Figure 4.23** depicts, Japan has traditionally had the highest defense expenditure in Asia. In 2000, Japan's defense spending was double that of China. Currently, China's defense spending is over five times that of Japan. China's spending and economic growth has become such that no Asian country will be able to compete for a long time.

The response from Asian countries has largely been garbled and reactive. As **Figure 4.23** and **Figure 4.24** show, there has not been a significant uptick in defense spending from many Asian countries who have expressed concern about China's rise in defense expenditure. In real dollars, Japan spends less than it did in 1995 and Taiwan has only increased spending by one billion since 2000.

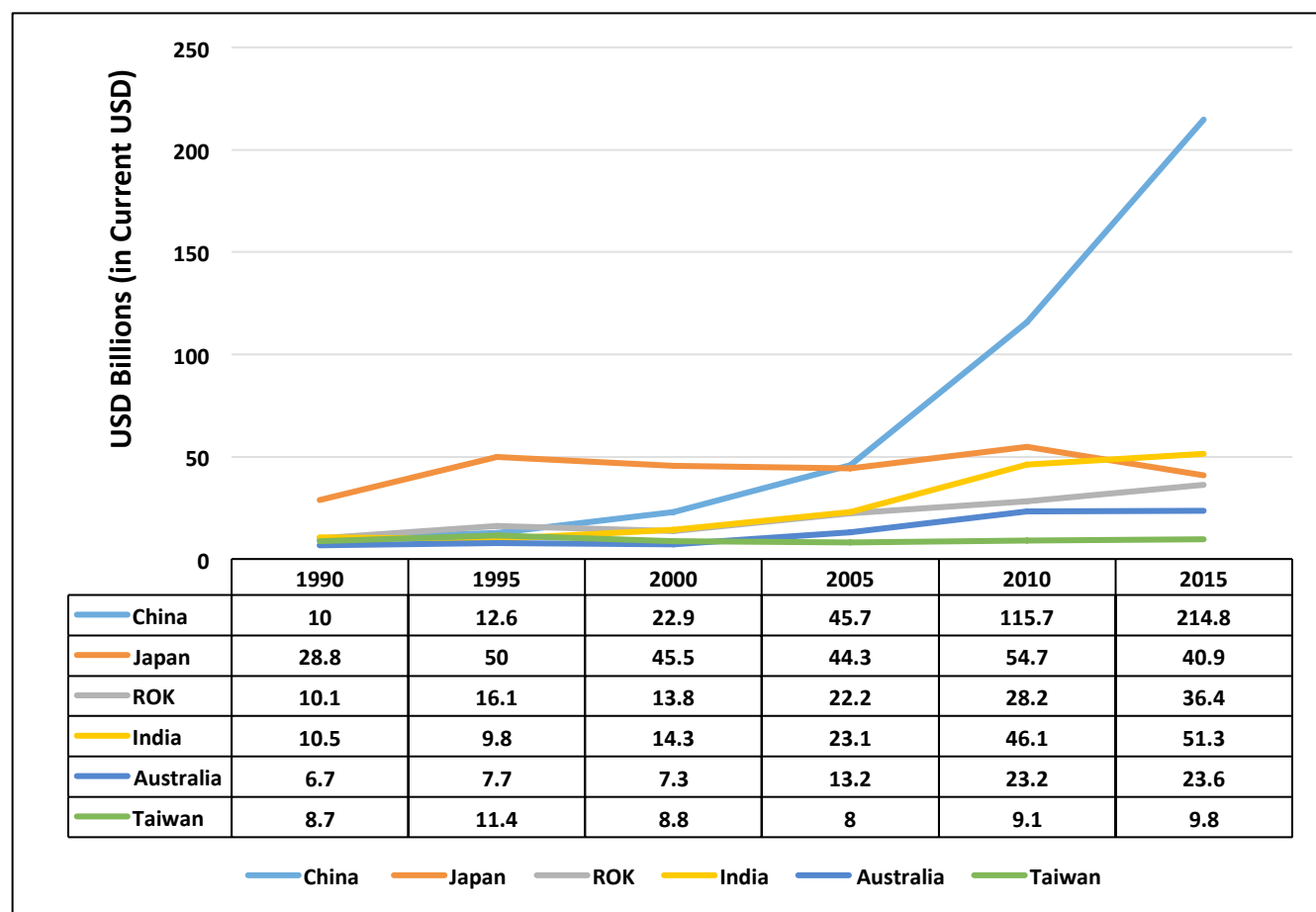
There have been fractures among Asian countries in attempting to present a unified front to China. For example, in the aftermath of the arbitration ruling on the South China Sea, the Association of Southeast Asian Nations (ASEAN) could not come to an agreement on releasing a joint statement regarding the arbitration result due to differing opinions.<sup>151</sup>

Consequently, it seems that many of the Asian countries are relying heavily on the U.S. and its rebalance to Asia. In many cases, they for an increasing U.S. presence while doing little to bolster

themselves. This has led to complaints across the spectrum in the U.S. that many of its Asian allies are freeriding on American power and commitment.

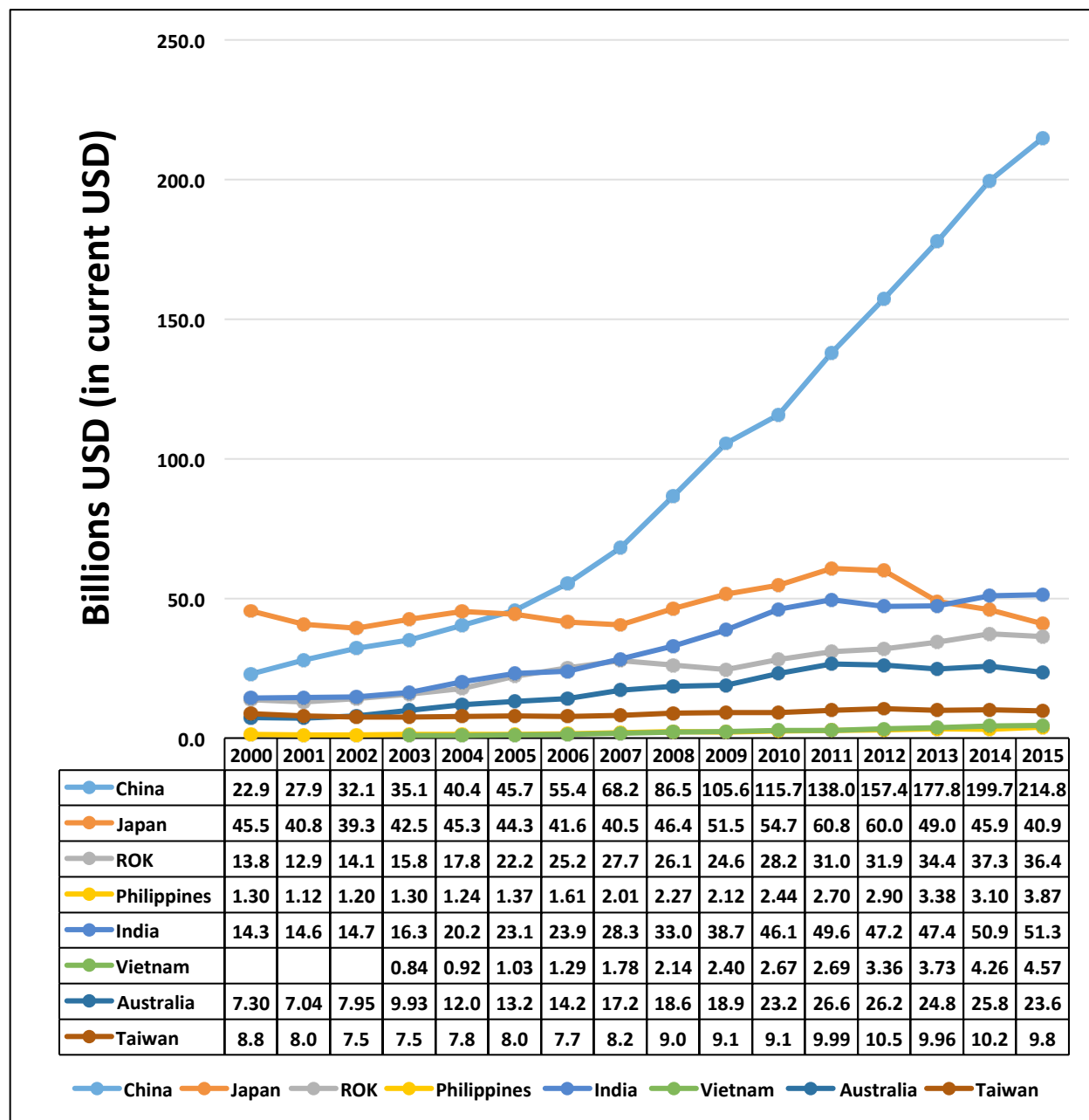
Overall, China's massive growth appears to have blindsided many Asian countries and their subsequent response has been tepid.

**Figure 4.23: Military Expenditure in Asia 1990-2015 (Current USD)**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

**Figure 4.24: Military Expenditure in Asia 2000-2015 (Current USD)**



Source: SIPRI, *Military Expenditure Data 1988-2015*, <https://www.sipri.org/databases/milex>. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies, September 2016.

## CHAPTER 5: CHINESE STRATEGY AND PLA MILITARY DOCTRINE

Strategy, like military expenditures, is best judged by actions rather than what is said or claimed. During the past five years, however, China's unclassified literature has become more conceptual and less focused on actual force numbers and implementation than most discussions of strategy by other neighboring Asian nations, as well as such discussions of the US and Europe. This has led to significant debates in the Western open-source literature over China's actual strategy, and how it affects its force structure, military spending, and arms purchases. It has also led to similar debates over China's actual internal views of its strategic environment, its intentions, and the goals it is seeking to pursue.

One way to partially resolve these debates is to focus on China's actions rather than its official statements. At the same time, simply measuring the shifts in the unclassified data on Chinese forces and actions lacks context and perspective. They need to be analyzed in the context of Chinese strategic doctrine. This and the following chapters attempt to tie Chinese strategy and broad statements regarding its military developments to quantitative indicators of trends in Chinese military modernization and force development in order to better determine China's actual goals and how they relate to real-world changes in its military posture and forces.

### *Chinese Strategic Doctrine*

Public statements of strategy have obvious limitations. No nation will give away its secret intentions, goals, and means to achieve them. Even the most transparent official strategy document is inevitably political in character, and shaped by the internal politics of national security, infighting and debates between serves and various elements of the national security structure, and designed in part to influence outside opinion and political needs. What China says is not a full reflection of what its leaders actually think and intend, any more than any unclassified Western strategy document or force plan has passed fully passed such test or come close to meeting it.

It is also important to keep in mind the difficulties that arise analyzing Chinese defense literature due to difficulties in transcription, translation, and transliteration. Countries sometimes deliberately conceal facts or use misleading terms in official documents and statements. This holds especially true in non-democratic systems and ones where ideology plays a critical role.

Like most countries, China does not make a unified, single doctrine for guiding military operations publicly available. Rather, Chinese doctrine must be understood as the combination of several documents and guidelines at different command levels of the armed forces, united into a hierarchical system that the Chinese refer to as a "Science of Military Strategy." At the top of this hierarchy, the "Military Strategic Guidelines" provide direction on the current and future development of the PLA.

The 2012 DoD annual report to Congress on Chinese military and security developments commented on this situation as follows:<sup>152</sup>

China's 'Military Strategic Guidelines for the New Period,' completed in 1993 and revised as recently as 2004, contains the overarching strategic and operational guidance that directs the training, development, and employment of China's armed forces.

Attempts to discern a systematic hierarchy among Chinese war-fighting principles usually identify two concepts – “Active Defense” and “Local War under Conditions of Informatization” – at the top level of China’s military doctrine. In addition, the older concept of “People’s War” has been modified and updated to remain relevant in the 21<sup>st</sup> century.

### Active Defense

Active Defense is an operational guideline for military strategy that has been part of PRC military thinking since Mao Zedong and has been applied to all the branches of the armed forces. It states that China’s military engages in a policy of strategic defense and will only strike militarily after it has already been struck.

However, Active Defense specifically states that such a defensive strategic posture is only viable if mated with an offensive operational posture. Moreover, the first strike that triggers a Chinese military response need not be military; actions in the political and strategic realm may also justify a Chinese military reaction.<sup>153</sup>

The *Science of Military Strategy*, a PLA textbook on strategy, presents the four pillars of active defense.<sup>154</sup>

- First, China will not fire the first shot and will attempt to settle any disputes by peaceful means for as long as possible.
- Second, China will attempt to deter war militarily or politically before it breaks out.
- Third, China will respond to an attack with offensive action and will seek to destroy the enemy’s forces.
- A fourth pillar, but presented as part of pillar three, is that China would not be the first state to use or threaten to use nuclear weapons.

Thus, while Active Defense posits a strategically defensive orientation for the PLA, it specifically instructs the PLA to engage in operationally offensive action in order to thwart an invader. As the *Science of Military Strategy* states:<sup>155</sup>

Strategically, we would fight only after the enemy has struck. But when foreign enemies forced war on us, we should be able to deal out powerful counterattack and stop the enemy’s offense in predetermined areas. After gradually depriving the enemy of his strategic initiative, we would change strategic defensive to strategic offensive, so as to utterly defeat the enemy’s invasion.

China’s 2015 Defense White Paper provides a broadened explanation of the “strategic guideline of active defense” which shows how this concept has evolved better reflect China’s current situation, emphasizing information dominance, maritime power, and technological modernization<sup>156</sup>

To implement the military strategic guideline of a security situation, the basic point for PMS will be placed on winning informationized local wars, highlighting maritime military struggle and maritime PMS. The armed forces will work to effectively control major crises, properly handle possible chain reactions, and firmly safeguard the country's territorial sovereignty, integrity and security.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will innovate basic operational doctrines. In response to security threats from different directions and in line with their current capabilities, the armed forces will adhere to the principles of flexibility, mobility and self-dependence so that "you fight your way and I fight my way." Integrated combat forces will be employed to prevail in system-vs-system operations featuring information dominance, precision strikes and joint operations.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will optimize the military strategic layout. In view of China's geostrategic environment, the security threats it faces and the strategic tasks they shoulder, the armed forces will make overall planning for strategic

deployment and military disposition, in order to clearly divide areas of responsibility for their troops, and enable them to support each other and act as an organic whole. Threats from such new security domains as outer space and cyber space will be dealt with to maintain the common security of the world community. China's armed forces will strengthen international security cooperation in areas crucially related to China's overseas interests, to ensure the security of such interests.

To implement the military strategic guideline of active defense in the new situation, China's armed forces will uphold the following principles:

- To be subordinate to and in the service of the national strategic goal, implement the holistic view of national security, strengthen PMS, prevent crises, deter and win wars;
- To foster a strategic posture favorable to China's peaceful development, adhere to the national defense policy that is defensive in nature, persevere in close coordination of political, military, economic and diplomatic work, and positively cope with comprehensive security threats the country possibly encounters;
- To strike a balance between rights protection and stability maintenance, and make overall planning for both, safeguard national territorial sovereignty and maritime rights and interests, and maintain security and stability along China's periphery;
- To endeavor to seize the strategic initiative in military struggle, proactively plan for military struggle in all directions and domains, and grasp the opportunities to accelerate military building, reform and development;
- To employ strategies and tactics featuring flexibility and mobility, give full play to the overall effectiveness of joint operations, concentrate superior forces, and make integrated use of all operational means and methods;
- To make serious preparations to cope with the most complex and difficult scenarios, uphold bottom-line thinking, and do a solid job in all aspects so as to ensure proper responses to such scenarios with ease at any time and in any circumstances;
- To bring into full play the unique political advantages of the people's armed forces, uphold the CPC's absolute leadership over the military, accentuate the cultivation of fighting spirit, enforce strict discipline, improve the professionalism and strength of the troops, build closer relations between the government and the military as well as between the people and the military, and boost the morale of officers and men;
- To give full play to the overall power of the concept of people's war, persist in employing it as an ace weapon to triumph over the enemy, enrich the contents, ways and means of the concept of people's war, and press forward with the shift of the focus of war mobilization from human resources to science and technology; and
- To actively expand military and security cooperation, deepen military relations with major powers, neighboring countries and other developing countries, and promote the establishment of a regional framework for security and cooperation.

The 2016 DoD Report notes that:<sup>157</sup>

China characterizes its military strategy as one of “active defense,” a concept it describes as strategically defensive but operationally proactive in orientation. It is rooted in a commitment not to attack, but to respond aggressively once an adversary decides to attack—a defense that counterattacks in order to disrupt an adversary’s preparations or offensive rather than a defense that reacts passively. The PLA interprets active defense to include mandates for both de-escalation and seizing the initiative. Active defense is set in China’s National Security Law (2015) and is included in the PLA’s major strategy documents.

### **Local War Under Conditions of Informatization**

While Active Defense provides the basic strategic posture for the PLA, its primary modern operational concept is the doctrine of Local War under Conditions of Informatization.

The Local War under Conditions of Informatization (Local Wars) concept has been the official military doctrine of the PLA since 1993.<sup>158</sup> This doctrine states that near-future warfare will be local geographically, primarily along China's periphery; limited in scope, duration, and means; and conducted under "conditions of informatization."

The U.S. Department of Defense (DoD) describes these as "conditions in which modern military forces use advanced computer systems, information technology, and communication networks to gain operational advantage over an opponent."<sup>159</sup> The DOD further interprets the doctrine to refer to "high-intensity, information-centric regional military operations of short duration."<sup>160</sup> As the rest of this study will show, the PLA's ongoing modernization and force development has occurred along the operational requirements of this doctrine.

As has been discussed earlier, the Chinese concept of "informatization," uses a word that attempts to capture and describe an important but abstract concept. A US study explains this concept as follows:<sup>161</sup>

Western analysts often see 'informatization' as a vague concept that is functionally equivalent to the PLA's 'RMA with Chinese characteristics,' or to the modernization of the PLA's C4ISR (Command, Control, Communications, Computers and Intelligence, Surveillance, and Reconnaissance) capabilities, or to the American military's concept of Network-Centric Warfare (NCW)... The term 'informatization,' at its most universal and elemental, describes the process of moving toward greater collection, systematization, distribution, and utilization of information.

Within that ultimate process, however, there are numerous subordinate processes, extending down through multiple layers, from the global trend of informatization to the informatization of particular industries, societies, weapons systems, and the like. At any given level, the term "informatization" can refer to an organic, decentralized process (such as the "informatized conditions" under which the PLA are instructed to prepare to win local wars), to an intentional, directed process (the informatization of weapons and equipment), or in some cases to actions taken by an actor to adapt or prepare for informatization trends beyond its control.

In short, "informatization" is seen as a global phenomenon and/or broad historical trend in society:<sup>162</sup>

Just as the industrial revolution transformed both the context of warfare and the means by which military capabilities were generated, Chinese theorists perceive the information society as representing anew sea-change with implications for every aspect of warfighting and military construction. PLA theoreticians view this trend as not only altering how wars are fought, but whether or not wars commence at all, with informatization sometimes lowering the barriers to entry into a conflict.

In an apparent nod to People's War:<sup>163</sup>

PLA scholars informatized mobilization as requiring systematic communication, coordination, and synchronization between the PLA, China's other armed forces (the militia and People's Armed Police), and civilian networks, both for the national defense and for Hu's focus on the PLA carrying out expanded military operations other than warfare (MOOTW). PLA scholars emphatically view civil-military integration in the defense economy as a key component of both PLA informatization and military innovation, thus intertwining military and civilian informatization efforts.

Like many of the PLA's theoretical concepts, this view of modern war is based on a combined study of history and theory; PLA theorists reportedly identified the 1991 Gulf War as the beginning of a new era in warfare, a Revolution in Military Affairs (RMA), in which information technology completely revolutionized warfare and changed the way militaries were organized, led, and fought. Moreover, the same theorists assessed that the dramatic changes in international relations following the Cold War had decisively altered both the political drivers for war and the political constraints on war.<sup>164</sup>

They concluded that the result of the RMA and the decisive change in international affairs is a new type of warfare dominated by two key characteristics: a dependence on information technology and a limitation in geographic scope, duration, and political objectives of future warfare. As the *Science of Military Strategy* asserts:<sup>165</sup>

It has two distinctive features: one is the high-tech feature, and the other is the local feature. The former refers to the high-tech as the material and technological foundation of war, for a large amount of high-tech weapons and equipment are used and a lot of traditional military systems are improved by the employment of high technologies. The latter means that the war is controlled within the local range. Moreover, the aim, range, tools of war and time and space of engagements are all limited. These two features determine the fundamental orientation of the future development of local war.

With regard to the “local feature”, PLA theorists argue that in contrast to the previous PLA belief in “Total War,” “Local Wars” are characterized by the pursuit of limited political goals through a relatively constrained use of force.<sup>166</sup> Under this concept, military force supports diplomatic efforts aimed at securing attainable, limited political goals rather than the complete destruction of the enemy. To quote a RAND report, “Military action is intended to create conditions for the achievement of the desired political outcome.”<sup>167</sup>

Thus, military force operates in conjunction with, or possibly in support of, other instruments of national power. PLA Colonels Qiao Liang and Wang Xiangsui argue this point strongly in their book, *Unrestricted Warfare*, and assert that the effectiveness of military power has declined relative to the new, infinite means of coercing one’s enemies. They contend that the dynamically changing external environment facing nation-states today makes “obsolete the idea of confining warfare to the military domain.”<sup>168</sup> As a result, military means are just one instrument of comprehensive national power amongst many others.

Despite the decreasing importance of the purely military sphere in future conflicts, the concept of Local Wars still focuses on the specific conditions of military-on-military confrontations. It estimates that the high level of technology present in Local Wars ensures that wars will be brief but highly destructive contests between highly lethal and networked military forces.

Due to the increased battlefield lethality of modern weapons in combination with the limited geographic scope and objectives of Local Wars, the PLA expects to fight intense short wars that will be very decisive. Moreover, the ability of military forces to communicate and coordinate rapidly through C4ISR networks means that military forces in Local Wars at the operational level will be agile, capable of high-tempo deep operations, resource-intensive, critically dependent on information, and present in all warfare domains.<sup>169</sup>

Starting in late 2015, China began to undertake a series of reforms to further build a military capable of fighting informationized wars. The 2016 DoD report states that:<sup>170</sup>

The widening gap between the demands of winning informationized local wars and the PLA’s legacy command, organizational, and administrative structure has fueled several proposals for reform since the 1990s. The Chinese Communist Party (CCP) Central Committee endorsed the need for reform at the Third Plenum of the 18th Party Congress in November 2013 and the Central Military Commission (CMC) established the Leading Group for Deepening Defense and Military Reforms in the months that followed. President Xi Jinping chairs the group, and CMC Vice Chairmen Fan Changlong and Xu Qiliang serve as its deputies.

In late November 2015, President Xi introduced the major elements of structural reform intended to be carried out by 2020 at a special three-day reform group session. Further announcements followed in December. The Ministry of National Defense (MND) spokesman stated that, overall, the reforms sought to



improve “leadership administration and command of joint operations” so that the PLA would have a force structure able to fight and to win modern conflicts. These reforms include:

- > *Theaters*. The PLA is transitioning from its seven legacy military regions (MR) to five “theaters of operations,” or joint commands, in a move the MND spokesman tied to enhancing combat effectiveness.
- > *Army Headquarters*. In late 2015, the PLA began to establish a headquarters for its ground forces, creating a separate PLA Army (PLAA) service. Previously, leadership of ground units was integrated into the PLA’s four general departments, which were each represented on the CMC.
- > *Rocket Force*. On December 31, 2015, China’s military leadership re-designated the PLA Second Artillery Force (PLASAF) as the PLA Rocket Force (PLARF) and elevated it from an independent branch to a full service.
- > *Strategic Support Force*. Also on the last day of the year, the PLA created a new force under the CMC, reportedly to oversee its space and cyber capabilities.
- > *Roles and missions*. The reform plan aims to establish two clear lines of authority under the CMC. It gives the services authority over “force management” issues while the theater headquarters command operations—a distinction that was ambiguous in the past.
- > *Staff Departments*. The leadership is also adjusting the PLA’s senior staff bodies, in part by replacing the four general departments with six joint departments, three commissions, and five offices under the CMC.
- > *Internal Discipline*. The CMC is tightening military discipline with reforms to its Discipline and Inspection Commission, its Auditing Office, the PLA judicial system, and a new Politics and Law Commission.

In September 2015, President Xi also announced that the PLA would reduce its force by 300,000 personnel by the end of 2017, a move widely expected to result in fewer non-combat personnel, such as those specialized in arts and culture, administrative duties, or academic work. China’s official media also report the cuts will help to rebalance the proportion of forces among the services in ways that will raise the relative importance the PLA Navy (PLAN) and PLA Air Force (PLAAF).

At the operational level, the PLA may intend to continue to convert some divisions into brigades in order to increase its overall combat capabilities and enhance mobility. Although the majority of these conversions appear to have been accomplished prior to 2015, additional actions may have been paused in 2015 due to the wider PLA reorganization. This is part of an overall modernization effort to streamline the force and to reduce non-combat positions such as entertainment units or headquarters staffs. The PLA is also placing non-commissioned officers in positions traditionally held by officers or assigning civilians to take over some duties.

The continued development of army aviation units, special operations forces (SOF), and airland mobility is an attempt to increase the agility of the force and build an expeditionary capability. These changes in how the PLA trains for combat and how it would fight during a conflict has required fundamental changes to PLA doctrine. Dissemination of this revised doctrine will probably take some time but will support the PLA’s modernization goals for 2020.

## People’s War

The Chinese concept of People’s War is one in which the people actively support the military during times of warfare: this active support can be logistical, political, or operational. When describing arming the civilian population for military operations, PLA writings mostly refer to militia, civil defense, and reserve forces.<sup>171</sup> However, the use of civilian materiel and personnel for

support and logistics functions is an accepted part of PLA doctrine and is still seen as necessary for victory in Local Wars:<sup>172</sup>

The cooperation between the regular warfare and irregular warfare stresses that we should give full play to the creativity of the masses and servicemen on the basis of inheriting the glorious tradition of the people's war so that the new form of the people's war under modern conditions can be explored according to the reality of the war in different strategic directions. "Five combinations" should be dealt with well. The first is the combination of the regular troops with the masses participating in the war. The emphasis should be put on coastal regions or inland border regions. The masses should be mobilized to support defensive operations on the sea or counterattack in self-defense on the borders, and make use of local scientific and technical resources to launch all kinds of attacks against the enemy and provide various special supports.

The PLA sees no contradiction between People's Wars and Local Wars; instead, the two doctrines are seen as mutually reinforcing.<sup>173</sup> Moreover, this belief in complementarity is more than theoretical; the PLA actively depends on the civilian population at all levels, requiring logistical and direct support from the Chinese people in mobilization, mobility, and combat.

For example, a key role of local governments in wartime is to coordinate civilian support for military forces. Referencing transportation during wartime, the *Science of Second Artillery Campaigns* states:<sup>174</sup>

With respect to engineering support, on one hand the destruction during wartime of the positions, roads, bridges within the battlefield would greatly magnify the work load and difficulty; while on the other hand, the magnanimous support and assistance from the local government and the masses would become a potent replenishment of our wartime engineering support. Moreover, within the battle zone, the financial potential, mechanical maintenance capability, loading and unloading transportation capability, medical first-aid ability, in addition to the quantity and quality of the population, would all constitute extremely direct influence towards the logistics, equipment technical support and personnel replenishment.

Consequently, the PLA identifies the Chinese population and local governments as vital resources during Local Wars. Given the predicted close proximity of China to future battlefields, as well as the necessary mobilization and maneuver that would take place within China, the PLA predicts that the local population can be decisive even in a local, high-technology war.

Another key element of People's War is the necessity of maintaining good relations with the local populace. As a result, the *Science of Second Artillery Campaigns* specifically instructs SAF personnel to maintain good relations with the local populace for ethical and operational reasons:<sup>175</sup>

Vigorously foster the PLA's good tradition of supporting the government and cherishing the people, and foster military-politics and military-civilian relationships. Under the premise of strict adherence to secrecy, obtain contact with pertinent departments of the local government in a timely manner, and actively seek the vigorous support of the regional government. Under the condition of satisfying campaign operations, strive to accommodate the masses by self-consciously safeguarding the masses' interests. Strictly abide by policy regulations and the masses discipline, resolve new issues that surface during the process of campaigns in a timely manner, and establish the fine image of a mighty and civilized army.

### ***Chinese Campaign Doctrine***

Active Defense, Local Wars, and People's War all help describe how China intends to shape its force posture, develop its forces, and fight at the strategic level. Operationally, or in the Chinese terminology, at the campaign level, the PLA has developed doctrines and principles of warfare that it believes will enable China to win Local Wars even against technologically superior adversaries. While every element of PLA campaign doctrine cannot be discussed in this limited overview, the campaign doctrines most necessary for evaluating Chinese modernization are included below.

## Integrated Joint Operations

Chinese military writings describe joint operations as a critical component of future military operations and a necessary means of defeating technologically superior adversaries. PLA doctrine holds that joint operations, or cooperation at the operational level between multiple services, are an essential means of augmenting combat power at the operational level and a necessity for success in Local Wars. Identifying future combat as a confrontation between military systems, the PLA believes multi-service cooperation, such as the use of SAF forces at the operational level to support PLAAF operations, will enable the PLA to achieve its objectives in a highly complex and lethal environment.

As the *Science of Military Strategy* notes:<sup>176</sup>

Under the high-tech conditions, the victory of war depends on the comprehensive confrontation capacity of the whole combat system. The composition of war power is developing in the direction of systematization, and the emphasis is laid on the combination of various forces so as to find new ways to increase their combat effectiveness through the integrated composition and employment of combat forces. The operations of individual service are disappearing, while the traditional division of labor among the Army, the Navy and the Air Force is blurring.

Various combat forces are more closely connected with each other, and the operations are highly integrated. A very small-scale operation possesses the feature of jointness. The enormous power of various combat forces can only be given full play to in joint operations. Integrated and joint operation has become the basic pattern of high-tech local war. The principles of “systems confrontation” and “overall strike” have become more important than that of “independent operation”.

Sometimes strategic means might be used to attack tactical targets, and, sometimes, tactical means might be employed to attack strategic targets. Supported by information technology, various arms and services, different functional formations and various combat factors are woven into a unity. Hence, joint operation has become the inexorable operational pattern. Combined fighting capacity has become the fundamental symbol of combat effectiveness of the armed forces.

Traditionally, the PLA has considered joint operations to be “operations under unified command and executed by two or more services at the corps level.”<sup>177</sup> However in the last decade, the PLA has made two revisions to its joint operations concept.

First, the PLA has renamed joint operations “integrated joint operations,” partially in response to lackluster training practices that did not achieve the hoped-for level of jointness but also in order to emphasize the role of support, logistical, and civilian forces in the joint operations concept. The new concept also emphasizes the role of informatization in joint operations.<sup>178</sup>

Second, the PLA has begun the process of pushing joint operations down from the level of corps (Group Armies [GA’s]) to that of divisions and even brigades.<sup>179</sup> As the above quote shows, the PLA intends to push down joint operations to “very small-scale operations.” However, as one analyst writes:<sup>180</sup>

It is evident that conducting joint operations at division level and below is still a relatively new concept for the PLA and that more time is necessary for them to experiment, encounter problems, find solutions, and communicate these experiences throughout the PLA.

According to the 2014 DoD report, in order to achieve this new concept:<sup>181</sup>

...the PLA is laying the foundation for future changes in military doctrine. To develop a new cadre of officers, the PLA is reshuffling its academics to cultivate junior officers proficient with and capable of leveraging technology in all warfighting functions for joint operations. The National University of Defense Technology, for example, launched a yearlong joint operations staff officer course to serve as a pilot for a

future national-level program. The course allows junior officers to rotate to the command elements of other PLA services to enhance their skills in joint operations planning and preparation.

The PLA sees a clear necessity for highly integrated C4ISR systems in order to win campaigns in Local Wars. The 2016 DoD report summarizes the Chinese priority to modernize these systems as follows:<sup>182</sup>

China continues to prioritize C4I modernization as a response to trends in modern warfare that emphasize the importance of rapid information sharing, processing, and decision-making. The PLA seeks to modernize itself both technologically and organizationally to command complex, joint operations in near and distant battlefields with increasingly sophisticated weapons.

The PLA views technological improvements to C4I systems as essential to improve the speed and effectiveness of decision-making while providing secure and reliable communications to fixed and mobile command posts. The PLA is fielding advanced automated command systems like the Integrated Command Platform (ICP) to units at lower echelons across the force. The adoption of the ICP enables multi-service communications necessary for joint operations. These C4I advancements are expected to shorten the command process. The new technologies introduced into the PLA enable information-sharing—intelligence, battlefield information, logistical information, and weather reports—on robust and redundant communications networks, to improve commanders’ situational awareness. In particular, the transmission of ISR data in near real-time to commanders in the field could facilitate the commanders’ decision making processes and make operations more efficient.

These technical improvements have greatly enhanced the PLA’s flexibility and responsiveness. “Informationized” operations no longer require in-person meetings for command decision-making or labor-intensive processes for execution. Commanders can issue orders to multiple units at the same time while on the move, and units can rapidly adjust their actions through the use of digital databases and command automation tools. The PLA also seeks to improve its C4I capabilities by reforming its joint command institutions at the national and regional levels.

## **Information Warfare**

One of the main principles of the Local Wars concept is that Information Warfare (IW) will play a central role in future warfare. Within the realm of IW, the PLA must be capable of quickly seizing and retaining information supremacy, or the ability to access and process information in effective C4ISR networks while denying the enemy the same ability.<sup>183</sup> Consequently, the PLA believes that advantages in collecting, transmitting, and processing information will lead to significant advantages at the operational and even strategic level.

The 2011 DoD Report described these Chinese efforts as follows:<sup>184</sup>

PRC military writings highlight the seizure of electromagnetic dominance in the early phases of a campaign as among the foremost tasks to ensure battlefield success. PLA theorists have coined the term ‘integrated network electronic warfare’ (*wangdian yitizhan*—网电一体战) to describe the use of electronic warfare, computer network operations, and kinetic strikes to disrupt battlefield information systems that support an adversary’s warfighting and power projection capabilities. PLA writings identify ‘integrated network electronic warfare as one of the basic forms of’ integrated joint operations, suggesting the centrality of seizing and dominating the electromagnetic spectrum in PLA campaign theory.

The PLA has developed the Integrated Network and Electronic Warfare (INEW) doctrine to organize and structure its forces for seizing information supremacy. INEW calls for the immediate seizure of information supremacy at the beginning of a conflict or even before. According to INEW, the goal of IW forces is:<sup>185</sup>

Controlling the dominant position in battlefield information within the scope of a particular time and space... It means having the rights of freedom and initiative when using information and controlling the battlefield initiative...

The 2014 DoD report on China found that:<sup>186</sup>

Almost all of the PLA's 2013 exercises focused on operating in "informationized" conditions, a concept that can be viewed as the Chinese corollary to U.S. network-centric warfare. This concept requires enhancing systems and weapons with information capabilities and linking geographically dispersed forces and capabilities into an integrated system capable of unified action.

Under the section concerning China's "force modernization goals and trends," the 2014 report found that the dominance of information warfare is a critical component of the evolving modern Chinese military strategy:<sup>187</sup>

An essential element, if not a fundamental prerequisite, of China's emerging A2/AD regime is the ability to control and dominate the information spectrum in all dimensions of the modern battlespace. PLA authors often cite the need in modern warfare to control information, sometimes termed "information blockade" or "information dominance," and to seize the initiative and gain an information advantage in the early phases of a campaign to achieve air and sea superiority.

China is improving information and operational security to protect its own information structures and is also developing electronic and information warfare capabilities, including denial and deception, to defeat those of its adversaries. China's "information blockade" likely envisions the use of military and non-military instruments of state power across the battlespace, including in cyberspace and outer space to deny information superiority to its adversaries. China's investments in advanced electronic warfare (EW) systems, counterspace weapons, and computer network operations (CNO) – combined with propaganda and denial through opacity – reflect the emphasis and priority China's leaders place on building capability for information advantage.

INEW holds that this objective can only be obtained by integrating means across the services. As a doctrine, INEW specifically focuses on integrating cyber and electronic warfare forces. However, other PLA forces will be used in conjunction with cyber/electronic attacks to create a hard/soft kill mix of attacking forces: PLA theorists argue that close coordination of operational systems provides the only means for victory in the system-on-system confrontation expected during a fight for information supremacy.<sup>188</sup>

Some reports saw the focus on informationized warfare as an element of People's War. Chinese military writers reportedly envision the mobilization of millions of citizens skilled in IT applications as the heroes in a new online People's War.<sup>189</sup> Some military districts already established reserve and militia units specializing in information warfare, thereby drawing on the vast, untapped potential of civilian software experts. As many as twenty city departments were believed to have information warfare regiments among their military reserve forces in 2005.<sup>190</sup>

The 2015 DoD report on China summarized the recent trends in China's building of an informationized military as:<sup>191</sup>

Chinese military writings describe informationized warfare as an asymmetric way to weaken an adversary's ability to acquire, transmit, process, and use information during war, and discuss its use as a way to force an adversary to capitulate before the onset of conflict. The PLA conducts military exercises simulating operations in complex electromagnetic environments, and likely views conventional and cyber operations as a means of achieving information dominance.

The GSD Fourth Department (Electronic Countermeasures and Radar) would likely use EW, cyberspace operations, and deception to augment counterspace and other kinetic operations during a wartime scenario to deny an adversary's attainment and use of information. "Simultaneous and parallel" operations would involve strikes against U.S. warships, aircraft, and associated supply craft and the use of information attacks to impact tactical and operational communications and computer networks. These operations could have a significant impact upon an adversary's navigational and targeting radars.

Cyber operations are a key component of informationization and could serve Chinese military operations in three key areas. First, they allow data collection for intelligence and potential offensive cyber operation purposes. Second, they can be employed to constrain an adversary's actions or slow response time by targeting network-based logistics, communications, and commercial activities. Third, they can serve as a force multiplier when coupled with kinetic attacks during times of crisis or conflict.

Developing cyber capabilities for warfare is consistent with authoritative PLA military writings, which identify information warfare as integral to achieving information superiority and an effective means for countering a stronger foe. These writings detail the effectiveness of information warfare and offensive cyber operations in conflicts and advocate targeting adversary C2 and logistics networks to affect their ability to operate during the early stages of conflict. They portray the enemy's C2 system as "the heart of information collection, control, and application on the battlefield. It is also the nerve center of the entire battlefield."

The 2016 DoD report further adds:<sup>192</sup>

The PLA conducts military exercises simulating operations in complex electromagnetic environments, and likely views conventional and cyber operations as means of achieving information dominance. The PLA would likely use EW, cyberspace operations (CO), and deception to augment counterspace and other kinetic operations during a wartime scenario to deny an adversary's attainment and use of information. Chinese military writings describe informationized warfare as an asymmetric way to weaken an adversary's ability to acquire, transmit, process, and use information during war and to force an adversary to capitulate before the onset of conflict. "Simultaneous and parallel" operations would involve strikes against U.S. warships, aircraft, and associated supply craft and the use of information attacks to affect tactical and operational communications and computer networks. These operations could have a significant effect on an adversary's navigational and targeting radars.

## Chinese Cyberwarfare

Cyberwarfare is becoming a major aspect of Chinese strategy and modernization and has triggered a growing US, ROK, and Japanese response. Chinese defensive and offensive cyber strategy has evolved over the past decade as part of the PLA's "Integrated Network Electronic Warfare" doctrine and "Local War Under Conditions of Informatization" concept.

Cyberwarfare has also become a concern of China's most senior leaders, as witnessed by Chinese President Xi Jinping becoming personally involved. Upon taking charge of the Central Internet Security and Informatization Leading Group in early 2014, the state-run Xinhua News Agency stated that President Xi Jinping sees Internet security as "a major strategic issue concerning a country's security and development as well as people's life and work." The President went further when he stated that, "efforts should be made to build our country into a cyber power."<sup>193</sup>

Later in 2014, President Xi Jinping issued official guidelines on the necessity to develop cyber defensive capabilities in his *Opinion on Further Strengthening Military Information Security*.<sup>194</sup> The PLA guidelines were briefly explained in the Chinese media as follows:<sup>195</sup>

The Opinion sets forth the guidelines, basic principles, key tasks and support measures for military information security work at present and for a period to come, laying down an important basis for the People's Liberation Army (PLA) and the Armed Police Force (APF) to carry out work in this area.

The Opinion urged all parties to make information security the underlying project of military preparedness and take unconventional and practical measures to solve protruding conflicts and key and difficult issues, so as to promote the scientific and safe development of China's military information construction.

The Opinion called for efforts to implement centralized management of military information security, and speed up the establishment of a military information security protection system that is aligned with the national information security system and consistent with the requirement for military preparedness.

The Opinion demanded to strongly promote China's independent information technology applications to cement the foundation for military information security.

It called for innovations in the information security technology and protection system to effectively improve the comprehensive defensive capability of military information security.

The Opinion also asked for resolute protection of online ideological safety and severe crackdown on military-related online crimes.

The following year, China issued its 2015 Defense White Paper, which discussed its views on cyberspace as a critical security domain and “a new commanding height in strategic competition.”<sup>196</sup> The white paper continued with the following comment:<sup>197</sup>

Cyberspace has become a new pillar of economic and social development, and a new domain of national security. As international strategic competition in cyberspace has been turning increasingly fiercer, quite a few countries are developing their cyber military forces. Being one of the major victims of hacker attacks, China is confronted with grave security threats to its cyber infrastructure.

As cyberspace weighs more in military security, China will expedite the development of a cyber force, and enhance its capabilities of cyberspace situation awareness, cyber defense, support for the country's endeavors in cyberspace and participation in international cyber cooperation, so as to stem major cyber crises, ensure national network and information security, and maintain national security and social stability.

As previously discussed, the PLA has paid significant attention to information warfare in the past decade under the “Integrated Network Electronic Warfare” doctrine, not only looking at cyberwarfare, but also battlefield EW. The doctrine promotes the PLA’s capabilities in paralyzing an opponent’s C4ISR capabilities through network warfare and EW tools.

The PRC has apparently moved towards a new “information confrontation” (*xinxi duikang*) concept, integrating non-electronic and electronic information warfare under a single command. It is likely that the PLA perceives information warfare as a national exercise to be undertaken in times of both peace and war, as information sovereignty is an important aspect of national power. In a battle situation, each side would employ integrated air, ground, naval, and electromagnetic forces. As such, the PLA is working to improve battlespace situational awareness by linking all the military branches into one common operating platform.<sup>198</sup>

In addition to enhancing battle space situational awareness, cyberwarfare is seen as a valuable tool for psychological operations against the public populations of opposing countries. This can involve “public diplomacy measures, propaganda and psychological campaigns, political and cultural subversion, deception of or interference with local media, infiltration of computer networks and databases, and efforts to promote a dissident or opposition movements across computer networks.”<sup>199</sup>

Such operations target “the emotions, motives, objective reasoning, and behavior of a specific, targeted audience”<sup>200</sup> and essentially attempt to degrade American will to sustain a conflict.<sup>201</sup> This would appear to be one way to take advantage of what the Chinese perceived to be an extreme aversion to casualties by Americans.<sup>202</sup>

In an assessment of China’s capabilities, the IISS noted:<sup>203</sup>

The PLA has devoted much attention to information warfare over the past decade, both in terms of battlefield EW and wider, cyber-warfare capabilities. The main doctrine is the ‘Integrated Network Electronic Warfare’ document, which guides PLA computer-network operations.

PLA thinking appears to have moved beyond INEW towards a new concept of ‘information confrontation’ (*xinxi duikang*) which aims to integrate both electronic and non-electronic aspects of information warfare within a single command authority. PLA thinking sees warfare under informationized conditions as characterized by opposing sides using complete systems of ground, naval, air, space and electromagnetic

forces. It aspires to link all service branches to create a system of systems to improve battlespace situational awareness.

Three PLA departments – Informatization, Strategic Planning and Training – have either been established or re-formatted to help enable this transformation. Since 2008, major PLA military exercises, including *Kuayue 2009* and *Lianhe 2011*, have all had cyber and information-operations components that have been both offensive and defensive in nature. China's cyber assets fall under the command of two main departments of the General Staff Department. Computer-network attacks and EW would, in theory, come under the 4th Department (ECM), and computer-network defence and intelligence gathering come under the 3rd Department (SIGINT).

The 3rd Department (3PLA) is supported by a variety of 'militia units' comprising both military cyber-warfare personnel and civilian hackers. In a February 2013 report, US security company Mandiant described a secret Chinese military unit, 'Unit 61398', subordinate to 3PLA that had, Mandiant alleged, systematically exfiltrated substantial amounts of data from 141 companies since its facility was built, in 2007, in Shanghai.

The DoD 2015 report on Chinese military power provided the following assessment of Chinese cyber strategy and capabilities:<sup>204</sup>

Cyber operations are a key component of informationization and could serve Chinese military operations in three key areas. First, they allow data collection for intelligence and potential offensive cyber operation purposes. Second, they can be employed to constrain an adversary's actions or slow response time by targeting network-based logistics, communications, and commercial activities. Third, they can serve as a force multiplier when coupled with kinetic attacks during times of crisis or conflict.

Developing cyber capabilities for warfare is consistent with authoritative PLA military writings, which identify information warfare as integral to achieving information superiority and an effective means for countering a stronger foe. These writings detail the effectiveness of information warfare and offensive cyber operations in conflicts and advocate targeting adversary C2 and logistics networks to affect their ability to operate during the early stages of conflict. They portray the enemy's C2 system as "the heart of information collection, control, and application on the battlefield. It is also the nerve center of the entire battlefield."

The 2016 DoD report made the following assessment:<sup>205</sup>

Cyberwarfare capabilities could serve PLA operations in three key areas. First and foremost, they allow the PLA to collect data for intelligence and potential offensive cyberoperations (OCO) purposes. Second, they can be employed to constrain an adversary's actions or to slow response time by targeting network-based logistics, communications, and commercial activities. Third, they can serve as a force-multiplier when coupled with kinetic attacks during times of crisis or conflict.

The development of cyber capabilities for warfare is consistent with authoritative PLA military writings, which identify information operations (IO) as integral to achieving information superiority and as an effective means for countering a stronger foe. China's most recent Defense White Paper (DWP) for the first time noted cyberspace as a new domain of national security and area of strategic competition. The DWP also declared China's intent to expedite the development of a cyber force in response to a perceived increase in cyber threats.

PLA military writings detail the effectiveness of IO and OCO in conflicts and advocate targeting an adversary's C2 and logistics networks to affect its ability to operate during the early stages of conflict. They portray an enemy's C2 system as "the heart of information collection, control, and application on the battlefield. It is also the nerve center of the entire battlefield."

In the PLA, IO command organizations exist at the strategic, campaign, and tactical levels, according to China's Academy of Military Sciences. The campaign-level IO department contains several groups dedicated to coordinating IO. The structural reforms announced in 2015, however, may change how the PLA organizes and commands IO.



## US Views on Chinese Cyber Activities

Chinese strategy is not limited to military activity. A 2011 report by the US Office of the National Counterintelligence Executive noted that Chinese private companies and government intelligence agencies use Chinese citizens or people with family ties to China to exploit their insider access to US corporate networks to steal trade secrets using emails or thumb drives. Every year, tens of billions of dollars of intellectual property, trade secrets, and technology are copied from US corporations, government agencies, and research institutions, primarily by China and Russia.<sup>206</sup>

Presidential Policy Directive 20 was signed by President Barack Obama in October 2012 to give US federal agencies clear standards when facing cyberspace threats. Although the Directive's exact terms are unknown, it likely included a distinction between offensive cyber work and network defense.<sup>207</sup>

In early 2013, the computer security firm Mandiant released a report detailing the activities of Chinese hackers in stealing business information from companies around the world. One finding that did not receive much attention was that state-sponsored Chinese hackers had penetrated US energy and other critical infrastructure; one US official had said in 2010 that network inspections had “found software tools left behind that could be used to destroy infrastructure components” following hacks from China and Russia. Chinese state-sponsored hackers attacked one company with remote access to over 60% of gas and oil pipelines in North America.<sup>208</sup>

Mandiant documented systematic data theft from at least 141 organizations over seven years, tracing the attacks back to a Chinese military unit within the 2<sup>nd</sup> Bureau of the PLA's General Staff Department's 3<sup>rd</sup> Department – code named Unit 61398. This unit is just one of dozens working for the Chinese military in cyber-espionage all over the country – there are other units within the General Staff's 2<sup>nd</sup> Department and the Ministry of State Security. Unit 61398, employing hundreds or even thousands of employees, is one of the most prolific.<sup>209</sup>

Most of the targets were US companies, though approximately a dozen were smaller US local, state, and federal government agencies, as well as international governmental agencies. The hackers generally stayed in a company's computer systems for about a year, and in many cases, terabyte-size amounts of intellectual property were stolen – including pricing documents, negotiation strategies, manufacturing processes, clinical trial results, technology blueprints, and other proprietary information.

Mandiant named 115 victims in the US, along with several each in Britain, Canada, Israel, India, Taiwan, Singapore, Switzerland, Norway, Belgium, France, Japan, South Africa, Luxembourg, and the UAE. The top sectors targeted were aerospace, satellites and telecommunications, public administration, information technology, and scientific research and consulting. Mandiant also stated that it had uncovered “only a small fraction of the cyber-espionage that ‘Unit 61398’ has committed.”<sup>210</sup>

The Mandiant report came out at the same time as a classified US National Intelligence estimate, which concluded that China was the most aggressive perpetrator of a huge cyber-espionage campaign against US commercial targets.<sup>211</sup> In April 2013, China and the US held high-level military talks in which a senior Chinese general, Fang Fenghui, pledged to work with the US on cybersecurity. The general said he would be willing to set up a “mechanism” for such cooperation, though progress could be slow; however, the consequences of a major attack “may be as serious as a nuclear bomb.”<sup>212</sup>

In May 2014, the U.S. Justice Department, issued an indictment of five military officers reportedly from “Unit 61398” for conducting cyberespionage against private American companies in order to steal trade secrets. The Chinese Defense Ministry denied these allegations stating that China, “has never supported any hacker activities.”<sup>213</sup>

After this indictment, the Chinese suspended the Cyber-Security Working Group with the United States, and the Chinese Foreign Ministry characterized the indictment as a “serious violation of the basic norms of international relations” while its State Internet Information Office said the U.S. action was like “a thief yelling ‘Catch the thief.’”<sup>214</sup> The intelligence leaks of self-characterized whistle-blower, Edward Snowden, concerning broad-based cyberespionage conducted by the U.S. National Security Agency provided powerful ammunition for Chinese accusations that the United States was also guilty in this regard.

Additionally, a private U.S. cybersecurity firm, Crowdstrike, based in Irvine, CA released a report on June 9, 2014 that named another secret cyberespionage group, “Unit 61486,” allegedly connected to the Chinese government. This group was reported to have used malware hidden within a bogus email attachment to steal trade and defense secrets from European, American, and Japanese entities.<sup>215</sup> As more of these reports and allegations come to the surface, the legal action taken by the U.S. Justice Department could be the first shot fired in a “tit-for-tat” cyber-confrontation between the United States and China.

These Chinese activities led to a growing US reaction. The Obama administration revealed in July 2015 that the personal information of 21.5 million Americans had been accessed by a cyber-attack that was believed to originate in China. This massive cyber-attack included 19.7 million Americans who were subjected to government background checks and 1.8 million others who had other personal identifiable information stolen. In a related but separate attack, the Obama administration believed that China was also involved in a cyber-attack that compromised the personnel data of 4.2 million federal employees.<sup>216</sup>

The DoD reports on Chinese military power for 2013 to 2015 made it clear that China’s cyberwarfare modernization had become a far more challenging issue for the US:<sup>217</sup>

**Cyberwarfare in China’s Military.** Cyberwarfare capabilities could serve Chinese military operations in three key areas. First and foremost, they allow data collection for intelligence and computer network attack purposes. Second, they can be employed to constrain an adversary’s actions or slow response time by targeting network-based logistics, communications, and commercial activities. Third, they can serve as a force multiplier when coupled with kinetic attacks during times of crisis or conflict.

Developing cyber capabilities for warfare is consistent with authoritative PLA military writings. Two military doctrinal writings, *Science of Strategy*, and *Science of Campaigns* identify information warfare (IW) as integral to achieving information superiority and an effective means for countering a stronger foe. Although neither document identifies the specific criteria for employing computer network attack against an adversary, both advocate developing capabilities to compete in this medium.

The *Science of Strategy* and *Science of Campaigns* detail the effectiveness of IW and CNO in conflicts and advocate targeting adversary C2 and logistics networks to affect their ability to operate during the early stages of conflict. As *Science of Strategy* explains, “In the information war, the command and control system is the heart of information collection, control, and application on the battlefield. It is also the nerve center of the entire battlefield.”

In parallel with its military preparations, China has increased diplomatic engagement and advocacy in multilateral and international forums where cyber issues are discussed and debated. Beijing’s agenda is frequently in line with Russia’s efforts to promote more international control over cyber activities. China and Russia continue to promote an Information Security Code of Conduct that would have governments exercise

sovereign authority over the flow of information and control of content in cyberspace. Both governments also continue to play a disruptive role in multilateral efforts to establish transparency and confidence-building measures in international fora such as the Organization for Security and Cooperation in Europe (OSCE), ASEAN Regional Forum, and the UN Group of Governmental Experts. Although China has not yet agreed with the U.S. position that existing mechanisms, such as international humanitarian law, apply in cyberspace, Beijing's thinking continues to evolve.

The 2014 DoD report stated:<sup>218</sup>

China may be willing to play a more constructive role in these efforts. Notably, in June 2013, China joined a landmark consensus of the UN GGE that addressed here fundamental issues: (1) confirmed that existing international law, including the UN Charter, applies to cyberspace and that the law of state responsibility should guide state behavior with regard to the use of cyberspace; (2) expressed the need to promote international stability, transparency, and confidence in cyberspace; and (3) explored how the international community can help build the cybersecurity capacity of less-developed states.

The 2015 DoD report provided the following update on Chinese cyber activities directed against the US Department of Defense and Chinese engagement on international cyber issues:<sup>219</sup>

In 2014, numerous computer systems around the world, including those owned by the U.S. Government, continued to be targeted for intrusions, some of which can be attributed directly to the Chinese Government and military. In a single year, actors associated with the Chinese Government successfully penetrated U.S. Transportation Command (USTRANSCOM) contractors about twenty times. These intrusions were focused on accessing networks and exfiltrating information.

China is using its cyber-espionage capabilities to support intelligence collection against the U.S. diplomatic, economic, and defense industrial base sectors that support U.S. national defense programs. The information targeted could potentially be used to benefit China's defense industry, high-technology industries, policymaker interest in U.S. leadership thinking on key issues, and military planners building a picture of U.S. defense networks, logistics, and related military capabilities that could be exploited during a crisis.

Although this alone is a serious concern, the accesses and skills required for these intrusions are similar to those necessary to conduct offensive cyber operations. China's 2013 Defense White Paper notes China's own concern over foreign cyberwarfare efforts and highlighted the importance of cybersecurity in China's national defense.

The 2016 DoD report added:<sup>220</sup>

**Cyber Activities Directed Against the Department of Defense.** In 2015, numerous computer systems around the world, including those owned by the U.S. Government, continued to be targeted for intrusions, some of which appear to be attributable directly to China's Government and military. These and past intrusions were focused on accessing networks and exfiltrating information. China is using its cyber capabilities to support intelligence collection against the U.S. diplomatic, economic, and defense industrial base sectors that support U.S. national defense programs. The information targeted could potentially be used to benefit China's defense industry, high technology industries, and provide the CCP insights into U.S. leadership perspectives on key China issues. Additionally, targeted information could inform Chinese military planners' work to build a picture of U.S. defense networks, logistics, and related military capabilities that could be exploited during a crisis. The accesses and skills required for these intrusions are similar to those necessary to conduct cyberattacks.

These developments in Chinese cyber activities had a major impact on US and Chinese military relations. US Government officials have noted that cyber issues will be a key aspect of the US-PRC relationship.<sup>221</sup> The DoD summarized the role of cyberspace and cyberwarfare in its new strategy as follows in its overview of the President's FY2016 defense budget request:<sup>222</sup>

This year's budget continues to fully support funds to increase defensive and offensive cyberspace operations capabilities and to develop the Cyber Mission Forces initiated in FY 2013.

The unique attributes of cyberspace operations require trained and ready cyberspace forces to detect, deter, and, if directed, respond to threats in cyberspace. Securing and defending cyberspace requires close

collaboration among Federal, state, and local governments; private sector partners; and allies and partners abroad.

This year's budget continues the training and implementation of Cyber Mission Force teams to execute the cyber missions: National Mission Forces to focus on specific threat actors and prepare to counter cyber-attacks on the United States in the event of a cyber attack of significant consequence; Combat Mission Forces to support combatant commanders as they plan and execute full-spectrum military missions; and Cyber Protection Forces to secure, operate, and defend the Department's networks and support military operations worldwide.

The FY 2016 President's Budget also:

- Continues to support the construction of the Joint Operations Center for U.S. Cyber Command (USCYBERCOM) at Fort Meade, Maryland. Occupancy is scheduled for FY 2018.
- Continues to support cyberspace operational Science and Technology programs and other research and technology projects to develop the tools required by the cyber workforce to accomplish their mission.
- Continues to support defensive cyberspace operations providing information assurance and cyber security to the Department's networks at all levels.
- Reorganizes and augments personnel within the Combatant Commands to support the integration and coordination of cyberspace operations.
- Supports ongoing investments in the Department's larger Information Technology budget to consolidate and standardize the Department's networks and implement the Joint Information Environment (JIE).

These US actions built on previous US efforts that an IISS analysis summarized as follows in 2015:<sup>223</sup>

US Army Cyber Command (ARCYBER), Fleet Cyber Command (the US 10th Fleet) and the 24th Air Force deliver cyber capability for land, sea and air forces. Marine Force Cyber Command was established in 2009. These service groups are commanded by US Cyber Command (itself under US Strategic Command, and co-located with the NSA). The NSA director also heads Cyber Command.

DoD's November 2011 'Cyberspace Policy Report' said that 'if directed by the President, DoD will conduct offensive cyber operations in a manner consistent with the policy principles and legal regimes that the Department follows for kinetic capabilities, including the law of armed conflict'.

In October 2012, President Barack Obama signed Presidential Policy Directive 20, the purpose of which was to establish clear standards for US federal agencies in confronting threats in cyberspace. The terms of the directive are secret but are thought to include an explicit distinction between network defence and offensive cyber operations.

The 2014 QDR noted that the Pentagon will 'deter, and when approved by the President and directed by the Secretary of Defense, will disrupt and deny adversary cyberspace operations that threaten U.S. interests'. January 2014 saw the US stand up the Cyber National Mission Force – 'the US military's first joint tactical command with a dedicated mission focused on cyberspace operations'. There are plans to create 133 cyber mission teams by the end of FY2016, according to the Head of Cyber Command, General Keith Alexander.

Director of National Intelligence James R. Clapper made the following comments in his testimony to the Senate Select Committee on Intelligence regarding Chinese cyber operations and cybersecurity in early 2015:<sup>224</sup>

In August 2014, the US company, Community Health Systems, informed the Securities and Exchange Commission that it believed hackers "originating from China" had stolen PII on 4.5 million individuals.

In May 2014, the US Department of Justice indicted five officers from China's Peoples' Liberation Army on charges of hacking US companies

Politically motivated cyber attacks are now a growing reality, and foreign actors are reconnoitering and developing access to US critical infrastructure systems, which might be quickly exploited for disruption if an adversary's intent became hostile. In addition, those conducting cyber espionage are targeting US government, military, and commercial networks on a daily basis.

These threats come from a range of actors, including:

- (1) nation states with highly sophisticated cyber programs (such as Russia or China),
- (2) nations with lesser technical capabilities but possibly more disruptive intent (such as Iran or North Korea),
- (3) profit-motivated criminals, and
- (4) ideologically motivated hackers or extremists. Distinguishing between state and non-state actors within the same country is often difficult—especially when those varied actors actively collaborate, tacitly cooperate, condone criminal activity that only harms foreign victims, or utilize similar cyber tools.

...Chinese economic espionage against US companies remains a significant issue. The “advanced persistent threat” activities continue despite detailed private sector reports, public indictments, and US demarches, according to a computer security study. China is an advanced cyber actor; however, Chinese hackers often use less sophisticated cyber tools to access targets. Improved cyber defenses would require hackers to use more sophisticated skills and make China's economic espionage more costly and difficult to conduct.

### **Integrated Firepower Operations**

PLA doctrine states that integrated firepower comes from artillery, air forces, and missile strikes, supported by IW operations. As technology improved, the PLA identified four characteristics of modern firepower:<sup>225</sup>

- It is capable of attacking the enemy simultaneously at all depths on the battlefield.
- It can be used at any phase of the campaign.
- It can be highly effective (i.e. accurate) allowing for fewer platforms (aircraft, ships, artillery tubes, etc.) to deliver fewer munitions to achieve results faster and with fewer civilian casualties than in previous wars.
- It can be delivered in a joint manner by a diverse set of weapon systems from all the services appropriate to the type of target.

The PLA believes that fewer munitions are needed as a result of modern weapons being more accurate than previous “dumb” weapons. Nevertheless, the PLA expects to expend a large quantity of precision-guided munitions in the event of conflict.<sup>226</sup>

The PLA has actively trained its forces in joint operations exercises that integrated its firepower in various live fire evolutions, such as JOINT ACTION (LIANHE XINGDONG) in 2014, and in later exercises, as the DoD 2015 report notes:<sup>227</sup>

FIREPOWER (HUOLI) 2014 included ten large-scale evolutions primarily with artillery and air defense brigades from at least six military regions and significant participation by military academies. Key objectives included joint planning, intelligence, surveillance, and reconnaissance (ISR) support, and command and control of integrated joint fire power against opposition forces.

### **Mobility and Comprehensive Support**

PLA doctrine envisions campaign mobility as its basic method of defeating forces that technologically superior to its own. Although comprehensive support is necessary to provide maneuverability and operational deception, the PLA hopes to achieve a local superiority of force

to defeat an otherwise stronger adversary. In addition, maneuvering enables the PLA to disrupt an adversary while avoiding an enemy's strength.

The annual update section of the 2016 DoD report on China outlined several recent actions the PLA had taken to achieve this goal.<sup>228</sup>

The PLA focused last year's training on developing the capability to execute large-scale, complex joint operations. This included greater realism during exercises, improved core service capabilities, strengthened strategic campaign training, and execution of long-distance maneuvers and mobility operations. Major exercises included new iterations of the exercise series STRIDE, JOINT ACTION, and FIREPOWER

> STRIDE 2015 was both larger in scale and had more rounds of force-on-force events than last year's iteration. Ten brigades from all seven MRs deployed to a training center for three rounds of force on-force drills. STRIDE 2015 also included intensified operational command training for PLA officers, the integration of PLAAF and PLAA aviation units in coordinated air-to-ground strikes, and increased nighttime combat training.

> JOINT ACTION 2015 consisted of five separate exercises held in locations across China in which military units from all services and civilian support assets conducted complex, large scale joint operations. Exercises in western China focused on high altitude operations, with special emphasis on using space-based reconnaissance. Exercise activity in the Nanjing MR rehearsed second-echelon logistics, over-the-shore activity, and follow-on force combat operations in support of an island landing campaign.

> FIREPOWER 2015 included two largescale evolutions: The first phase included a PLAAF "Blue Force"—or enemy force—flying more than 200 sorties with multiple types of aircraft and unmanned aerial vehicles (UAV) attacking the PLA "Red Force" air defense units in a complex electromagnetic environment. The second phase consisted of "Blue Force" Army units using artillery, antitank weapons, and motorized forces to attack a "Red Force" that was focused on both offensive and defensive operations.

The PLA expects that both sides in a military confrontation will seek to increase the range and ease of their own movements while impeding the ability of the enemy to do the same.<sup>229</sup> Advantages at the campaign level will be seized by the side that manages to secure relative freedom of movement. As Chinese writing on the *Science of Campaigns* states:<sup>230</sup>

In a modern campaign, the confrontation between maneuver and counter-maneuver will be extraordinarily intense. On the one hand, because maneuver is growing in significance for seizing campaign victory, counter-maneuver operations on the battlefield will receive a high level of attention. Counter-maneuver operations can delay the speed of an opponent's advance, disrupt their operational plans, kill their effective strengths, and weaken the sharp momentum of their attack.

Highly effective counter-maneuver operations can even directly alter the force strength ratio between ours and their sides, and gain battlefield initiative. Thus, counter-maneuver operations are critical for winning a victory in a modern campaign. On the other hand, campaign maneuver under modern conditions will be implemented on a battlefield of unprecedented "transparency," and concealing the intention and activities of maneuver will be very difficult.

At the same time, the means of modern operations and strikes will increase and firepower system assault will have high precision, long range, and large lethality. This will result in maneuver to encounter at any time an opponent's strikes and damage from the battlefield spaces such as air, ground, water surface (underwater) and various operational means.

Hence, in a modern campaign, as both sides engaging in battle strive for and maintain battlefield initiative, not only must they implement initiative and flexible campaign maneuver, they must also adopt active and effective measures to oppose the counter- maneuver activities of the enemy. Maneuver and counter-maneuver have already become an important content of modern campaign confrontation and the struggle between maneuver and counter-maneuver will very intense.

Additionally, comprehensive support includes operational, logistics, and armament support. Several principles are central to comprehensive support:<sup>231</sup>

First, the PLA intends to take advantage of People's War and utilize the potential of the civilian population's support capabilities.

Second, support forces should be under a unified command and should give primacy to the primary combat mission.

Third, support forces comprise organic forces, reinforcing forces (from higher echelons), and mobilized civilian forces.

Lastly, defense of support elements is vital to the campaign as they will be targeted by adversary forces.

Utilizing these principles, the PLA has developed a single support system based on the Military Regions (MRs). Joint Logistics Sub-Departments (JLSDs) in each MR deploy to war zones and set up ad-hoc "logistics support brigades" using military and civilian personnel and material resources. As part of this system, support services will be pushed as far forward as possible and will be given "on the spot" as much as possible.<sup>232</sup>

### *Service Strategy*

The PLAN, PLAAF, and SAF each have their own doctrinal concept of how they plan to achieve their objectives within the context of the PLA's shift to the Local Wars doctrine. The development of modern warfare since the 1980s has convinced the PLA that the PLAN, PLAAF, and SAF are capable of achieving strategic objectives independently and that their strength will be a key indicator of overall PLA combat power. Consequently, the PLAN, PLAAF, and SAF have developed independent doctrines outlining how each service and branch will modernize, develop its forces, and fight.

As the *Science of Military Strategy* states:<sup>233</sup>

Beneath the military strategy is China's service strategy. It comes up following the development of Chinese army from a single service to the armed forces of modern combined services and arms to meet requirements of modern war. China's navy and air force shoulder the important missions [of safeguarding] the security of China's territorial waters and territorial air [space] and protect China's maritime rights and interests. In modern war especially high-tech local war, the strategic status and effects of [the] navy and air force are improving day by day [the capabilities ....].

[The] opportunity for [the] navy and air force to independently accomplish strategic tasks is increasing, and there are objective requirements at [the] strategic level to plan sea and air operations and [the] construction of [a] navy and air force. Accordingly, under [the] unified guidance of China's military strategy of active defense, China's navy and air force need to establish the naval strategy of offshore defense and the air force strategy of offensive air defense. As one of the five nuclear power universally acknowledged, the nuclear force is [part of] China's important strategic means.

The nuclear weapons of mass destruction will directly serve not only the purpose of securing the objectives of military strategy but also that of national strategy. This [allows] China's nuclear strategy of effective deterrence [to] have independent status in China's strategic structure, and concurrently have the characteristics of China's national strategy, military strategy, and service strategy, a triad of special strategic pattern.

Accordingly, the PLAN currently operates under a doctrine of "Near Seas" or "Offshore Defense" in which the PLAN prepares for combat beyond the coasts of China out towards the first island chain.<sup>234</sup> The US Office of Naval Intelligence (ONI) summarized this in their 2015 report on the PLA Navy:<sup>235</sup>

Offshore defense focuses on regional goals and deterring a modern adversary from intervening in a regional conflict. Admiral Liu characterized “offshore” areas as those east of Taiwan and the northern part of the Pacific Ocean, stretching beyond the First Island Chain. Offshore defense is often associated with operations in the Yellow Sea, East China Sea, and South China Sea—China’s “near seas.” In the late 1980s, the development of offshore defense paralleled the Central Military Commission (CMC)’s adoption of a new military strategy that focused on local wars on China’s periphery rather than a major confrontation with the Soviet Union.

The PLAAF operates under a doctrine of “Integrated Air and Space Operations, Being Prepared for Simultaneous Offensive and Defensive Operations” that calls for the PLAAF to be capable of both defending China from long-range attacks, but also of long-range strikes and power projection operations.<sup>236</sup>

The SAF operates under the doctrine of “Dual Deterrence, Dual Operations,” which demands that the SAF be capable of long-range conventional strike missions *and* nuclear counter-attack missions, both under conditions of nuclear deterrence.<sup>237</sup> A more detailed discussion of these service strategies is presented in later chapters in the context of each service and branch’s individual modernization and force development trends.

### The Nine-Dash Line

Chinese strategy is increasingly tied to territorial claims that are discussed in more detail in the following chapters. These claims call for a major increase in Chinese strategic influence in the Pacific to secure airspace and waters. In June 2014, China issued a new map of such claims which is shown in **Figure 5.1**. This map showed China’s territorial claims in far more definitive terms than in the past, and without any sections indicating that Chinese claims might be uncertain or options. As People’s Daily put it, the Chinese people will “fully, directly know the full map of China... won’t ever think again that China’s territory has primary and secondary claims”

The map included Taiwan as part of China. It gave China suzerainty over the Spratly and Paracel Islands, the two main archipelagos of the South China Sea, areas claimed by Vietnam, the Philippines and several other Southeast Asian nations. It also showed a 10-dash line (as opposed to China’s earlier nine-dash line) that included most of the South China Sea. The map did, however, leave some Chinese claims affecting India and in Northeast Asia less clear – although this was as much as a matter of the maps large scale as anything else.<sup>238</sup>

These claims have a long and complex history. The nine-dash line, originally an eleven-dotted line, was officially drawn in 1947 by the Chinese Nationalist Government during the Chinese Civil War. At that time, much of Asian was still occupied or under colonial rule, and such claims were ignored as little more than nationalist political posturing.

China’s new rulers adopted such claims when the Chinese Communist Party formed the People’s Republic of China in 1949, and Zhou Enlai endorsed a revised nine-dash line in 1953. The line, called by China a “traditional maritime boundary line.” It enclosed many key features of the South China Sea – the Paracel Islands, the Pratas Islands, the Spratly Islands, the Macclesfield Bank, and the Scarborough Shoal.

Some of the Chinese claims in the South China Sea appear in historical documents that date back centuries, but – like many conflicting claims – were never supported by a continuing Chinese presence or rule and had no continuing *de facto* status during the period of European colonialism, Japanese expansion, and changes in the national boundaries and role of regional powers from the Opium Wars onwards.<sup>239</sup>



In 1992, Taiwan gave the status of “historic waters” to the maritime areas within the nine-dash line, and most Chinese scholars today support the nine-dash line by arguing for historic rights within this line, sovereignty over all features within the line, and sovereign right and jurisdiction as defined by the UN Convention on the Law of the Sea.

However, UNCLOS does not mention “historic rights,” but refers to “historic title.” UNCLOS does not explicitly define what “historic title” is, nor does it give details as to what “historic title” entails.<sup>240</sup> According to China foreign policy expert Sun Yun, the ambiguity about the exact details of China’s claims allow it to satisfy domestic public opinion and safeguard the government’s legitimacy.<sup>241</sup>

China has used paramilitary and law enforcement forces – in particular, the Coast Guard – to patrol the waters within the nine-dash line. The PLAN uses maritime tensions to justify modernization, while growing numbers of paramilitary and law enforcement vessels are playing an increased role in disputed territories and have been involved in many of the recent incidents.

Until March 2013, the major maritime law enforcement actors were collectively known as the “Five Dragons.” These were the State and General Administration of Customs, Fisheries Law Enforcement Command (FLEC), the Maritime Safety Administration (MSA), the China Maritime Surveillance (CMS), and the Chinese Coast Guard (CCG). These actors were domestically oriented and did not have experience in foreign affairs.

The Ministry of Foreign Affairs (MFA), which is the only agency that has extensive experience in dealing with diplomatic affairs, did not have control over these organizations. Although the MFA was authorized to negotiate with neighboring countries over the South China Sea disputes, it had been largely side-stepped by domestic actors, severely limiting the amount of influence the MFA could have on Chinese action in the South China Sea.

As the International Crisis Group noted in 2010,<sup>242</sup>

...the extensive use of paramilitary and law enforcement forces in sovereignty disputes also lowers the threshold of entry into confrontation. Naval vessels are likely to behave with more restraint than domestic actors with a limited understanding of foreign policy implications, while paramilitary agencies often tend to take more assertive actions precisely due to the lesser political ramifications of incidents in which they are involved. Moreover, civilian vessels, such as fishing boats, are more willing to retaliate against paramilitary than military vessels, thus increasing the risk of violence. On the other hand, a study conducted by Chinese scholars at the Ningbo Coast Guard Academy proposed that creating an enlarged, unified maritime security apparatus would strengthen flexibility in maritime conflicts. They concluded that relying on the navy to resolve disputes runs the risk of dangerous escalation, while the current model of fragmented law enforcement agencies lacks coherence and thus can lead to unpredictable risks of conflict.

Furthermore, when China sends law enforcement vessels to patrol all of the waters within the nine-dashed line, sometimes even entering into the economic zones of Vietnam and the Philippines, it appears to be exerting authority over areas claimed by other countries and to which it may not have a claim under UNCLOS. At the 2012 National People’s Congress session, Liu Cigui, director of the State Oceanic Administration, indicated that China was serious about carrying out law enforcement activities in the South China Sea. He said that regular patrol activities would cover all the maritime zones under its jurisdiction. This could potentially include the entire nine-dashed line region, thus causing further confusion and anxiety among the other claimants.

These problems help explain a major change in the structure of such paramilitary organizations and their impact on Chinese strategy. In March 2013, all of the “dragons” were consolidated under the Chinese Coast Guard, except the Maritime Safety Administration. The Coast Guard, in turn,

was to be commanded by the State Oceanic Administration (SOA). This was done ostensibly in order to more efficiently conduct maritime enforcement.

It may also have been intended to, “strengthen China’s ability at controlling escalation, should deliberate incidents occur at sea, by consolidating bureaucratic control.” However, it is still unclear what the bounds of the SOA’s authority are and what involvement the military will have in the new organization.<sup>243</sup>

It should be noted that a 10<sup>th</sup> line near the northeastern part of Taiwan was added in an official Chinese map published in 2013. This raised questions as to how this affected China’s claims in the South China Sea, if at all. One view is that it was an attempt to “highlight the mirror-image symmetry of its own maritime territorial claims with those of Taiwan, as a means of further narrowing the cross-strait gap.”<sup>244</sup>

In June and July 2014, two new maps of China were published that used ten dashes instead of nine. These two maps, one released to the public and the other to the military, asserted modified Chinese claims to territory, particularly in the South China Sea.<sup>245</sup> **Figure 5.1** shows the June 2014 map that was released to the public. It clearly shows the Paracels and the Spratly within the 10 lines.

*Figure 5.1 China's New Map of Greater China: June 2014*



Source: Xinhua, May 28, 2014.

### **Chinese Actions to Establish Control within the First Island Chain**

Like China's use of cyber operations, its expanding ambitions in the Pacific reflect a *de facto* strategy that is less defensive than some of China's strategic doctrine and matches its emerging

status as a regional superpower. They are also a source of growing tension between China and the US and some of China's neighbors with a major strategic impact, and involve major changes in China's strategic posture that are not reflected in its formal strategy.

In addition to achieving its security objectives in the first island chain – which stretches from the Aleutians to the Philippines, containing Taiwan and Okinawa – China wants control over the second island chain. As the map in **Figure 5.2** shows, this is a series of island groups running from the Japanese archipelago to the Bonin and Marshall islands. The US control of La Perouse Strait, Tsugaru Strait, and Tsushima Strait allows the US military the capacity to react quickly to a North Korean provocation as well as defend the key naval and air base of Guam.

In 1982, Chinese Admiral Liu Huaqing, the mastermind of China's modern naval strategy and former PLAN commander, said it would be necessary for China to control the first island chain by 2010 and the second island chain by 2020. Further, the PLAN should be ready to challenge US dominance over the Indian Ocean and Western Pacific in 2040.<sup>246</sup> As one US military analyst noted in 2011:<sup>247</sup>

China's active defense strategy has a maritime component that aligns with the PRC's 1982 naval maritime plan outlined by then-Vice Chairman of the Military Commission, Liu Huaqing. This naval strategy delineated three stages. In the first stage, from 2000 to 2010, China was to establish control of waters within the first island chain that links Okinawa Prefecture, Taiwan and the Philippines. In the second stage, from 2010 to 2020, China would seek to establish control of waters within the second island chain that links the Ogasawara island chain, Guam and Indonesia. The final stage, from 2020 until 2040, China would put an end to U.S. military dominance in the Pacific and Indian Oceans, using aircraft carriers as a key component of their military force. Recent Chinese military developments, rhetoric, and actions reflect implementation of this maritime strategy, on pace with the projections to seek control of the first island chain.

In order to achieve these goals, China is increasing its territorial sovereignty claims over islands in the Pacific that are also claimed by its neighboring countries, as well as its claims regarding airspace and territorial waters. Examples include the Senkaku/Diaoyu Islands and the Philippines' Scarborough Shoal. China has also built facilities on Mischief Reef, which is internationally recognized as part of the Philippines. These are actions many feel violate international law; however, the Philippines lacks the naval and air force capabilities to effectively confront China and negotiations have gone nowhere.<sup>248</sup>

The 2014 Japanese defense white paper addressed these Chinese sovereignty disputes in some depth—albeit from a clearly Japanese perspective.<sup>249</sup>

China is strongly expected to recognize its responsibility in the international community, accept and comply with international norms, and play an active role in a more cooperative manner on regional and global issues. On the other hand, there have been disputes between China and other countries on issues relating to trade imbalances, currency rates, and human rights. Especially in regard to conflicts over maritime interests, China has adopted so-called assertive measures, including attempts to alter the status quo by coercive measures based on China's own assertion which is incompatible with the existing international law and order. These measures include dangerous acts that could cause unintended consequences and raise concerns over China's future direction.

In recent years, China is believed to be aiming to build up capabilities to conduct operations in more distant waters and airspace. Accordingly, China has been rapidly expanding its maritime activities based on sea power and air power, both qualitatively and quantitatively. With regard to its activity in the sea areas and airspace surrounding Japan, Chinese naval vessels and navy and air force aircraft have been observed conducting training exercises of some kind, such as carrier-based helicopter flights and fleet formation and maneuver exercises, as well as information gathering activities.

A large number of Chinese government ships and aircraft belonging to maritime law-enforcement agencies have also been observed, which were engaged in monitoring activities for the protection of its maritime rights and interests. Such activities by China include those that involve incursion into Japan's territorial waters, violation of Japan's airspace, and dangerous acts that could cause unintended consequences, including a Chinese vessel's direction of a fire control radar at a JMSDF destroyer, the flight of fighters abnormally close to JSDF aircraft, and activities that could infringe upon the freedom of overflight over the high seas, such as the establishment of the "East China Sea Air Defense Identification Zone," and are extremely regrettable. China is urged to accept and comply with international norms.

Regarding the activities of naval forces, the number of Chinese naval surface vessels advancing to the Pacific Ocean has increased in recent years, and such advancements are currently conducted routinely. Every year since 2008, Chinese naval fleets have been passing the sea area between the main island of Okinawa and Miyako Island. However, in April 2012, a naval fleet passed the Osumi Strait eastward for the first time, and in October of the same year, they navigated the sea area between Yonakuni Island and Nakanokami Island near Iriomote Island northward for the first time.

In July 2013, Chinese naval fleets passed the Soya Strait eastward for the first time. As such, the Chinese naval fleets' advancement and homing routes between the East China Sea and the Pacific Ocean continue to become diverse by incorporating the areas north of Japan, and it is understood that China seeks to improve its deployment capabilities to the open ocean. Furthermore, in October 2013, China reportedly conducted "Maneuver 5," the first joint exercise by its three naval fleets in the western Pacific Ocean.

In addition, Chinese naval vessels appear to routinely conduct operations in the East China Sea. After referring to its own position regarding the Senkaku Islands, China alleges that patrols by Chinese naval vessels in the sea areas under its jurisdiction are completely justifiable and lawful. In January 2013, a Chinese naval vessel directed fire-control radar at a JMSDF destroyer and is suspected to have directed fire-control radar at a helicopter based on the JMSDF destroyer.

With regard to the activities of air forces in the airspace above the East China Sea, Chinese aircraft have been diversifying their flight patterns. In September 2007, multiple H-6 bombers flew into Japan's Air Defense Identification Zone above the East China Sea and advanced near the Japan-China median line. Similarly, in March 2010, a Y-8 early warning aircraft advanced near the Japan-China median line. In March 2011, a Y-8 patrol aircraft and Y-8 intelligence gathering aircraft crossed the Japan-China median line and approached within approximately 50km of Japan's airspace near the Senkaku Islands. In 2012, China intensified the activities of its aircraft, including fighters.

In January 2013, the Chinese Ministry of National Defense made public the fact that Chinese military aircraft regularly conducted warning and surveillance activities and that Chinese fighters conducted activities believed to be Combat Air Patrols (CAP) in the East China Sea. In addition, in the most recent Chinese defense white paper, the phrase "air vigilance and patrols at sea" was added for the first time ever.

On November 16 and 17, 2013, a Tu-154 intelligence gathering aircraft flew over the East China Sea on two consecutive days. On November 23, the Chinese government announced that it established "the East China Sea Air Defense Identification Zone (ADIZ)" including the Senkaku Islands which China described as if they were a part of China's "territory," that it obligated aircraft flying in the said zone to abide by the rules set forth by the Chinese Ministry of National Defense, and that the Chinese Armed Forces would take "defensive emergency measures" in the case where such aircraft does not follow the instructed procedures.

Japan is deeply concerned about such measures, which are profoundly dangerous acts that unilaterally change the status quo in the East China Sea, escalating the situation, and that may cause unintended consequences in the East China Sea. Furthermore, the measures unduly infringe the freedom of overflight over the high seas, which is the general principle of international law. Japan is demanding China to revoke any measures that could infringe upon the freedom of overflight over the high seas. The United States, the Republic of Korea, Australia, and the European Union (EU) have expressed concern about China's establishment of such zone.

On the very day that China announced the establishment of the East China Sea ADIZ, a Tu-154 intelligence gathering aircraft and a Y-8 intelligence gathering aircraft flew over the East China Sea, respectively. On the same day, the Chinese Air Force announced that it conducted its first patrol flight since the establishment of the ADIZ. Subsequently, the Chinese Armed Forces announced on November 28 that its KJ-2000 Airborne Early Warning and Control system and Su-30 and J-11 fighters conducted patrol flights in the ADIZ, and



announced on the following day that its Su-30 and J-11 fighters scrambled. On December 26, 2013, the Chinese Armed Forces announced that in the one month that passed since the establishment of the ADIZ, a total of 87 reconnaissance aircraft, early warning aircraft and fighters were mobilized to the relevant airspace.

In March and April 2011 and in April 2012, Chinese helicopters, etc. that appeared to belong to the SOA flew close to JMSDF destroyers which were engaged in monitoring and surveillance in the East China Sea. Further still, in May and June 2014, two Su-27 fighters of China flew abnormally close to the aircraft of JMSDF and JASDF that were conducting routine monitoring and surveillance activities in the East China Sea. The Chinese Ministry of National Defense announced that JSDF aircraft conducted dangerous acts against Chinese aircraft. However, the operations of JSDF aircraft were legitimate activities in compliance with the international law. There is no truth to the Chinese assertion that JSDF aircraft carried out dangerous acts.

With respect to air forces' advancement into the Pacific Ocean, it was confirmed for the first time by the JASDF's scrambling fighters that a Y-8 early warning aircraft and a H-6 bomber flew through the airspace between the main island of Okinawa and Miyako Island and advanced to the Pacific Ocean in July and September 2013, respectively. Similar flights were conducted by two Y-8 early warning aircraft and two H-6 bombers (total: four aircrafts) on three consecutive days in October of the same year and by one Y-8 intelligence gathering aircraft and two H-6 bombers (total: three aircrafts) in March 2014. As such activities demonstrate, China has been further intensifying the activities of its aircraft, including fighters.

China has also been intensifying its activities in the South China Sea, including waters around the Spratly Islands and the Parcel Islands, over which territorial disputes exist with neighbors, including some ASEAN (Association of Southeast Asian Nations) member states. In March 2009, Chinese ships, including a naval vessel, a maritime research ship of the SOA, a Bureau of Maritime Fisheries' patrol ship, and trawlers, approached a U.S. Navy acoustic research ship operating in the South China Sea to obstruct its operations.

In addition, in December 2013, a Chinese naval vessel cut across the bow of a U.S. Navy cruiser operating in the South China Sea at point blank range. It is also reported that Chinese naval vessels fired warning shots at fishing boats of neighboring countries. Furthermore, in recent years, there has been growing friction between China and its neighboring countries over the South China Sea, as illustrated by protests by Vietnam and the Philippines against China's activities in these waters.

A Chinese Defense Ministry spokesman stated that the Chinese military was "strongly discontented and resolutely against" the Japanese accusations in response to the Japanese white paper's claims of repeated Chinese intrusion into Japanese territorial waters and airspace and that China had used aggressive tactics to expand its maritime power. Further, the Chinese Defense Ministry said that Japan was undermining regional stability with its claims to the disputed Diaoyu/Senkaku Islands – an unusually strong rebuttal for the PRC, which rarely mentions other countries by name.<sup>250</sup>

These disputes in the East China Sea reached a new level in November 2013 when China established an Air Defense Identification Zone (ADIZ) in the East China Sea. Within the ADIZ are the disputed Senkaku/Diaoyu Islands (claimed by Japan and China), the Socotra Rock (claimed by South Korea as Ieodo and China as Suyan Jiao), and sections of the Japanese and South Korean ADIZ's. The Chinese claim that this ADIZ will enhance regional security and good order in the air.

They also view the establishment of the ADIZ as an equalizing move, as China did not have an ADIZ in the East China Sea like Japan, South Korea, or Taiwan. Furthermore, the ADIZ was established partly to respond to "changes in foreign and Chinese aircraft capabilities and early warning technologies."<sup>251</sup> Despite Chinese claims that the ADIZ is benign, the timing and lack of consultation with neighbors regarding the establishment of the ADIZ has raised serious concerns about the true purpose of the ADIZ. Highlighting these concerns is a peculiar characteristic of this

ADIZ, which is that aircraft that are not planning to enter Chinese airspace still must file a flight plan with Chinese authorities.

American ADIZ's, which China referred to when establishing their own ADIZs, only places a requirement to file a flight plan on aircraft intending to enter American airspace.<sup>252</sup> Although there may have been coordination issues between the military and the diplomatic/foreign affairs systems regarding the development and presentation of the ADIZ, there was broad agreement within the Chinese government that the ADIZ should be established.<sup>253</sup>

Observers who do not share the same view as the Chinese believe that the ADIZ is a way to enhance Chinese claims in the region, demonstrate effective control, and make the issue a *fait accompli* in China's favor.<sup>254</sup> This approach is characterized as "salami slicing," which involves gradually strengthening de facto claims of sovereignty.<sup>255</sup> The establishment of the ADIZ, although claimed to target no one, appears to be a strong response to Japanese claims in the East China Sea. Indeed, although the ADIZ overlaps with Japanese, South Korean, and Taiwanese ADIZ's, Chinese responses to Japanese protest are particularly strong and harsh. On the contrary, Chinese responses to South Korean and Taiwanese protests are more accommodating and friendly.<sup>256</sup>

Whether or not this ADIZ is targeted at any state does not reduce the likelihood of accidents and miscalculated escalation. China will commit ships and aircraft to enforce the ADIZ and current crisis management mechanisms, such as actively used hotlines between disputing states, are lacking.<sup>257</sup> China's enforcement of its controversial ADIZ has led to close encounters in the air between Chinese and Japanese military aircraft, where military aircraft from both countries were flying in close proximity to each other.<sup>258</sup> While incidents at sea are relatively easy to avoid because of the slower operating speeds of vessels, the high speed and small size of aircraft can make avoiding accidental collisions much more difficult.

One commentator puts forward an interesting view on the Chinese perspective regarding the ADIZ. China is less willing to leave regional security up to the United States, wants to "consolidate" its national interests, and believes that there is nothing China can do to become a "responsible stakeholder" without giving up on its national interests. With this more pessimistic view of the US, China believed that the establishment of an ADIZ would be a rather low-risk move that could still serve to solidify Chinese claims, galvanize public sentiment, and examine American intentions through the response to its ADIZ.<sup>259</sup>

In any case, these issues reflect a fundamental shift in how China actually shapes its strategy and efforts to increase its strategic influence, and a steady rise in the potential for conflict in the South China Sea. As Bonnie S. Glaser of CSIS noted in 2012,<sup>260</sup>

The risk of conflict in the South China Sea is significant. China, Taiwan, Vietnam, Malaysia, Brunei, and the Philippines have competing territorial and jurisdictional claims, particularly over rights to exploit the region's possibly extensive reserves of oil and gas. Freedom of navigation in the region is also a contentious issue, especially between the United States and China over the right of U.S. military vessels to operate in China's two-hundred-mile exclusive economic zone (EEZ). These tensions are shaping—and being shaped by—rising apprehensions about the growth of China's military power and its regional intentions. China has embarked on a substantial modernization of its maritime paramilitary forces as well as naval capabilities to enforce its sovereignty and jurisdiction claims by force if necessary. At the same time, it is developing capabilities that would put U.S. forces in the region at risk in a conflict, thus potentially denying access to the U.S. Navy in the western Pacific.

Furthermore, as another CSIS briefing pointed out, China has been increasing its sovereignty claims over territory and waters within and beyond the nine-dash lines:<sup>261</sup>

China's policy of strategic ambiguity, as it has been euphemistically called, serves its purposes well. It allows China the flexibility to interpret its position to serve the audience at hand. This is why the Ministry of Foreign Affairs was able to issue its well-publicized statement in February 2012 stating that no nation claims sovereignty over the entire South China Sea and that the dispute is only about the "islands and adjacent waters." This raised hopes in the United States and among the other Asian claimants that China was backing away from the 9-dash lines claim and moving to bring its claims in line with international law.

That, however, has clearly not been the case. This year's tensions in the sea started with a two-month standoff between Chinese and Philippine ships at Scarborough Shoal. That confrontation, despite pronouncements to the contrary from Beijing, served as an example of a creeping evolution in Beijing's claims. For years the Chinese territorial claims in the South China Sea extended only to the Spratlys (Nansha, or "South Banks") and Paracels (Xisha, or "West Banks").

Any claim to other features, like Scarborough Shoal, was only implied in so far as they fell within the ambiguous 9-dash lines. Then China extended its claim to the entirely submerged Macclesfield Bank via the imaginary Zhongsha, or "Middle Banks," despite there being no way under international law to claim title over a submerged feature as if it were an island.

Further, in recent years, as Beijing has tried to move beyond an overreliance on the indefensible 9-dash lines, Scarborough Shoal has been incorporated as part of Zhongsha. The fact that it lies hundreds of miles from Macclesfield Bank or that it appears on none of the historical documents China puts forth to prove its title to the Spratlys and Paracels seemingly does not matter.

Beijing showed similar disregard for the policy put forth in its February Ministry of Foreign Affairs statement when in early May it reinstated its annual unilateral fishing ban for all of the South China Sea above the 12th parallel. Such a ban would be possible only if China were claiming all the waters within the 9-dash lines, not only its "islands and adjacent waters."

Then in late June, the China National Offshore Oil Corporation (CNOOC) fired a shot across Vietnam's bow by announcing the company would open nine oil and gas blocks in the South China Sea to foreign bids. The catch was that all nine blocks lie within the 200-nautical-mile exclusive economic zone (EEZ) of Vietnam, and many in fact overlap with existing blocks already leased by Vietnam, including those committed to Exxon-Mobil. More importantly, CNOOC's blocks are not defensible under a claim to the "islands and adjacent waters" of the South China Sea because there is no island within 200 nautical miles (the maximum allowable EEZ) of all the blocks.

Vietnam-China relations suffered a blow in early May 2014, when the China National Offshore Oil Corporation (CNOOC) placed an oil rig south of the disputed Paracel Islands. Over 80 ships were dispatched by China to support and protect the rig; warships were allegedly part of this group of vessels. Vietnam responded by sending 29 ships of its own, which then led to boat ramming and water cannon firing. One Vietnamese fishing boat was sunk and several Vietnamese were injured.<sup>262</sup>

These controversial actions led to anti-Chinese riots in Vietnam that injured many Chinese factory workers, even leading to a number of deaths. Following difficult talks between China and Vietnam that did not make any progress towards resolving the situation, China sent four more rigs the South China Sea, three rigs closer to the Chinese coast and one just outside the Vietnamese EEZ.<sup>263</sup>

In addition to the tensions surrounding the oil rig, China undertook land reclamation projects in the disputed Spratly Islands that could form islands large enough to construct buildings.<sup>264</sup> Although international concern and regional protest regarding China's actions has been sharp, the Chinese view such actions as normal activity, underscoring their territorial claims.<sup>265, 266</sup>



These tensions have reinforced China's generally negative view of the US 'pivot' to Asia. For example, one Chinese newspaper called for the US "to rein in its unruly allies in the region including Japan and the Philippines," in direct reference to the recent island disputes. Further, because the US has a "responsibility for sowing the seeds of conflict," it "shoulders certain responsibilities for the chronic disputes."<sup>267</sup>

**Figure 5.2: DoD Representation of the First and Second Island Chains**



Source: DoD, *Military and Security Developments Involving the People's Republic of China* 2012, 40.  
[http://www.defense.gov/pubs/pdfs/2012\\_CMPR\\_Final.pdf](http://www.defense.gov/pubs/pdfs/2012_CMPR_Final.pdf).

## *The US View*

Outside experts have many different views of Chinese strategy and doctrine – and the extent to which developments like its cyberwarfare efforts and territorial claims mean China’s real strategy and doctrine differ from its declared ones. It is also true of all countries that they make the best public case they can, and do so largely in diplomatic terms.

Once again, however, it is useful to examine how recent US DoD reports on China’s strategy and doctrine contrast to the Chinese writing summarized earlier:<sup>268</sup>

China’s leaders characterize the first two decades of the 21st century as a “strategic window of opportunity.” They assess that during this period, both domestic and international conditions will be conducive to expanding China’s “comprehensive national power,” a term that encapsulates all elements of state power, including economic capacity, military might, and diplomacy.

China’s leaders anticipate that a successful expansion of comprehensive national power will serve China’s strategic objectives, which include: perpetuating Chinese Communist Party (CCP) rule, sustaining economic growth and development, maintaining domestic political stability, defending national sovereignty and territorial integrity, and securing China’s status as a great power.

The 2014 report added:<sup>269</sup>

Though there is debate in Chinese academic circles over whether China can sustain the “period of strategic opportunity” through this decade, Chinese leaders have continued to reiterate the centrality of this period to achieving these key strategic objectives.

China’s leaders routinely emphasize the goal of reaching critical economic and military benchmarks by 2020. These benchmarks include successfully restructuring the economy to maintain growth and increase the quality of living of China’s citizens to promote stability; making major progress in military modernization; and attaining the capability to fight and win potential regional conflicts, including those related to Taiwan, protection of sea lines of communication (SLOCs), defense of territorial claims in the South China Sea and East China Sea, and the defense of western borders.

Statements by Chinese leaders indicate that, in their view, the development of a modern military is necessary for China to achieve greater power status. These statements also indicate that the Chinese leadership views a modern military as a critical deterrent to prevent actions by outside powers that could damage Chinese interests, or to allow China to defend itself against such actions should deterrence fail.

Since China launched its “reform and opening” in late 1978, the essential elements of China’s strategy to accomplish these goals have remained relatively constant. Rather than challenge the existing global order, China has adopted a pragmatic approach to international relations and economic development that seeks to strengthen the economy, modernize the military, and solidify the CCP’s hold on power. China balances the imperative to reassure countries that its rise is “peaceful” with the imperative to strengthen its control over existing sovereignty and territorial claims.

The 2016 DoD report stated that:<sup>270</sup>

### **Factors Shaping China’s Leadership Perceptions.**

Authoritative official documents indicate that China’s leaders over the past several years have viewed the country’s security environment as becoming more complex. Even with “a generally favorable external environment,” last year’s Defense White Paper (DWP) assessed that “the national security issues facing China encompass far more subjects, extend over a greater range, and cover a longer time span than at any time in the country’s history. Internally and externally, the factors at play are more complex than ever before.” Some of these evolving factors include:

**Domestic Stability.** China’s leaders are watchful for signs of unrest and vigilant about controlling dissent. In 2015, the leadership’s anxieties about social stability spurred the CCP to tighten social controls and crackdown on dissent. The protests in Hong Kong in late 2014 inflamed Chinese officials’ perceptions that the West seeks to intensify domestic instability that would overthrow the CCP. China’s new National

Security Commission has a mandate to protect the CCP from both internal and external threats, a reflection of the regime's enduring fear of foreign subversion. This fear of unrest probably also has contributed to the leadership's focus on tightening CCP control of the PLA. In his first speech as commander-in-chief, Xi cited the Communist Party of the Soviet Union's lack of control of its armed forces as a key cause of the Soviet Union's demise.

**Decelerating Economic Growth.** China's continued economic growth has been a chief enabler of the PLA's rapid modernization. Chinese leaders, however, were concerned about the past year's slowing growth and stock market volatility. China's economy faces a range of risks, including a slowdown in the property market, ballooning debt that continues to outpace economic growth, high off-balance sheet borrowing by provincial and local governments, domestic resource constraints, and rising wages. China's leaders recognize that the economy needs to embark on a disruptive transition from an export- and investment-driven economy to a more consumer-driven economy, but they worry that the necessary reforms in the short term could undermine the steady economic growth, low unemployment, and contained inflation that the leadership judges to be the bedrock of social stability. Over the longer term, China's economy also faces environmental challenges and the dual threat of a rapidly aging population and a declining birth rate that now falls below replacement level, changes that will strain China's resources and its economic growth model. The CCP Central Committee last year decided to lift its longtime "one-child policy" in part to address this challenge, but the high cost of living still discourages many couples from having a second child.

**Regional Challenges to China's Interests.** There are numerous, complex maritime and territorial disputes across the Asia-Pacific. China's behavior in these disputes have increased regional concerns about its intentions in the region, undercutting its professed desire to maintain a friendly periphery, and driving its neighbors to align more closely with each other and the United States.

**Nationalism.** CCP and PLA leaders have adopted a more nationalistic foreign policy posture. Stirring nationalist sentiment may bolster the legitimacy of the CCP, but also risks limiting Chinese leaders' flexibility in dialogues with foreign interlocutors, including during a crisis, by limiting options and opening the leadership up to criticism that it has insufficiently defended China's national interests.

#### **Foreign Military Engagement.**

The PLA engages with foreign militaries to demonstrate its growing capabilities and to improve its tactics, techniques and procedures. Bilateral and multilateral exercises provide a political benefit to China and opportunities for the PLA to improve capabilities in areas such as counterterrorism, mobility operations, and logistics.

**Military Diplomacy.** In January 2015, the PLA held an All-Army Foreign Affairs Work Conference to outline how China's military diplomacy would support the vision set by the CCP's earlier Central Foreign Affairs Work Conference. At this PLA event, senior officials conveyed the goals and strategic outlook for military diplomacy for the next decade, addressing themes of President Xi's speech to Party leaders, including "big power diplomacy," coordination, and policy implementation.

Senior-level visits and exchanges provide China with opportunities to increase military officers' international exposure, to communicate China's positions to foreign audiences, to understand alternative worldviews, and to advance foreign relations through interpersonal contacts and military assistance programs. Expanded PLA travel abroad enables PLA officers to observe and study foreign military command structures, unit formations, and operational training.

**Military Cooperation.** As China's regional and international interests grow more complex, the PLA's international engagement will expand, especially in the areas of PKO, counterpiracy, HA/DR, counterterrorism, and joint exercises. For example, virtually every Latin American and Caribbean country that diplomatically recognizes China sends officers to the strategic-level College of Defense Studies at the National Defense University; some of these countries also send officers to the PLAA and PLAN command schools. In addition to furthering PLA modernization, the focus of these engagements will probably remain on building China's political ties, assuaging fears about China's rise, and building China's international influence, particularly in Asia, Africa, and Latin America.

This US perspective reflects concerns that help explain both the changes in US strategy and a range of concerns that are also shared by many of China's neighbors – although not as publically.

These include comments in the 2010 South Korean defense white paper and other regional military studies.<sup>271</sup>

At the same time, a careful reading of the US view shows that the US does not see China as posing unacceptable risks and problems for the future, and that it sees many aspects of China's strategy as a natural result of its national interests. It is also clear that in virtually every area in which the US does note its concerns, there is room for dialog and compromise that can serve Chinese, US, and local interests.

These are not casual considerations. It is all too clear that one of the worst possible outcomes for China, the US, and Asia would be for the two major powers to confront each other and engage in a major arms race focusing on the risk of war, forcing other Asian nations to take sides. One only has to recall the Anglo-German naval arms race before World War I, or the end result of US and Japanese confrontation before World War II to see the risks. It is also clear that even without any conflict, the end result would be far more costly to China and the US than making pragmatic compromises and taking steps to ensure that the risk of any form of conflict was kept to an absolute minimum.

The 2014 DoD report fully recognized these imperatives:<sup>272</sup>

During their June 2013 Sunnylands summit, U.S. President Xi Jinping emphasized the importance of developing a new model of bilateral relations that avoids the historical trap of conflict between a rising power and an established one, preventing the relationship from unnecessarily deteriorating into strategic rivalry. Both sides have articulated the desire for a new model of military-to-military relations that is an integral part of a broader shared vision for a positive, cooperative, and comprehensive U.S.-China relationship.

The U.S. DoD's approach to military engagements with the PRC's Ministry of National Defense focuses on three lines of effort: building cooperative capacity in areas of mutual interest; fostering greater institutional understanding; and promoting common views of the regional security environment and related security challenges. In 2014, the DoD will pursue these lines of effort to develop a "new model of military-to-military relations" focused on: sustained, substantive dialogue; concrete, practical cooperation; and enhanced risk reduction.

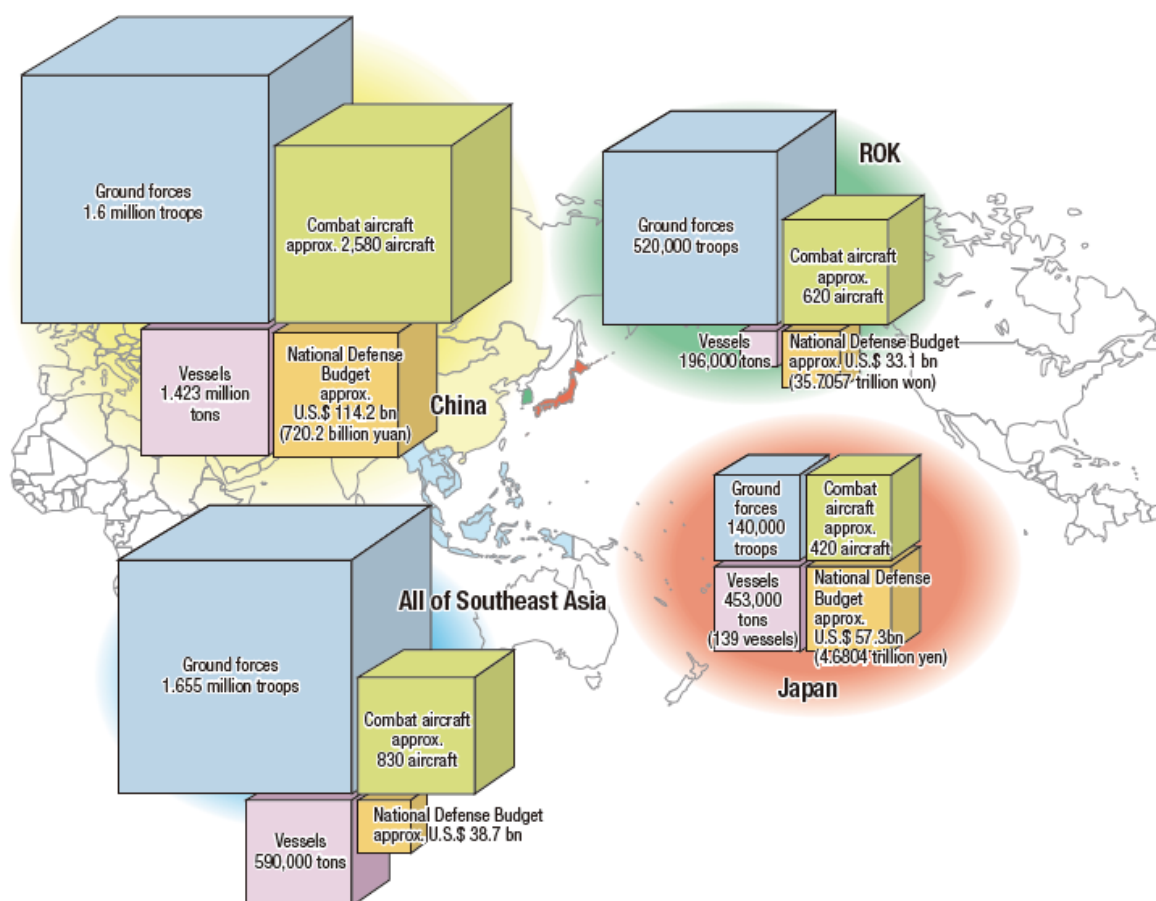
The U.S.-China relationship has elements of both cooperation and competition. A new model of military-to-military relations seeks to manage competition through sustained and substantive dialogue and a commitment to risk reduction, and at the same time deepen practical, concrete cooperation in areas of mutual interest. The relationships and channels of communication developed through military-to-military engagements are particularly important during periods of tension, and contacts at all levels can help reduce miscommunication, misunderstanding, and the risks of miscalculation.

### **Japanese and South Korean Perspectives on the Balance**

The Japanese Ministry of Defense White Paper of 2014 provided a somewhat similar perspective, but also gave a relatively current estimate of how China's forces compare with the size of other forces in the region.<sup>273</sup> These comparisons are shown in **Figure 5.3** and **Figure 5.4**. A 2014 South Korean estimate is shown in **Figure 5.5**.

**Figure 5.3 Comparison of Forces Strength and Defense Budgets between Southeast Asia, China, Japan, ROK**

**Fig. I-1-5-1** Comparison of Forces Strength and Defense Budget between Southeast Asia and Japan/China/ROK 2013

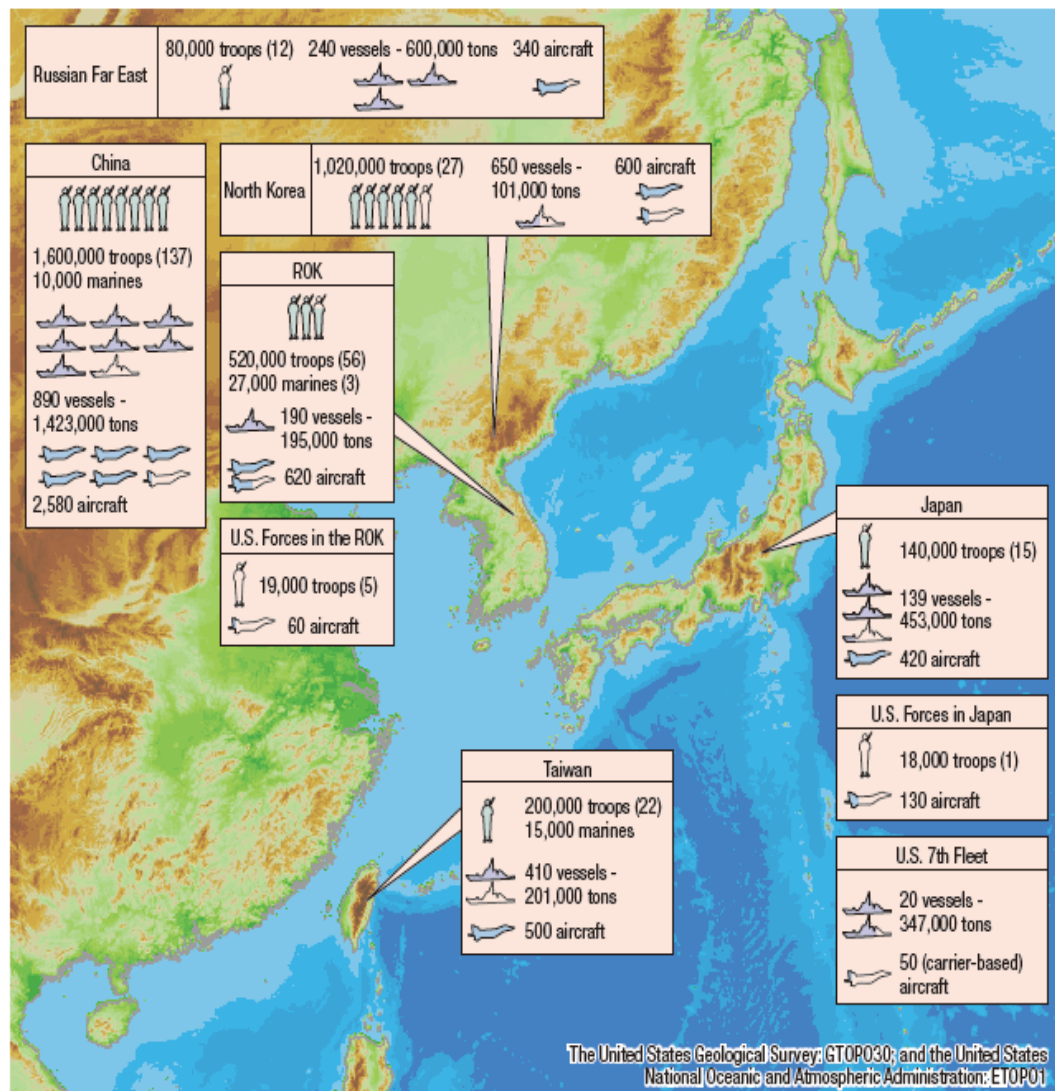


- Notes: 1. Source: The Military Balance 2014 and others. The size of each block indicates relative size using Japan as the base size.
2. For Japan, the force strength shows the actual strength of each Self-Defense Force as of the end of FY2011; the number of combat aircraft is the sum of the number of combat aircraft of the ASDF (excluding transport aircraft) and that of the MSDF (fixed-wing aircraft only).
3. The national defense budget of China is from the Finance Minister's Budget Report to the National People's congress in 2013.
4. The national defense budget of the ROK is from the ROK National Defense White Paper 2013.
5. The national defense budget of China and the ROK is expressed in U.S. dollars and is calculated using the FY2013 Ministry of Finance exchange rates of 82 yen to 1 dollar, 13 yen to 1 yuan, and 76 yen to 1,000 won.
6. The Japanese national defense budget is expressed in U.S. dollars converting 2013 figures using the FY2013 Ministry of Finance exchange rate of 82 yen to 1 dollar.

Source: Ministry of Defense of Japan, *Defense of Japan*, August 2014.

**Figure 5.4: Japanese Ministry of Defense Summary of the Military Balance**

**Fig. I-0-0-1 Major Military Forces in the Asia-Pacific Region (Approximate Strength)**



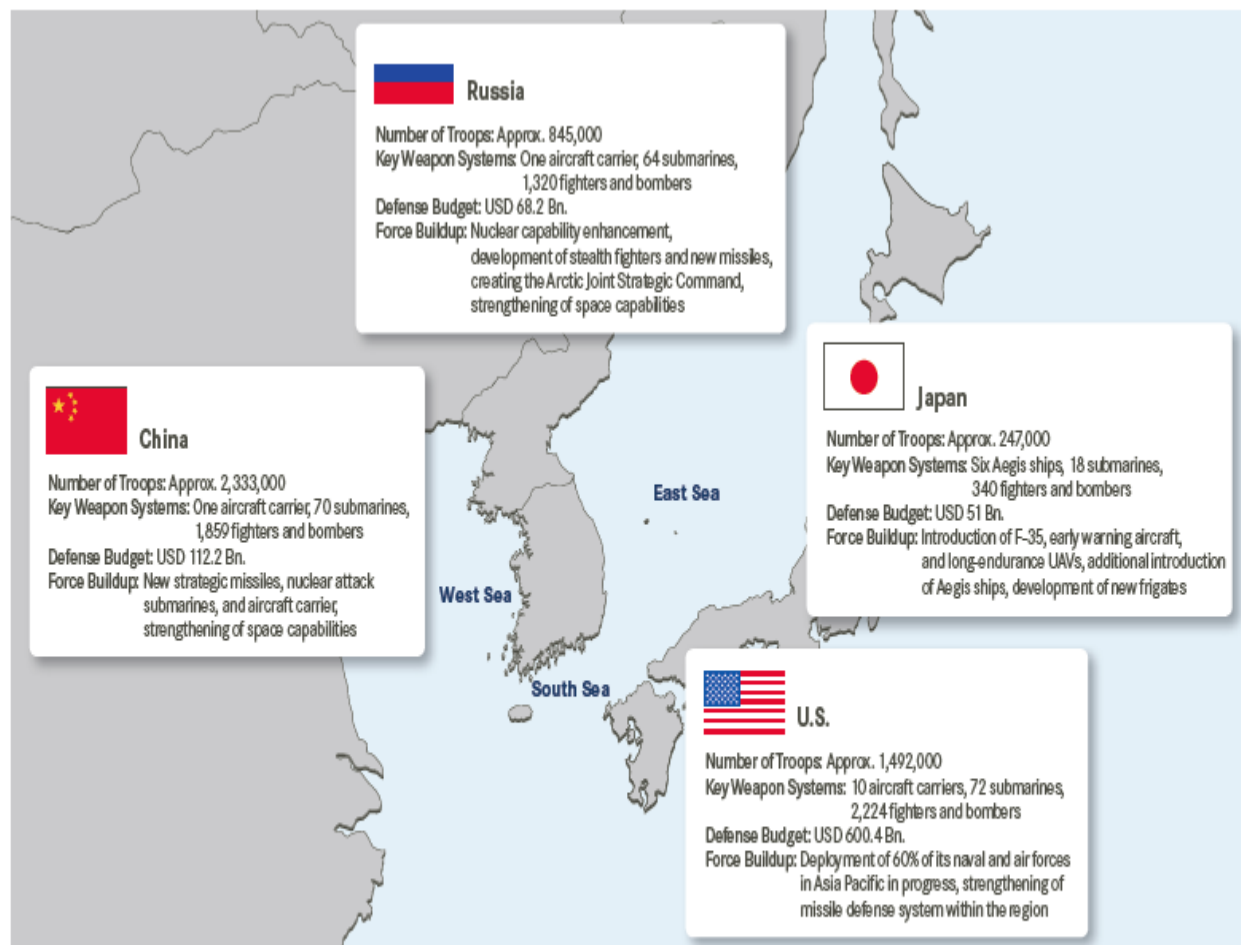
- Notes:
1. Source: "The Military Balance 2014" published by the U.S. Department of Defense, and others.
  2. Figures for Japan, as of the end of 2013, indicate the strength of each SDF; the number of combat aircraft is the sum of ASDF aircraft (excluding transport aircraft) and MSDF aircraft (fixed-wing aircraft only).
  3. Figures of U.S. ground forces in Japan and the ROK are those of Army and Marine Corps personnel combined.
  4. Combat aircraft include Navy and Marine aircraft.
  5. Figures in parentheses show the total number of central units, such as divisions and brigades. Only divisions are included in North Korea.
  6. The number of U.S. 7th Fleet vessels and aircraft indicates those which are forward-deployed in Japan and Guam.

Legend

	Ground forces (200,000 troops)		Naval vessels (200,000 tons)		Combat aircraft (500 aircraft)
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Source: Ministry of Defense of Japan, *Defense of Japan*, August 2014.

**Figure 5.5: South Korean Ministry of Defense Summary of the Military Strength of the Major Northeast Asian Powers**



\* Sources: *The Military Balance 2014* (The International Institute for Strategic Studies, February 2014), *Defense of Japan (Annual White Paper)* (2014) and others (defense budgets are for 2013.)

\* Number of fighters and bombers includes naval aircraft. Number of submarines includes strategic nuclear submarines.

Source: Ministry of Defense of South Korea, *2014 Defense White Paper*, 15,  
[http://www.mnd.go.kr/user/mnd\\_eng/upload/pblicitn/PBLICTNEBOOK\\_201506161156164570.pdf](http://www.mnd.go.kr/user/mnd_eng/upload/pblicitn/PBLICTNEBOOK_201506161156164570.pdf).

### ***Putting China's Strategy and Actions in Perspective***

That said, it is important to remember the historical context in which China operates. China has been the victim of outside interference and occupation since the first Opium War in 1839-1842. Much of its territory was occupied by European concessions, and it saw a European-US-Japanese force take Beijing in 1900. It has been challenged on all its borders and at sea, involved in major aggressive wars with Japan, dealt with US support of the KMT after 1945 and fought the Korean War with a US-led UN coalition. It then turned to the US out of strategic necessity in 1972 as friction grew with the former Soviet Union.

Chinese officials and officers often make it clear in private conversations that they see China's actions as necessary steps to prevent the U.S. and other power from containing China, limiting its emergence as a major regional and world power, and posing a future strategic challenge to its economic development. The history of emerging major powers and competing major powers is always troubled, and particularly when the emerging power has often been the victim in past conflicts and political struggles. China's critics need to remember this, just as China needs to remember the risks in trying to reshape history rather than shape a stable and positive future.<sup>274</sup>



## CHAPTER 6: CHINESE MILITARY ORGANIZATION

Like all modern powers, China has a broadly structured national security system in which its forces are supported by a wide range of other organizations, security structures, and paramilitary forces. While China's strategic doctrine describes how China's armed forces will fight in the twenty-first century, its theoretical approach does not give a detailed picture of the PLA's ability to fight as its doctrine demands. Examining the organizational structure of the PLA and its institutional modernization helps clarify its ability to fight and to understand the changes in each individual service's force structure.

The changes in China's military organization—specifically the character, roles, and missions of each element of Chinese military and security forces—reflect a major shift toward modernization over the last two decades. These shifts are also reflected in its military personnel forces, equipment, deployments, and tactics summarized in the following chapters.

At the same time, there still are key uncertainties in assessing the effectiveness of such developments. China has not fought a modern war, or any serious conflict for decades. This makes it difficult to assess how the impact of such widespread institutional reforms would really impact the PLA if it had to operate in a wartime situation.

### *PLA Military Organization*

The PLA comprises China's main armed forces and is exclusively under the authority of the Central Military Commission (CMC). Although it is called the People's Liberation *Army*, the PLA consists of four services—the PLA Army (PLAA), the PLA Navy (PLAN), PLA Air Force (PLAAF)—and as of December 31, 2015, the PLA Rocket Force (PLARF).<sup>275</sup> Additionally, China uses paramilitary forces—in particular, the Coast Guard—to patrol the waters within the nine-dash line, as discussed previously.

Starting in late 2015, China began to implement plans for structural military reorganization that had been announced at the Third Plenum of the 18th Central Committee of the Chinese Communist Party (CCP) in November 2013, with the goal of fully implementing the reforms shown in **Figure 6.1** by 2020 according to the demanding schedule set forth in **Figure 6.2**.

There are good reasons for such actions and for giving them high priority. Despite intermittent reforms, the PLA still bore a substantial resemblance to the Soviet model of armed forces developed in the 1950s. China had concluded that the pre-reform PLA command structure was top heavy, which hindered joint operations in a local wars context, and China's 2015 White Paper had focused on continuing to build a military capable of fighting “informationized local wars”.

The future battlefield is projected to be more dynamic and more fast paced, requiring lower echelon leaders to take the initiative and make battlefield decisions without having to wait for orders from higher up the command chain.<sup>276</sup> The joint operations that the PLA envisions conducting in the future require faster decision-making loops and shortened time gaps between sensors and shooters, both of which could be gained by giving lower level officers more authority to command.<sup>277</sup>

These were all key reasons for the encompassing reforms shown in **Figure 6.1**. They are a clear indication of the fact that China's leadership recognizes that significant updates are required to be a military power in the modern era.

### The Reform Plans and Reform Schedule

These planned changes are so substantial that the April 2016 Department of Defense report on China observed they were the, “most significant reforms of the PLA in at least three decades.”<sup>278</sup> The same Department of Defense Report on China highlighted the main aspects of the organizational reforms as follows.<sup>279</sup>

Additionally, the People's Liberation Army (PLA) updated high-level strategies, plans, and policies that reflect its intent to transform itself into a more flexible and advanced force capable of more advanced joint operations and fighting and winning “informationized local wars”—regional conflicts defined by real-time data-networked command.

**Structural Reform.** The widening gap between the demands of winning informationized local wars and the PLA's legacy command, organizational, and administrative structure has fueled several proposals for reform since the 1990s. The Chinese Communist Party (CCP) Central Committee endorsed the need for reform at the Third Plenum of the 18th Party Congress in November 2013 and the Central Military Commission (CMC) established the Leading Group for Deepening Defense and Military Reforms in the months that followed. President Xi Jinping chairs the group, and CMC Vice Chairmen Fan Changlong and Xu Qiliang serve as its deputies.

In late November 2015, President Xi introduced the major elements of structural reform intended to be carried out by 2020 at a special three-day reform group session. Further announcements followed in December. The Ministry of National Defense (MND) spokesman stated that, overall, the reforms sought to improve “leadership administration and command of joint operations” so that the PLA would have a force structure able to fight and to win modern conflicts. These reforms include:

- > *Theaters.* The PLA is transitioning from its seven legacy military regions (MR) to five “theaters of operations,” or joint commands, in a move the MND spokesman tied to enhancing combat effectiveness.
- > *Army Headquarters.* In late 2015, the PLA began to establish a headquarters for its ground forces, creating a separate PLA Army (PLAA) service. Previously, leadership of ground units was integrated into the PLA's four general departments, which were each represented on the CMC.
- > *Rocket Force.* On December 31, 2015, China's military leadership re-designated the PLA Second Artillery Force (PLASAF) as the PLA Rocket Force (PLARF) and elevated it from an independent branch to a full service.
- > *Strategic Support Force.* Also on the last day of the year, the PLA created a new force under the CMC, reportedly to oversee its space and cyber capabilities.
- > *Roles and missions.* The reform plan aims to establish two clear lines of authority under the CMC. It gives the services authority over “force management” issues while the theater headquarters command operations—a distinction that was ambiguous in the past.
- > *Staff Departments.* The leadership is also adjusting the PLA's senior staff bodies, in part by replacing the four general departments with six joint departments, three commissions, and five offices under the CMC.
- > *Internal Discipline.* The CMC is tightening military discipline with reforms to its Discipline and Inspection Commission, its Auditing Office, the PLA judicial system, and a new Politics and Law Commission.

In September 2015, President Xi also announced that the PLA would reduce its force by 300,000 personnel by the end of 2017, a move widely expected to result in fewer non-combat personnel, such as those specialized in arts and culture, administrative duties, or academic work. China's official media also report the

cuts will help to rebalance the proportion of forces among the services in ways that will raise the relative importance the PLA Navy (PLAN) and PLA Air Force (PLAAF).

**Figure 6.1: PLA Reform Schedule: 2015-2020**

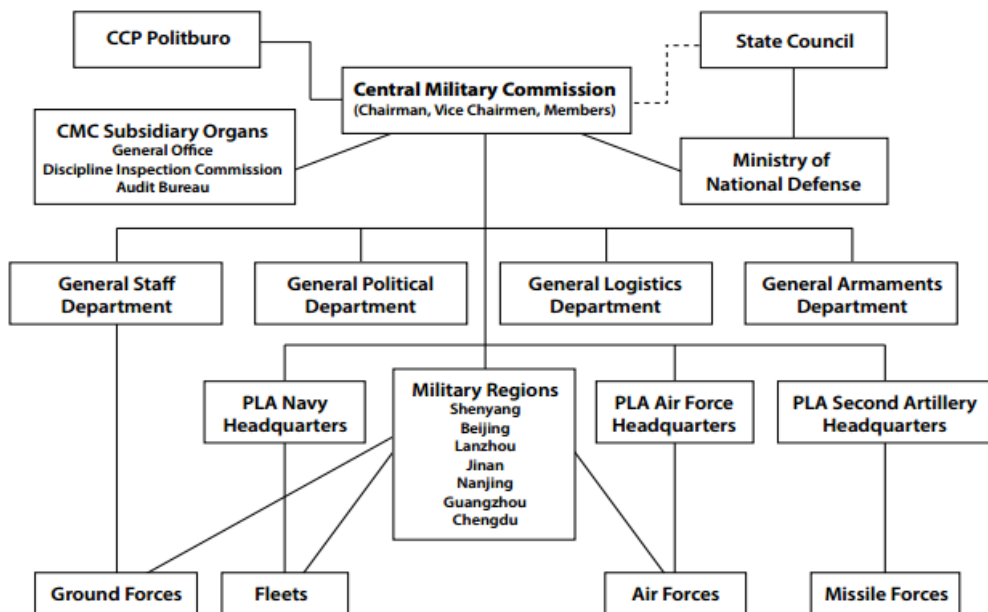
**Table. PLA Reform Agenda, 2015–2020**

Reform Area (English)	Reform Area (Chinese)	Topics	Target Date
Leadership Management System	领导管理体制	Reform Central Military Committee departments, military services, logistics system, equipment development system	2015 <sup>+</sup>
Joint Command and Control System	联合作战指挥体制	Establish two-level joint command system, reform joint training, establish theater commands	2015 <sup>+</sup>
Military Scale Structure	军队规模结构	Reduce force size by 300,000, reducing noncombat personnel, reduce officer billets, phase out old equipment	2016 <sup>+</sup>
Force Composition	部队编成	Adjust force structure, optimize reserve force, reduce militias	2016
Cultivating New-Type Military Talent	新型军事人才培养	Enhance professional military education	2016
People's Armed Police command and control system and force composition	武装警察部队指挥管理体制和力量结构	Adjust People's Armed Police command and control and force structure	2016
Policy System	政策制度	Reform personnel system, budget management and procurement system, salary and welfare system	2017–2020
Developing Civil-Military Integration	军民融合发展	Enhance management of civilian-military integration	2017–2020
Military Legal System	军事法治体系	Reform military regulations and military justice system	No Date Provided

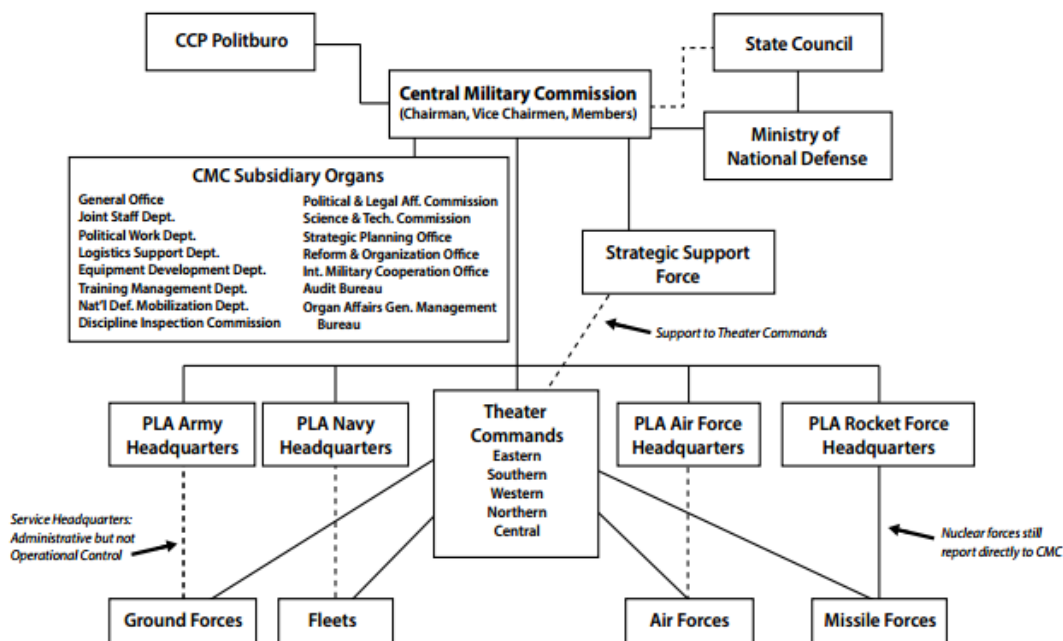
Source: Phillip C. Saunders and Joel Wuthnow, *China's Goldwater-Nichols? Assessing PLA Organizational Reforms*, National Defense University, April 2016, <http://inss.ndu.edu/Portals/68/Documents/stratforum/SF-294.pdf>

**Figure 6.2: PLA Structure Pre/Post Reforms**

**Figure 1. PLA Structure Prior to Reforms**



**Figure 2. PLA Structure after Reforms**



Source: Phillip C. Saunders and Joel Wuthnow, *China's Goldwater-Nichols? Assessing PLA Organizational Reforms*, National Defense University, April 2016, <http://inss.ndu.edu/Portals/68/Documents/stratforum/SF-294.pdf>

The proposed reforms also include substantial changes to the lines of authority within the PLA as China seems to be moving towards a more Western-style military setup.<sup>280</sup> The changes have led analysts to compare the reforms to “China’s Goldwater-Nichols.”<sup>281</sup> An April 2016 report by Phillip C. Saunders and Joel Wuthnow of the National Defense University noted that:<sup>282</sup>

The reforms affected not only individual organizations but also the lines of authority connecting the PLA’s major components. Chinese sources describe the revised division of labor with the following formula: the CMC and its subsidiary departments will provide overall management, the theaters will focus on operations, and the services will manage force building. In effect, the PLA will have two distinct chains of command: an operational chain passing from the CMC to the theaters to the troops, and an administrative chain flowing from the CMC to the service headquarters to the troops.

The nature of the reforms suggests that the PLA is moving toward a more modular, U.S.-style C2 arrangement in which operational commanders develop force packages from units that are trained and equipped by the services. In particular, the PLA restructuring has drawn comparisons to the U.S. military following the Goldwater-Nichols Department of Defense Reorganization Act of 1986. This act resulted in a C2 structure for the U.S. military in which authority flows from the President and Secretary of Defense to the commanders of the regional unified combatant commands, who lead joint forces within their respective theaters. Service chiefs were given an advisory role, with responsibilities to “organize, train, and equip” troops. This bifurcation of authority appears similar to the evolving PLA distinction between operational and administrative chains of command.

### **Reforming the Middle More than the Top**

There are important, and sometimes questionable, limits to such reforms. While the reforms are considerable—particularly within the midlevel bureaucracy—the top levels of the command structure will not be restructured. As depicted in **Figure 6.2** and **Figure 6.3** the Central Military Commission (CMC) remains the dominant stakeholder in leadership of China’s military. Additionally, the role of the Politburo, State Council, and Ministry of National Defense appear not to have been meaningfully altered.

The continued power of the CMC and the military’s permanent connection to the CCP makes it clear that the reforms will not fully remake the PLA as a Western military. Indeed, many of the characteristics of the PLA are still unique to the Chinese system. The National Defense University report by Phillip C. Saunders and Joel Wuthnow states:<sup>283</sup>

Nevertheless, the new PLA C2 system has some key differences with the U.S. system. First, unlike the U.S. combatant commands, which span the globe, the theaters cover territory only within China. Operations far beyond China’s borders (such as those in the Middle East or the Indian Ocean) will apparently be centrally directed by the JSD in Beijing. Second, the PLA retains the CMC as its highest decision making body and does not have a U.S.-style commander in chief equivalent. Nevertheless, as discussed below, the reforms have strengthened Xi Jinping’s role within the CMC (under what is being labeled a “CMC chairman responsibility system”). Third, the PLA remains a Leninist military whose primary responsibility is defending CCP rule. Unlike the U.S. military, where unit commanders exercise sole authority, the PLA retains political commissars and Party committees that are supposed to play a role in all key decisions.

Thus, China’s official description of its overall command structure and military decision-making process in its 2006 defense white paper is likely to continue to remain mostly accurate.<sup>284</sup>

The state exercises unified leadership over national defense activities. China’s armed forces are under the leadership of the Communist Party of China (CPC). The Central Military Commission (CMC) of the CPC and that of the People’s Republic of China (PRC) are completely the same in their composition and in their function of exercising leadership over the armed forces. The CMC chairman has overall responsibility for its work.

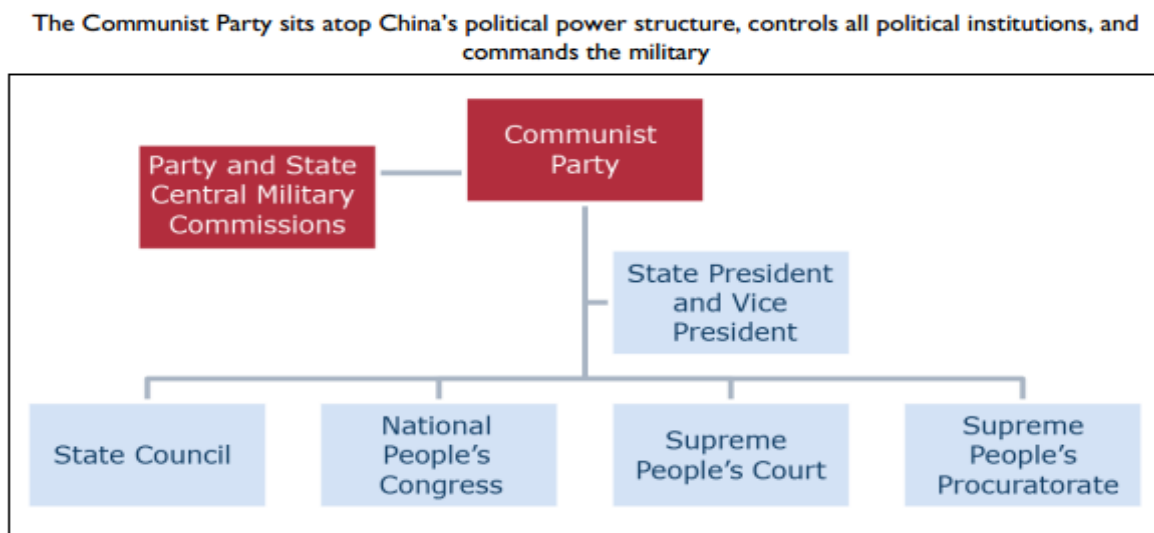
The National People's Congress (NPC) elects the chairman of the CMC of the PRC and, upon nomination by the chairman, decides on the choice of all other members of the CMC. The NPC decides on war and peace and exercises other functions and powers relating to national defense as prescribed by the Constitution. When the NPC is in recess, its Standing Committee decides on the proclamation of a state of war, decides on the general or partial mobilization of the country, and exercises other functions and powers relating to national defense as prescribed by the Constitution.

The president of the PRC, in pursuance of the decisions of the NPC and its Standing Committee, may proclaim a state of war, issue mobilization orders, and exercise other functions and powers relating to national defense as prescribed by the Constitution.

The State Council directs and administers national defense building in the following areas: making national defense development programs and plans, formulating principles, policies and administrative regulations for defense building, administering defense expenditure and assets, directing and administering national defense scientific research and production, directing and administering work related to mobilization of the national economy, mobilization of people's armed forces, people's air defense and national defense traffic, directing and administering the work of supporting the military and giving preferential treatment to families of servicemen and martyrs, as well as the resettlement of servicemen discharged from active service. It also directs national defense education and, jointly with the CMC, the building of the Chinese People's Armed Police Force (PAPF) and the militia, the work concerning enlistment and reserve service, and the administration of border, coastal and air defenses, and exercises other functions and powers relating to national defense building as prescribed by law.

Under the State Council are the Ministry of National Defense (MND) and other departments concerning national defense building. The CMC directs and exercises unified command of China's armed forces. It has the following functions and powers: deciding on the military strategy and operational guidelines of the armed forces, directing and administering the building of the PLA, submitting proposals related to national defense to the NPC or its Standing Committee, formulating military regulations, issuing decisions and orders, deciding on the structure and organization of the PLA, appointing and removing, training, evaluating, and rewarding and punishing members of the armed forces, approving systems and development programs and plans for weaponry and equipment, and exercising other functions and powers as prescribed by law.

**Figure 6.3: China's Political Structure**



**Source:** CRS research.

Source: Susan V. Lawrence, *China's Political Institutions and Leaders in Charts*, Congressional Research Service, November 12, 2013, <https://www.fas.org/sgp/crs/row/R43303.pdf>.

As the Chinese 2006 defense white paper makes clear, this Central Military Commission (CMC) is at the top of China's military chain of command. This will remain true following the implementation of the reforms. It plays the decisive role in planning and decision-making for military-security policy and all issues related to the armed forces. Since 1982, the CMC has been the most senior decision-making body for military affairs and armed forces in China. The CMC is directly derived from the Central Committee of the CCP, thereby putting the Chinese armed forces under Party control.

The January 2016 *Central Military Commission Opinion on Deepening Reform of National Defense and the Armed Forces* reiterates this point as a key aspect of the reforms, stating:<sup>285</sup>

It is necessary to consolidate and perfect the basic principles and system of the Party's absolute leadership over the military, maintain the nature and purposes of the people's military, carry forward our military's glorious traditions and excellent work style, comprehensively implement the Central Military Commission chairmanship responsibility system, and ensure that the supreme leadership right and command right of the military are concentrated in the CPC Central Committee and in the Central Military Commission.

The chairman of the CMC—currently China's president, Xi Jinping—is the commander-in-chief of all Chinese forces. The responsibilities of the CMC encompass operational command over all of China's armed forces and its branches, military doctrine development, logistics, and civil-military relations.

In practice, two CMCs exist next to each other—one for the party, one for the state—but they are almost identical. The National People's Congress elects the state commission's 11 members; the Central Committee of the CCP elects the party commission.<sup>286</sup> The existence of two parallel CMCs shows that the PLA and the armed forces play a twin role in the Chinese body politic – the CMC, and therefore the PLA, on the one hand is an integral part of the CCP and on the other hand serves as the highest administrative body for the Chinese state's military. Both CMCs have the same membership structure; the most important difference between the two is the existence of the General Office in the party CMC. The General Office facilitates and manages interaction among China's most senior military leaders.

These relations, however, seem to be moving toward a more centralized national security structure under the authority of the current Chinese President and through the Party. It should be noted that the National Security Commission, which was established in November 2013 and not formally a part of the PLA command structure, may play a significant role in informing the decisions and actions of the CMC in a more unifying way for handling both domestic and foreign security threats to the CCP.

### ***Organization of the PLA***

The area most visibly impacted by the reforms is the mid-level bureaucratic entities. Previously, the CMC maintained command and control over the armed forces through four general departments (GDs): The General Staff Department, the General Political Department, the General Logistics Department, and the General Armament Department. The GDs were the bureaucratic units that combined military planning and command in lieu of a ministry of defense. However, the reforms dissolved the GDs and replaced them with 15 subsidiary departments, commissions, and offices under CMC control.

A 2013 Congressional Research Service report outlined the old CMC's structure and authority within the Party as follows:<sup>287</sup>

The Party's Central Military Commission (CMC) exercises unified command over China's armed forces, consisting of the active and reserve forces of China's military, the People's Liberation Army (PLA); a paramilitary force, the People's Armed Police Force (PAP); and a militia. The PLA...is not a national army belonging to the state. Rather, it serves as the Party's armed wing.

The civilian General Secretary of the Communist Party serves as the CMC's chairman. The rest of the CMC is currently comprised of uniformed officers. They are two vice chairmen (who serve concurrently on the Party's Politburo), the State Councilor for military affairs (who serves concurrently as Minister of Defense), the directors of the PLA's four general departments, and the commanders of the Navy, the Air Force, and the strategic and conventional missile forces, known as the Second Artillery Corps. The Party and State CMC's have identical memberships and are effectively a single body. The institution of the Party CMC is the locus of authority.

The four general departments direct the service branches and serve as the national headquarters for the Army. They also direct China's military regions (MRs), also known as military area commands or theaters of war. The seven military regions are the Shenyang MR, Beijing MR, Lanzhou MR, Jinan MR, Nanjing MR, Guangzhou MR, and Chengdu MR. The Navy, the Air Force, and the Second Artillery Corps each has its own separate national headquarters. The Ministry of National Defense is not in the chain of command.

An April 2016 National Defense University report addressed the reforms and how the CMC is structured following reform implementation.<sup>288</sup>

On January 11, 2016, Xi revealed that the general departments had been replaced by a new CMC structure composed of 15 departments, offices, and commissions. The GSD's extensive portfolio was dispersed among several new CMC departments. Its core C2 function was transferred to a new Joint Staff Department (JSD), while its sub-departments responsible for training, mobilization, and strategic planning each became first-level departments directly under the CMC. The GPD, GLD, and GAD became the CMC Political Work, Logistics Support, and Equipment Development departments, respectively. The GPD's law enforcement functions were transferred to a new CMC Political and Legal Affairs Commission, while its oversight of Party discipline in the PLA moved to a strengthened CMC Discipline Inspection Commission. The GAD's Science and Technology Commission, responsible for defense innovation, was placed under direct CMC oversight.

The dissolution of the GDs and advent of the fifteen CMC subsidiaries seems to be done with the goal of the increasing the power and oversight of the CMC and CCP. This is corroborated by Xi Jinping's speech to the new departmental heads of the CMC on January 11, 2016 in which he noted that the CMC was establishing "concentrated and unified leadership" within the military apparatus.<sup>289</sup>

**Figure 6.4** provides a visual summary of CMC updates.



**Figure 6.4: Updated CMC Sections and Leadership****Table 1**  
*CMC Functional Sections<sup>7</sup>*

<i>CMC Organization</i>	<i>Organization assessed grade</i>	<i>Leader</i>	<i>Leader's previous position</i>	<i>Leader's previous grade</i>
General Office (办公厅)	(Theater deputy leader)	LTGEN Qin Shengxiang (秦生祥)	Director CMC General Office	MR deputy leader
Joint Staff Dept. (联合参谋部)	CMC member	GEN Fang Fenghui (房峰辉)	Chief of the General Staff	CMC member
Political Work Dept. (政治工作部)	CMC member	GEN Zhang Yang (张阳)	Director, GPD	CMC member
Logistic Support Dept. (后勤保障部)	CMC member	GEN Zhao Keshi (赵克石)	Director, GLD	CMC member
Equipment Development Dept. (装备发展部)	CMC member	GEN Zhang Youxia (张又侠)	Director, GAD	CMC member
Training & Administration Dept. (训练管理部)	Theater deputy leader	MGEN Zheng He (郑和)	Deputy Commander, Chengdu MR	MR deputy leader
National Defense Mobilization Dept. (国防动员部)	Theater deputy leader	MGEN Sheng Bin (盛斌)	Deputy Commander, Shenyang MR	MR deputy leader
Discipline Inspection Commission (纪律检查委员会)	Theater leader	GEN Du Jincai (杜金才)	Deputy Director, GPD & Secretary, CMC Discipline Inspection Commission	MR leader
Politics & Law Commission (政法委员会)	Theater deputy leader	LTGEN Li Xiaofeng (李晓峰)	Chief Procurator, PLA Military Procuratorate	MR deputy leader
Science & Technology Commission (科学技术委员会)	Theater deputy leader	LTGEN Liu Guozhi (刘国治)	Director, GAD S&T Commission	MR deputy leader
Office for Strategic Planning (战略规划办公室)	Corps leader	MGEN Wang Huiqing (王辉青)	Director, GSD Strategic Planning Dept.	Corps leader
Office for Reform & Organizational Structure (军委改革和编制办公室)	Corps leader	MGEN Wang Chengzhi (王成志)	Director, GPD Directly Subordinate Work Dept.	Corps leader
Office for International Military Cooperation (国际军事合作办公室)	Corps leader	RADM Guan Youfei (关友飞)	Director, MND FAO (director, GSD FAO; director, CMC FAO)	Corps leader
Audit Office (审计署)	(Corps leader?)	RADM Guo Chunfu (郭春富)	Director, CMC Auditing and Finance Dept.	(Corps leader?)
Agency for Offices Administration (机关事务管理总)	Corps leader	MGEN Liu Zhiming (刘志明)	Deputy Chief of Staff, Shenyang MR	Corps leader

NOTE: FAO = Foreign Affairs Office

Source: James Mulvenon, "China's "Goldwater-Nichols"? The Long-Awaited PLA Reorganization Has Finally Arrived", *China Leadership Monitor*, no. 49, p.3.

## Operational Command Levels

Under the old system the operational command levels directly under the CMC and the GDs differed among the branches. China's 2006 and 2013 defense white papers describe the command structure of its service branches and its military regions in more detail than its more recent strategy papers that provide more broad overviews of military strategy and reform.<sup>290</sup>

The Army has no independent leading body, and the leadership of it is exercised by the four general headquarters/departments. A military area command exercises direct leadership over the Army units under it.

The Navy, Air Force and Second Artillery Force, each of which has a leading body consisting of the headquarters, the political department, the logistics department and the armaments department, direct the military, political, logistical and equipment work of their respective troops, and take part in the command of joint operations.

The Navy organizes and commands maritime operations conducted independently by its troops or in support of maritime operations. There are three fleets under the Navy, namely, the Beihai Fleet, Donghai Fleet and Nanhai Fleet. Each fleet has flotillas, aviation divisions, etc. under its command.

The Air Force organizes and commands air operations conducted independently by itself or with Air Force personnel as the main fighting force, as well as air defense operations in the capital area. It has an air command in each of the seven military area commands of Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou and Chengdu, respectively. Under an air command are aviation divisions, ground-to-air missile divisions (brigades and regiments), antiaircraft artillery brigades (regiments), radar brigades (regiments) and other support troops. In major directions and key target areas there are also corps- or division-level command posts.

The Second Artillery Force organizes and commands its own troops in case of launching nuclear counterattacks with strategic missiles and conducting operations with conventional missiles. Under it are missile and training bases, and relevant support troops.

Military area commands (theaters of war) are military organizations set up according to the administrative divisions of the state, geographical locations, strategic and operational directions, and operational tasks. They are CMC-appointed organs for commanding joint theater operations. They direct the military, political, logistical and equipment work of the troops under them. Under a military area command are the headquarters, the political department, the joint logistics department and the armaments department. A military area command is mainly in charge of formulating programs and plans for combat readiness and operations of troops in the theater and for the reserve force buildup of the theater, organizing and commanding joint theater operations involving different services and arms, and providing joint logistical support. At present, the PLA has seven military area commands, namely, Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou and Chengdu.

## **Reforming Military Regions and Force Groupings for Joint Operations**

Another substantial reform is that PLA ground forces at the command level below the CMC structure will be reorganized from seven military regions (MRs) to five theater commands (Eastern, Southern, Western, Northern, Central) that cover all of China's territory (**Figure 6.5**). The theater commands will have their headquarters in Nanjing, Guangzhou, Chengdu, Shenyang, and Beijing. These commands now represent more functional blocks of forces, tied better to China's main defense and operational needs, with a better focus on the Northern, Eastern, and Southern theaters – the key areas where China needs coherent military contingency plans and operational control.

Following the reforms, the theater commands will handle command operations, while the services will be in control of force management—essentially the equipping and organizing of military units. The goal of these changes is to rectify past confusions regarding what roles fall under which organization's purview. Furthermore, the decrease in MRs marks a long-term trend of consolidating regional PLA branches that began as 13 in 1955 and was subsequently cut in both 1970 and 1985.<sup>291</sup>

On a functional level, a report from the Jamestown Foundation in February 2016 notes<sup>292</sup>, “The theater commands will have Army, Navy, and Air Force components based, respectively, on the ‘relevant naval fleets’ and air forces of the former Military Regions (MR)—Rocket Forces were not mentioned.”

A February 2016 Xinhua article following the theater reorganization offers further insight into the goals of reform and the CMC and Xi's thought process:<sup>293</sup>

The CMC Vice Chairman Fan Changlong announced the appointment of leaders for the five theater commands, which was endorsed by Xi. CMC Vice Chairman Xu Qiliang presided over the ceremony.

Xi called on the theater commands to keep their duties in mind and resolutely implement the country's military strategies.

The principle of a newly implemented structure, in which the CMC takes charge of the overall military administration, theatre commands focus on combat and the different military branches pursue their own development, must be resolutely observed, Xi said.

He further required building a joint battle command system that is "absolutely loyal, resourceful in fighting, efficient in commanding and courageous and capable of winning wars."

Xi said the move to establish the theater commands and form the joint battle command system is a strategic decision by the Communist Party of China (CPC) Central Committee and the CMC to realize the Chinese

dream of a strong military. It is also a landmark progress in implementing the military reforms and building the PLA's joint battle system.

He said the five theater commands are responsible for dealing with security threats in their respective strategic scopes, maintaining peace, containing wars and winning wars, noting their pivotal role in safeguarding the country's overall national security and military strategies.

The theater commands are directed to unswervingly act under the command of the Party and firmly uphold the CPC's absolute leadership over the armed forces, Xi said, urging the troops to strengthen political awareness and the awareness of safeguarding general interests.

"The armed forces should maintain a high degree of conformity with the CPC Central Committee and the CMC, strictly obey political discipline and rules, and carry out their orders and instructions to the letter," he added.

The newly-established commands should concentrate on fighting battles, Xi said, asking them to study the mechanism of winning modern wars, grasp the law of employing military forces, speed up the development of a strategy for the theater commands and enhance the training of joint operations and command in order to win the initiative in future wars.

Xi urged the theater commands to improve their ability to command and strengthen joint command and action to complete the tasks of routine combat readiness and military actions.

On behalf of their respective theater commands, the political commissars of the five theater commands vowed to firmly listen to the command of the CPC Central Committee, the CMC and Xi, and to perform their missions mandated by the party and the people.

Other CMC members and representatives from various military units attended Monday's ceremony.

China's military reform is aimed at establishing a three-tier "the CMC - theater commands - troops" command system and an administration system that goes from the CMC through various services to the troops.

Before the reshuffle, China had seven military area commands headquartered in Shenyang, Beijing, Jinan, Nanjing, Guangzhou, Chengdu and Lanzhou, which will no longer be maintained, said China's Defense Ministry spokesperson Yang Yujun during a press conference on Monday.

The five theater commands, under the administration of the CMC, are formed based on the functions and organs of the former military area commands, with the functions of command and logistics support improved, said Yang.

The Army, Navy and Air force have already been set up within the theater commands, according to Yang.

The newly-established commands are the top joint battle command agencies, performing the power and duties of taking unified command and control of the troops as entrusted by the CMC, said Yang.

**Figure 6.5: Chinese Military Regions**

**Military Regions (MR) 1985–2015**



**Theaters 2016–Present**



All locations are approximate.  
Boundary representation is not necessarily authoritative.

Source: DoD, *Military Power of the People's Republic of China* 2016.

## PLA Army (PLAA)

The reforms are particularly impactful for the PLAA as they establish an individual PLAA headquarters for the first time. The 2016 Department of Defense assessment of China noted:<sup>294</sup>

In November 2015, the PLA established a separate Army headquarters for its ground forces. The CMC creation in late 2015 of a separate Army headquarters set the conditions for joint operations by leveling the status of the services. This change has required an alteration in the organization of theater commands, which for the first time are establishing separate subordinate theater army headquarters to lead their ground components.

Other aspects of PLAA modernization continued in 2015. The PLA also continued to modernize and to restructure its ground force to create a fully modern army capable of fighting and winning multiple simultaneous regional land wars as the core element of a national joint force. In 2015, the PLAA emphasized mobility exercises across MRs, the mechanization of combat brigades, the creation of high-mobility infantry and combined-arms battalions, and the delivery of advanced command, control, communication, computers, and intelligence (C4I) equipment that provides real-time data-sharing at the division and brigade level. Modernization also involves improved rotary-wing army aviation with precision-guided munitions (including dedicated air-to-air missiles for helicopter-to-helicopter aerial combat). The PLAA continued to field tracked and wheeled artillery systems, wheeled anti-tank guns, anti-tank guided missiles, wheeled and tracked armored vehicles, and air defense systems which incorporate advanced target-acquisition capabilities. Advanced long-range artillery systems—conventional and rocket—as well as supporting target-acquisition systems continued to enter the force, providing PLAA tactical- and operational-level units with world-class, long-range strike capabilities.

The operational level directly subordinate to the theater commands comprises 18 group armies (GAs) for the PLAA ground forces. These GAs represent the highest exclusively military command level. They command a mix of divisions and brigades, although some GAs utilize only brigades or divisions. **Figure 6.6** shows the locations of each GA and their primary missions, according to the DoD's 2015 and 2016 annual reports to Congress on the Chinese military.

It is reported that the average number of troops under GA command has declined and may decline further in the future, as the PLAA shifts to a modular brigade structure<sup>295</sup> and already deploys GAs made exclusively of brigades.<sup>296</sup> Other organizational reforms that have an impact on the PLAA's structure and order of battle are explained later in this chapter.

Although GAs are roughly similar to a NATO corps, with 30,000-50,000 personnel, they are smaller than a corps in the U.S. military. Moreover, a GA with an all-brigade force structure would be more comparable to a U.S. division.<sup>297</sup> Consequently, a shift in the PLAA force structure towards brigades would significantly reduce the number of personnel per GA and, unless additional GAs were added, such a trend would ultimately reduce PLAA force numbers. It would also allow China to put more emphasis on high capability combat units like maneuver brigades, rather than on mass and larger, less flexible formations.

Below the GA command level, ground forces are organized into divisions, brigades, regiments, battalions, companies, platoons, and squads. The exact order of battle varies between different theaters and GAs.

**Figure 6.6: Locations of PLAA Group Armies**



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2016*.





CHINA: Group Armies (GA) Primary Missions		
<b>Shenyang MR</b>	<b>Nanjing MR</b>	<b>Lanzhou MR</b>
16 GA – Defensive, Offensive CT	1 GA – Amphibious, Offensive CT	47 GA – Defensive, Offensive CT
39 GA – RRU, Offensive MF	12 GA – Amphibious, Offensive CT	21 GA – Offensive MF, Defensive
40 GA – Defensive, Offensive CT	31 GA – Amphibious, Offensive CT	
<b>Beijing MR</b>	<b>Guangzhou MR</b>	
65 GA – Defensive	15 Airborne – RRU, Offensive MF	
38 GA – RRU, Offensive MF	41 GA – Offensive CT, Amphibious	
27 GA – Defensive	42 GA – Amphibious	
<b>Jinan MR</b>	<b>Chengdu MR</b>	
26 GA – Offensive CT, Defensive	13 GA – Defensive, Offensive CT	
20 GA – Offensive CT, Defensive	14 GA – Defensive, Offensive CT	
54 GA – Offensive MF, Amphibious		
		MR – Military Region
		MF – Mobile Force
		RRU – Rapid Reaction Unit
		CT – Complex Terrain (mountain, urban, jungle, etc.)

Source: DoD, *Military and Security Developments Involving the People's Republic of China* 2015.

## PLA Navy (PLAN)

For the PLA Navy (PLAN), a naval staff headquarters in Beijing forms the command level below the CMC. The highest operational command level in the PLAN is made up of three fleets – the North Sea Fleet, the East Sea Fleet, and the South Sea Fleet. Their headquarters are shown in **Figure 6.7**.

These fleets are then divided into flotillas, groups, and squadrons.<sup>298</sup> All fleets maintain operational command over the forces in the areas of their responsibility. Each fleet is organized to oversee coastal, deep-water, and naval aviation operations. Forces afloat are divided into divisions, regiments, and squadrons. In wartime, command over naval forces may be transferred to the MRs.<sup>299</sup>

These forces are evolving towards a more “blue water” navy, and both their command structure and modernization reflects this.

The 2013 Chinese white paper noted that:<sup>300</sup>

The PLA Navy (PLAN) is China's mainstay for operations at sea, and is responsible for safeguarding its maritime security and maintaining its sovereignty over its territorial seas along with its maritime rights and interests. The PLAN is composed of the submarine, surface vessel, naval aviation, marine corps and coastal defense arms.

In line with the requirements of its offshore defense strategy, the PLAN endeavors to accelerate the modernization of its forces for comprehensive offshore operations, develop advanced submarines, destroyers and frigates, and improve integrated electronic and information systems. Furthermore, it develops blue-water capabilities of conducting mobile operations, carrying out international cooperation, and countering non-traditional security threats, and enhances its capabilities of strategic deterrence and counterattack.

Currently, the PLAN has a total strength of 235,000 officers and men, and commands three fleets, namely, the Beihai Fleet, the Donghai Fleet and the Nanhai Fleet. Each fleet has fleet aviation headquarters, support bases, flotillas and maritime garrison commands, as well as aviation divisions and marine brigades. In September 2012, China's first aircraft carrier Liaoning was commissioned into the PLAN. China's development of an aircraft carrier has a profound impact on building a strong PLAN and safeguarding maritime security.

The 2015 Chinese white paper further added:<sup>301</sup>

With the growth of China's national interests, its national security is more vulnerable to international and regional turmoil, terrorism, piracy, serious natural disasters and epidemics, and the security of overseas interests concerning energy and resources, strategic sea lines of communication (SLOCs), as well as institutions, personnel and assets abroad, has become an imminent issue....

To implement the military strategic guideline of active defense in the new situation, China's armed forces will adjust the basic point for PMS [preparation for military struggle]. In line with the evolving form of war and national security situation, the basic point for PMS will be placed on winning informationized local wars, highlighting maritime military struggle and maritime PMS....

In line with the strategic requirement of offshore waters defense and open seas protection, the PLA Navy (PLAN) will gradually shift its focus from “offshore waters defense” to the combination of “offshore waters defense” with “open seas protection,” and build a combined, multi-functional and efficient marine combat force structure. The PLAN will enhance its capabilities for strategic deterrence and counterattack, maritime maneuvers, joint operations at sea, comprehensive defense and comprehensive support....

The seas and oceans bear on the enduring peace, lasting stability and sustainable development of China. The traditional mentality that land outweighs sea must be abandoned, and great importance has to be attached to managing the seas and oceans and protecting maritime rights and interests. It is necessary for China to develop a modern maritime military force structure commensurate with its national security and development



interests, safeguard its national sovereignty and maritime rights and interests, protect the security of strategic SLOCs and overseas interests, and participate in international maritime cooperation, so as to provide strategic support for building itself into a maritime power.

The key question that such development raises is just how effective China's mix of new organizational structures, an emphasis on a more professional military, and weapons quality and technology over numbers, can be made by a country with so limited an actual experience in modern warfare. The answer is not as obvious as saying that combat experience is critical. Britain learned the hard way how effective German naval forces could be with limited experience at the Battle of Jutland and in the chase to sink the Bismarck. While Britain won, it was a much closer run than the Royal Navy has anticipated.

**Figure 6.7: PLAN Fleet Headquarters**



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2016*.

## PLA Air Force (PLAAF)

The PLA Air Force (PLAAF) maintains a headquarters at a command level below the CMC. Before the reforms operational command over the PLAAF was dispersed among MR air force commands.<sup>302</sup> The MR headquarters retained control over combined operations, while the MR Air Force commander was responsible for flight operations within the MR.<sup>303</sup> **Figure 6.8** shows the locations of major PLAAF and PLAN aviation units throughout each MR. Tactical units include divisions, brigades, regiments, groups, squadrons, battalions, companies, platoons, squads, and flights.<sup>304</sup> It remains to be seen exactly how proposed reforms will alter the PLAAF.

China's 2013 white paper described the PLAAF as follows:<sup>305</sup>

The PLA Air Force (PLAAF) is China's mainstay for air operations, responsible for its territorial air security and maintaining a stable air defense posture nationwide. It is primarily composed of aviation, ground air defense, radar, airborne and electronic countermeasures (ECM) arms.

In line with the strategic requirements of conducting both offensive and defensive operations, the PLAAF is strengthening the development of a combat force structure that focuses on reconnaissance and early warning, air strike, air and missile defense, and strategic projection. It is developing such advanced weaponry and equipment as new-generation fighters and new-type ground-to-air missiles and radar systems, improving its early warning, command and communications networks, and raising its strategic early warning, strategic deterrence and long-distance air strike capabilities.

The PLAAF now has a total strength of 398,000 officers and men, and an air command in each of the seven Military Area Commands (MACs) of Shenyang, Beijing, Lanzhou, Jinan, Nanjing, Guangzhou and Chengdu. In addition, it commands one airborne corps. Under each air command are bases, aviation divisions (brigades), ground-to-air missile divisions (brigades), radar brigades and other units.

Once again, it is difficult to estimate the real world impact of these changes on effectiveness. It is easy to create an effective air force on paper, but China has limited real experience in using modern air power in actual combat, and even less experience in using it in effective joint warfare. It may well have learned enough from other nations and its exercises to become steadily more effective, but there are no unclassified reports from Western sources that convincingly address this. As a result, it is all too easy to either underestimate China on the basis of its lack of experience or to exaggerate its capability on the basis that all of its modernization efforts will be fully effective.

It is important to point out, however, that China is surrounded by regional neighbors that face the same lack of military experience. With the exception of the United States, no other regional power has conducted any meaningful form of modern war for decades.

**Figure 6.8: Locations of PLAAF & PLAN Major Aviation Units**



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2016*.

## PLA Rocket Force (PLARF)

Unlike the SAF, the PLARF is a formal branch of the PLA rather than a separate service like its predecessor. During the inauguration ceremony Xi Jinping stated the PLARF will be, “core force of strategic deterrence, a strategic buttress to the country's position as a major power, and an important building block in upholding national security.”<sup>306</sup> While there are reports<sup>307</sup> that the PLARF will control China's entire nuclear triad, the 2016 Department of Defense report on China states:<sup>308</sup>

The Rocket Force, renamed from the PLASAF late last year, operates China's land-based nuclear and conventional missiles. It is developing and testing several new classes and variants of offensive missiles, including a hypersonic glide vehicle; forming additional missile units; upgrading older missile systems; and developing methods to counter ballistic missile defenses.

Beneath this headquarters are six corps, also known as bases, which themselves command missile brigades, regiments, battalions, companies, and platoons. However, it is possible for both bases and brigades to operate independently directly under the CMC.

According to the *Science of Second Artillery Campaigns*, the SAF had three command levels capable of independent action at the campaign level:<sup>309</sup>

The participating strength of the Second Artillery Campaign is the Second Artillery Campaign large formation which normally contains the following three types: missile bases, missile base groups, and missile brigade at the campaign level.

The PRC's 2013 white paper described the SAF as follows:<sup>310</sup>

The PLA Second Artillery Force (PLASAF) is a core force for China's strategic deterrence. It is mainly composed of nuclear and conventional missile forces and operational support units, primarily responsible for deterring other countries from using nuclear weapons against China, and carrying out nuclear counterattacks and precision strikes with conventional missiles. Following the principle of building a lean and effective force, the PLASAF is striving to push forward its informationization transform, relying on scientific and technological progress to boost independent innovations in weaponry and equipment, modernizing current equipment selectively by applying mature technology, enhancing the safety, reliability and effectiveness of its missiles, improving its force structure of having both nuclear and conventional missiles, strengthening its rapid reaction, effective penetration, precision strike, damage infliction, protection and survivability capabilities. The PLASAF capabilities of strategic deterrence, nuclear counterattack and conventional precision strike are being steadily elevated. The PLASAF has under its command missile bases, training bases, specialized support units, academies and research institutions. It has a series of "Dong Feng" ballistic missiles and "Chang Jian" cruise missiles.

The 2015 Chinese defense white paper did not provide new details in regards to the structure of the SAF but the PRC's Ministry of National Defense website did further clarify the current structure, organization, and force building of the SAF.<sup>311</sup>

The Second Artillery Force is a strategic force under the direct command and control of the CMC, and the core force of China for strategic deterrence. It is mainly responsible for deterring other countries from using nuclear weapons against China, and for conducting nuclear counterattacks and precision strikes with conventional missiles.

The Second Artillery Force sticks to China's policy of no first use of nuclear weapons, implements a self-defensive nuclear strategy, strictly follows the orders of the CMC, and takes it as its fundamental mission the protection of China from any nuclear attack. In peacetime the nuclear missile weapons of the Second Artillery Force are not aimed at any country.

But if China comes under a nuclear threat, the nuclear missile force of the Second Artillery Force will go into a state of alert, and get ready for a nuclear counterattack to deter the enemy from using nuclear weapons against China. If China comes under a nuclear attack, the nuclear missile force of the Second Artillery Force will use nuclear missiles to launch a resolute counterattack against the enemy either independently or together with the nuclear forces of other services.

The conventional missile force of the Second Artillery Force is charged mainly of the task of conducting medium- and long-range precision strikes against key strategic and operational targets of the enemy.

### **Structure and Organization**

The operational command authority of the Second Artillery Force is highly centralized. The chain of command runs from the CMC, the Second Artillery Force and missile bases to missile brigades. The operations of the Second Artillery Force must follow the orders of the CMC in the strictest and most precise manner.

The Second Artillery Force is mainly composed of the nuclear missile force, the conventional missile force, the support force, educational institutions, research institutes and the headquarter organizations. The missile force is organized into missile bases, missile brigades and launch battalions.

The support force is organized into technical and specialized support units such as reconnaissance, intelligence, signal, ECM, engineering, logistics and equipment units. The educational institutions include a command college, an engineering college and a school for NCOs. The research institutes include equipment and engineering institutes.

### **Force Building**

Following the principle of building a lean and effective force and going with the tide of the development of military science and technology, the Second Artillery Force strives to raise the informationization level of its weaponry and equipment, ensure their safety and reliability, and enhance its capabilities in protection, rapid reaction, penetration, damage and precision strike. After several decades of development, it has created a

weaponry and equipment system with both nuclear and conventional missiles, both solid-fueled and liquid-fueled missiles, different launching ranges and different types of warheads.

The Second Artillery Force is endeavoring to form a complete system for war preparations, optimize its combat force structure, and build a missile operational system suited to informationized warfare. Its nuclear and conventional missile forces are kept at an appropriate level of readiness. The Second Artillery Force is making steady head-way in the construction of its battlefield system, and makes extensive use of modern mechanical equipment and construction methods. Each completed project is up to standard.

The Second Artillery Force is also dedicated to logistical reforms and innovations. It has created integrated data bases for field support and informationized management platforms for logistic materials, and improved support systems for the survival of combatants in operational positions. As a result, its integrated logistical support capabilities in case of actual combat have been markedly enhanced.

To ensure the absolute safety of nuclear weapons, the Second Artillery Force strictly implements rules and regulations for nuclear safety control and accreditation of personnel dealing with nuclear weapons, has adopted reliable technical means and methods, strengthens the safe management of nuclear weapons in the process of storage, transportation and training, improves mechanisms and methods for emergency response to nuclear accidents, and has put in place special safety measures to avoid unauthorized and accidental launches.

In terms of training, the Second Artillery Force takes specialized skills as the foundation, focuses on officers and core personnel, centers its attention on systems integration and aims at improving overall operational capabilities. It actively conducts specialized training, integrated training and operational training exercises. Specialized training mainly involves the study of basic and specialized missile theories, and the training in operating skills of weapons and equipment. Integrated training mainly consists of whole-process coordinated training of all elements within a combat formation.

Operational training exercises refer to comprehensive training and exercises by missile brigades and support units in conditions similar to actual combat.

The Second Artillery Force has adopted a rating system for unit training and an accreditation system for personnel at critical posts. It enhances on-base, simulated, web-based and realistic training, explores the characteristics and laws of training in complex electromagnetic environments and integrated training of missile bases, and is conducting R&D of a new generation of web-based simulated training systems. Significant progress has been made in building the "Informationized Blue Force" and battle laboratories.

The Second Artillery Force places personnel training in a strategic position, and gives it high priority. It is working to implement the Shenjian Project for Personnel Training, and create a three-tiered team of first-rate technical personnel. As a result, a contingent of talented people has taken shape, whose main body is composed of academicians of the Chinese Academy of Engineering, missile specialists, commanding officers, and skilled operators and technicians.

Once again, this is an aspect of Chinese forces where China has no practical experience. In this case, however, that closest thing any nation has to such experience is the U.S. use of cruise missiles and UCAVs in limited wars, and the even more limited Russian use of UCAVs against targets in Syria. The Iraqi and Iranian use of missiles during the Iran-Iraq War and in the 1991 Gulf war was largely an exercise in terror strikes against area targets like cities, and more recent missile firings in Syria and Yemen have been more demonstrative than serious attempts at warfighting.

China's ability to plan and execute a successful major missile campaign remains uncertain – as does that of the United States, Russia, and other regional powers like North Korea and Iran. This is particularly true in the face of joint warfare involving air forces with long-range precision strike capability.

Additionally, the threat of nuclear war is inherently effective as a deterrent and for the purposes of strategic intimidation. Using it means entering unknown territory that risks existential

consequences. Even limited threats of mutual assured destruction become totally unpredictable, and potentially so escalatory as to change every pre-use strategic calculation, the moment they are put into practice.

This is also a form of war where the senior political leadership may not understand the real nature of any use and the risks of restraint or non-restraint. Deterrence theory, like game theory, works best if it is never put into practice. It can degenerate into complexity or chaos” theory with all too little warning.

### Strategic Support Force (SSF)

On December 31, 2015 Xi Jinping announced the creation of the Strategic Support Force (SSF) as an independent branch of the PLA reporting to the CMC. The Department of Defense notes briefly that the SSF will “oversee its (China) space and cyber capabilities.”<sup>312</sup> The Chinese military establishment has been very tight-lipped thus far on what the SSF’s role and responsibility will be as part of the PLA. Military spokesperson Yang Yujun did, however, note that it was “an important growth point” for the PLA.<sup>313</sup>

A January 2016 Center for Naval Analyses China Studies report by David Finkelstein discusses the SSF as follows:<sup>314</sup>

Of all the official information released by Beijing to date, the PLA has been most vague about the missions, organization, and composition of this new force. It is not even clear at this point whether the Strategic Support Force is a service-level organization like the navy and air force, or an independent functional command.<sup>24</sup> Its name in Chinese would suggest the latter.

From what can be gleaned from official commentary, the Strategic Support Force is going to have several mandates, none of which have been spelled out in any detail. These include the following: some unspecified role in logistical support to the warfighting forces, some responsibility for “civil-military integration,” and responsibility for “the building of a new type of combat operation force.”<sup>25</sup> The latter two functions strongly suggest that the Strategic Support Force will be responsible for developing, managing, and possibly deploying the most modern, high-technology assets that define modern warfare to the warfighting commands. Our biggest hint is the term “from what can be gleaned from *xinxing zuozhan liliang*; 新型作战力量).

In the parlance of the PLA, “new type operational forces” generally refers to those key capabilities or units which are characterized by cutting-edge technologies and are deemed essential for prosecuting modern, high-technology, and information-intensive campaigns. Without such assets, according to various PLA writings, a military force fights under a great disadvantage. Examples usually given are cyber space, outer space, the electro-magnetic spectrum, ISR (intelligence, surveillance, and reconnaissance) assets, and precision-guided munitions. The term is sometimes applied to special operations forces, special aviation, and maritime assets such as unmanned aerial and underwater vehicles (UAVs, UUVs), and electronic countermeasures units.

These capabilities and units reside at the heart of what the PLA refers to as “informationized local wars” (*xinxihua jubu zhanzheng*; 信息化局部战争), which the PLA’s new military strategy (published in May 2015) has identified as the type of modern warfare that the Chinese armed forces must be able to prosecute, and which, from an operational perspective, this entire reorganization is meant to facilitate.<sup>26</sup>

The need for these types of high-technology assets and capabilities also undergirds the call for enhanced “civil-military integration” in research and development and production, which means that the development of new technologies in the civil and military research and development sectors should be better coordinated

and mutually supportive. Hence, this may be one reason why “civil-military integration” is listed under the auspices of the new Strategic Support Force.

So, an informed guess is that the Strategic Support Force is where cyber space, outer space, and other high-tech capabilities will reside. We will simply have to wait and see how this new command shapes up.

## ***The Organization of the Chinese Security and Paramilitary Forces***

At the same time, the Chinese armed forces are only one component of the overall Chinese security apparatus. China’s security responsibilities are shared among the Ministry of State Security, the Ministry of Public Security, the People’s Armed Police Force (PAPF), and the PLA. All of these organizations perform important functions, although the greatest burden in an armed conflict against a foreign power naturally lies with the PLA.

### **China Coast Guard (CCG)**

In recent years, the China Coast Guard (CCG) has garnered much of the focus among Chinese paramilitary forces for its role in China’s conflicts over disputed maritime territory in the East China Sea and South China Sea. The official creation of a national coast guard only occurred in 2013 when China Marine Surveillance (CMS), the Fisheries Law Enforcement (FLE), and other smaller entities were consolidated into the CCG led by the newly created State Oceanic Administration.<sup>315</sup> The creation of the official CCG was largely due to the growing reliance China placed on the paramilitary force for pursuing its maritime interests. In fact, commentators within China have gone as far as to refer to it as “China’s Second Navy”.<sup>316</sup>

The CCG is well equipped. The 2016 *IJSS Military Balance* indicates that it possesses roughly 330 patrol and coastal combatant ships making it the largest blue-water coast guard force in the world.<sup>317</sup> Additionally, the 2016 Department of Defense report on China notes that the Chinese are continuing to build and modernize the CCG.<sup>318</sup>

China prefers to use its government-controlled, civilian maritime law enforcement agencies in maritime disputes, and uses the PLAN in an overwatch capacity in case of escalation. The enlargement and modernization of the China Coast Guard (CCG) forces will improve China’s ability to enforce its maritime claims. The CCG is increasing its total force level at a rapid pace. Over the last five years, China has added more than 100 ocean-going patrol ships to the CCG to increase its capacity to conduct extended offshore operations and to replace old units. In the next decade, a new force of civilian law enforcement ships will afford China the capability to patrol more robustly its claims in the East China Sea and the South China Sea. Overall, the CCG’s total force level is expected to increase by 25 percent. Some of these ships will have the capability to embark helicopters, a capability that only a few CCG ships currently have.

In 2013, China consolidated four of its maritime law enforcement agencies into the CCG and subordinated its operations to the Ministry of Public Security. The CCG is responsible for a wide range of missions, including enforcing China’s sovereignty claims, anti-smuggling, protecting fisheries resources, and general law enforcement.

The continued buildup of the CCG largely stems from the ongoing unresolved nature of China’s maritime disputes with Japan, the Philippines, Vietnam, Indonesia, and numerous others. Additionally, they have managed to derive substantial success from the use of the CCG in protecting their various claims. The CCG continues to successfully prevent fisherman from the Philippines from accessing Scarborough Shoal, even in the after the Permanent Court of Arbitration ruled that the Chinese were violating the Filipino fisherman’s right to fish there.<sup>319</sup> The CCG also regularly sails through the contested Senkaku islands and into Japanese territorial water.<sup>320</sup>



The 2016 Department of Defense report on China adds:<sup>321</sup>

China has used low-intensity coercion to enhance its presence and control in disputed areas of the East and South China Sea. During periods of tension, official statements and state media seek to frame China as reacting to threats to its national sovereignty or to provocations by outside actors. China often uses a progression of small, incremental steps to increase its effective control over disputed areas and avoid escalation to military conflict. China has also used punitive trade policies as instruments of coercion during past tensions and could do so in future disputes. In 2015, China continued to employ China Coast Guard and PLA Navy ships to implement its claims by maintaining a near-continuous presence in disputed areas in order to demonstrate continuous and effective administration. Recent land reclamation activity has little legal effect, but will support China's ability to sustain longer patrols in the South China Sea. In 2012, China restricted Philippine fruit imports during the height of Scarborough Reef tensions. In 2010, China used its dominance in the rare earth industry as a diplomatic tool by restricting exports of rare earth minerals to Japan amid tensions over a collision between a Chinese fishing boat and Japanese patrol ship.

China's strategy to protect its maritime claims also extends beyond the use of traditional coast guard or naval forces. The Chinese use regular fishing boats and crews—backed by the military—to further their agenda in maritime disputes. This array of nontraditional forces forms what China considers to be its “maritime militia”.<sup>322</sup>

Andrew S. Erickson and Conor M. Kennedy of the Naval War College noted in a June 2016 *Foreign Affairs* article that:<sup>323</sup>

The militia represents a useful tool in China's plan to bloodlessly press its maritime claims, since its frequently civilian appearance allows Beijing to deny its involvement in encounters such as last October's and exploit the U.S. Navy's rules of engagement, which limit the actions U.S. ships can take against civilian vessels. Despite its potency, the maritime militia is the least understood of China's sea forces, and so far, the U.S. government has not acknowledged its existence in public reports or major official statements.

The maritime militia units are managed by local PLA military commands and are funded by local and provincial governments. To encourage locals to join up, municipalities often promise to pay militia personnel a pension equal to several thousand dollars per year if they are disabled in the line of duty—a sum comparable to other Chinese government pensions and an attractive draw in a rural fishing village. Hainan, the Chinese island province that claims administration over most of the South China Sea, is home to many of the most advanced units, some of which Chinese officials, including Chinese President Xi Jinping, have visited.

Maritime militia units are designed to look like civilian groups in most contexts, and they have considerable leeway to decide when to use the military uniforms in which their members usually train. A [January 2014 article](#) in China's official military newspaper, *PLA Daily*, neatly captures the intended effect: “Putting on camouflage, they qualify as soldiers; taking off the camouflage, they become law-abiding fishermen.” Of course, these are no ordinary fishermen. Members of the militia report to the People's Liberation Army and other government elements, and their missions are mandated and sponsored by the Chinese state. What is more, according to authoritative Chinese government and military-affiliated publications, some of China's most advanced maritime militia units—the same ones that would likely be entrusted with missions requiring contact with U.S. and other foreign forces—are trained by PLA Navy officers.

The Chinese maritime militia has been involved in numerous high-profile controversies near various locations where China has territorial disputes. In March 2009, a group of Chinese ships harassed the USNS Impeccable in the South China Sea and even attempted to use hooks to snag advanced sonar technology off the ship.<sup>324</sup> In April 2012, illegal fishing by Chinese fisherman began a standoff at the Scarborough Shoal that ultimately led to China seizing and militarizing the Shoal.<sup>325</sup> President of the Philippines Benigno S. Aquino III even likened China's aggressive land seizure to Nazi Germany's annexation of the Sudetenland.<sup>326</sup> In May 2014, a Chinese fishing boat rammed and sunk a Vietnamese vessel in a confrontation near a contentious Chinese oil rig located in the proximity of the Paracel Islands.<sup>327</sup> In 2016 alone, a hundred Chinese fishing ships

violated Malaysian territorial waters,<sup>328</sup> Vietnam seized a Chinese fishing boat in its waters,<sup>329</sup> and the Indonesia navy opened fire on a Chinese ship in its territorial waters.<sup>330</sup> Additionally, there have been numerous other lower-profile incidents and they seem unlikely to cease going forward.

Ultimately, China's utilization of the maritime militia indicates a growing global reliance on asymmetrical conflict tactics. Drawing comparison to Russia's deployment "little green men" paramilitary forces to the Ukraine, commentators have referred to China's fisherman as "little blue men".<sup>331</sup> The paramilitary forces provide China a strategic outlet that is simultaneously aggressive while also being largely devoid of the threat of traditional naval escalation due to the relatively low stakes and the plausible deniability that China is able to maintain. Still, while China continues to place high strategic value on the active maritime militia, it has alienated regional countries and furthered concerns that China's rise will not be peaceful.

### **Ministry of State Security (MSS)**

The Ministry of State Security serves under the PRC's State Council and conducts foreign and domestic intelligence and counter-intelligence collection. MSS agents perform covert activities, both inside and outside of China.<sup>332</sup>

### **Ministry of Public Security (MPS)**

The Ministry of Public Security has responsibility for internal security, and is also under the State Council. It is the highest-level administrative body for Chinese law enforcement forces and oversees approximately 1.9 million police personnel throughout China. These police forces have "many functions including domestic patrol, traffic control, detective, anti-crime, anti-riot, and anti-terrorism."<sup>333</sup> In 2001, the MPS ordered major cities to each establish an anti-riot force of no fewer than 300 personnel, many of whom are equipped with armored cars and armored personnel carriers.<sup>334</sup>

### **People's Armed Police Force (PAPF)**

The People's Armed Police Force (PAPF), also called the People's Armed Police or PAP, serves under the command of the CMC and the State Council, but by definition it is not part of the PLA.<sup>335</sup> It serves as an internal security force and was described by the 2010 Chinese white paper as the "shock force in handling public emergencies."<sup>336</sup> In addition, the PAPF acts as a light infantry reserve in the event of war and also takes part in reconstruction and rescue efforts after national emergencies.<sup>337</sup>

The PAPF's 660,000+ personnel are spread between the Internal Security Forces, the Border Defense Force (including the Coast Guard), the China Marine Surveillance Agency, the Maritime Safety Administration, and the Fisheries Enforcement Command. Some PAPF units are responsible for border security and for guarding critical infrastructure,<sup>338</sup> including critical military infrastructure.<sup>339</sup>

China's 2010 white paper stated that the PAPF also shares some territorial air defense duties with the PLAFAF, PLAN, and PLA ground forces.<sup>340</sup> The 2013 white paper notes,<sup>341</sup>

In peacetime, the PAPF's main tasks include performing guard duties, dealing with emergencies, combating terrorism and participating in and supporting national economic development. In wartime, it is tasked with assisting the PLA in defensive operations.

Based on the national information infrastructure, the PAPF has built a three-level comprehensive information network from PAPF general headquarters down to squadrons. It develops task-oriented weaponry and

equipment and conducts scenario-based training so as to improve its guard-duty, emergency-response and counter-terrorism capabilities.

The PAPF is composed of the internal security force and other specialized forces. The internal security force is composed of contingents at the level of province (autonomous region or municipality directly under the central government) and mobile divisions.

Specialized PAPF forces include those guarding gold mines, forests, hydroelectric projects and transportation facilities. The border public security, firefighting and security guard forces are also components of the PAPF.

Additionally, one of the most substantial roles of the PAPF is controlling the border. This is especially true considering China shares its border with more countries than any country in the world. Since the establishment of the People's Republic of China in 1949 it has resolved 12 of the 14 land border disputes with its neighbors via peaceful negotiation.<sup>342</sup> The two remaining involve India and Bhutan. The dispute with India, in particular, remains troublesome as tensions remain high and fire is often exchanged across the border.<sup>343</sup>

The Ministry of National Defense notes:<sup>344</sup>

The border public security force, listed as a component of the PAPF, is an armed law-enforcement body deployed by the state in border and coastal areas and at ports. Its main responsibilities are as follows: border and coastal public security administration; ports and border inspection and surveillance; patrols and surveillance in areas adjacent to Hong Kong and Macao; patrols and surveillance along the demarcation line of the Beibu Gulf; and the prevention of and crack-down on illegal and criminal acts in border and coastal areas, such as illegal border crossing, smuggling and drug trafficking.

The border public security force has 30 contingents in provinces (autonomous regions or municipalities directly under the central government, except Beijing); 110 detachments in border and coastal prefectures (prefecture-level cities, autonomous prefectures or leagues) and 20 marine police detachments in coastal prefectures; 207 active-duty border inspection stations at open ports; 310 groups in border and coastal counties (county-level cities or banners); 1,691 border police substations in border and coastal townships (towns); 46 frontier inspection stations on major border routes; and 113 mobile groups deployed in important sectors in border areas.

In recent years the border public security force has made efforts to implement the strategy of safeguarding the people and consolidating border defense; strengthen public security efforts by the general public; improve mechanisms for investigating, mediating and settling disputes, conflicts and mass incidents; tackle prominent public security issues; promote the building of model villages and consolidate border defense; and help children in need, thus vigorously promoting harmony and stability in border and coastal areas. Further efforts have been made by border inspection stations to improve their services. As a result, an environment has been created for safe, rapid and convenient customs clearance.

The border public security force, supported by other relevant departments, has cracked down hard on crimes, such as illegal border crossing, drug trafficking and smuggling, and carried out campaigns to combat organized criminal gangs and suppress evil forces in border and coastal areas. Since 2007 it has arrested 4,400 illegal border crossers, seized 3,806 kg of drugs, seized smuggled goods worth RMB620 million, cracked 19,205 criminal cases and handled 60,063 violations of public security.

### ***Further PLA Organizational Reforms***

The 3<sup>rd</sup> Plenum of the 18<sup>th</sup> Party Congress featured statements strongly backing military reforms, particularly organizational reforms. Organizational reforms have been particularly difficult to implement in the past because of deeply entrenched interests within the PLA that benefit from the current organization and structure of the PLA. However, PLA theorists have stressed that organizational reform is vital if the PLA is to successfully conduct integrated joint operations in line with the local wars doctrine.

Some of the key organizational reforms include: flattening the command structure, reforming the old Military Region system to better facilitate joint operations, improving personnel education, forming modular force groupings. These reforms are part of a broader embrace of the RMA with Chinese characteristics and joint operations.

### **Continued Importance of Improving Training and Education**

Arguably the most important reform, and one re-emphasized at the Third Plenum meeting, has been continued training and education reforms. The PLA has stressed that it needs personnel that are well trained and educated in joint operations and the use of new technology if they are to operate using tactics and doctrines that have not yet been battle tested.<sup>345</sup>

Moreover, the “PLA also notes that compared to highly advanced armed forces, the PLA’s current information literacy is low and its lack of specialized and technical personnel is constraining modernization.”<sup>346</sup> In order to better train and educate its personnel, the PLA is investing in new facilities and upgrading bases so that they can conduct more complex battlefield simulations and more effectively teach its personnel how to conduct joint operations. These facilities will also include “battle labs” that will experiment with and refine new and novel tactics.<sup>347</sup>

However, the nature and success of PLA efforts education has yet to be publically discussed amongst the other reforms. In the Jamestown Foundation February 2016 report on PLA reform, the authors categorize education as an “unanswered question” and provide a list of questions that still need to be addressed regarding the PLA’s education efforts.<sup>348</sup>

What is the status of the Academy of Military Science, National Defense University, and National University of Defense Technology? Will they continue to be directly under the oversight of the CMC? What changes will occur in the PLA system of educational academies and schools? Will the number of new students be reduced because of the 300,000-person reduction? Will new academies be formed or former academies transformed into new entities based on changes in personnel and force structure? For example, will more NCO schools or more command academies be established?

### **The Broader Anti-Corruption Campaign**

These military reforms are also tied to a much broader anti-corruption campaign that President Xi Jinping has made a cornerstone of his administration. The 2016 Department of Defense report on China notes:<sup>349</sup>

The CCP’s anticorruption efforts in the military targeted more than 40 senior officers in 2015, including former Central Committee Politburo member and CMC Vice Chairman Guo Boxiong, who served as the PLA’s top general before he retired in 2012. Guo, who was accused in July 2015 of accepting bribes and abusing his authority over promotions, is the second retired member of the high command to come under scrutiny for graft. Former CMC Vice Chairman Xu Caihou, Guo’s colleague, died this year while awaiting prosecution for corruption. Anticorruption investigations in the PLA parallel a larger Party-wide effort that President Xi initiated shortly after taking office to safeguard the legitimacy of the CCP, root out corruption and powerful rival networks, improve governance, and strengthen central control. Military discipline inspectors have targeted individual power networks and sectors historically prone to corruption, and the PLA is also revising its regulations to prevent abuse more effectively.

Some observers expect that even former President Jiang Zemin may be a target of this anti-corruption campaign.<sup>350</sup> Another scenario is that Xi and Jiang came to an agreement that allowed Xi to maintain his relationship with Jiang while going after high-profile members in Jiang’s network.<sup>351</sup>

The debates surrounding this anti-corruption campaign has centered on the true motivations driving the campaign. Some observers have seen the campaign as largely the manifestation of a power struggle within the CCP. Others believe that President Xi has a sense of urgency that stems from the belief that corruption presents a critical and even existential threat to the CCP.

Those who believe that the campaign is simply an internal power struggle point to the fact that the anti-corruption campaign itself is very opaque.<sup>352</sup> Information surrounding the campaign is tightly controlled and released carefully. One Chinese observer asserted that if the campaign was genuine, the anti-corruption campaign would be more transparent.<sup>353</sup>

Those who see the campaign as a pivotal point in Chinese politics point to the unprecedented scale of the anti-corruption campaign. They note that the campaign has crossed factional lines rather than staying within them, the latter of which would have strongly suggested that a power struggle was underway. For instance, although Jiang Zemin's political allies have been a significant target during the campaign, President Xi himself is widely considered to be a protégé of Jiang.<sup>354</sup>

The opaque nature of the CCP and its one party rule makes it difficult to determine the facts. However, the available evidence indicates that the motivations of the corruption campaign may stem from a mix of factors. It appears that President Xi is motivated both by exerting control over the military in a way that his predecessor Hu Jintao was unable to, while also rooting out legitimate corruption in the pursuit of building a modern informationized fighting force.

The April 2016 National Defense University report by Phillip C. Saunders and Joel Wuthnow notes:<sup>355</sup>

The main political drivers of the reforms are the desire to tighten civilian political control over the PLA and the need to deal with rampant corruption inside the military, including in the promotion system. These reflect Xi's general tendency toward centralizing authority and his use of the anticorruption campaign as both a means of rebuilding the party's image and a weapon against opponents. Since the new PLA command and control structure might best be described as Goldwater-Nichols with Chinese characteristics Xi assumed office, there has been a drumbeat of stories stressing the need for the party to exercise "absolute leadership" over the military; this was a major theme at the October 2014 PLA Political Work Conference at Gutian. Reiteration of this principle suggests continued leadership concerns about control over the military.

If President Xi's anti-corruption campaign is successful in rooting out corruption and creating an environment that discourages it, the entrenched interests that have hampered PLA reform in the past may finally be overcome. These sweeping changes will affect many in the PLA, potentially threatening entrenched interests. The disbanded General Logistic Department had a history of corruption particularly linked with real estate and development.<sup>356</sup> The progress that these two groups make may act as a gauge to measure the effectiveness of the anti-corruption effort and PLA organizational reform.

### **The Chinese View on the Current State of the PLA in Relation to Local Wars and Joint Operations**

Seen in another context, China's organizational reforms are crucial if China is to resolve a problem that it calls the "Two Incompatibles." This problem is explained as follows:

The main contradiction in our army building is that the level of our modernization is incompatible with the demands of winning a local war under informatized conditions, and our military capabilities are incompatible with the demands of carrying out the army's historic missions in the new century and new stage.

Such a characterization would suggest that the PLA views itself as not having reached the level of capability and modernization that can successfully fight the kind of war it expects to fight.

Although the PLA's technical advances have captured much world attention, the PLA is much more concerned about issues regarding organization, logistics, force structure, training, personnel education, and command and control.

Jiang Zemin emphasized the importance of non-technical aspects of modernization in the context of personnel education: "Though we're unable to develop all high-technology weapons and equipment within a short period of time, we must train qualified personnel first, for we would rather let our qualified personnel wait for the equipment than the other way round."<sup>357</sup>

## CHAPTER 7: FORCE CHANGES AND TRENDS IN PEOPLE'S LIBERATION ARMY TOTAL PERSONNEL

Modern military forces require a level of professionalism that conscripts cannot provide. They also require a level of military professionalism from officers and NCOs, and the delegation of authority and independence of action that most military forces cannot or will not give to junior officers and NCOs. China's conversion of its personnel to modern warfare is just as important and challenging as the modernization of its tactics and equipment, and just as hard to assess. Once again, the lack of modern combat experience may be a key indicator, but there is no certainty in assuming that China can only acquire this experience the hard way.

Changes in personnel policies have been a primary component of the PLA's modernization – especially its new Local Wars military doctrine – and have led to the PLA's concurrent cuts to overall force strength while making investments in human capital. The PLA has been significantly reduced in number three times since the 1980s, in 1985, 1997, 2003, with another planned cut by 2017. These cuts totaled 1,000,000, 500,000, and 200,000, respectively.

### *Shifts in Total Personnel*

In 2016, Chinese military and security forces consisted of about 2,333,000 active PLA, 660,000 People's Armed Police Force (PAPF) service personnel, and at least 510,000 military reserve forces.<sup>358</sup> These numbers are the same as 2015, however, Xi Jinping indicated in September 2015 that by the end of 2017 the PLA would decrease its size by 300,000 personnel.<sup>359</sup> Moreover, according to recent defense white papers that published force numbers within the past decade, there are over eight million militia members.

The 2006 Chinese white paper provides the best official Chinese description to date of some of the key reasons for recent changes and cuts in China's military personnel:<sup>360</sup>

To effectively fulfill its historic mission in the new stage of the new century, the PLA is speeding up the revolution in military affairs with Chinese features and enhancing in an all-round way its capabilities of defensive operations under conditions of informationization.

... In 1985, 1997 and 2003, China announced that it would cut the size of the PLA by one million, 500,000 and 200,000 persons, respectively. By the end of 2005, China had completed reducing the PLA by 200,000 troops, and the PLA currently has 2.3 million troops. The PLA has made new progress towards the goal of being proper in size, optimal in structure, streamlined in organization, swift and flexible in command, and powerful in fighting capacity.

Downsizing the PLA: The Army was the focus of force reduction, and its authorized number of personnel has been reduced by more than 130,000. Over 60,000 military personnel have been removed from the headquarters and directly affiliated units of military area commands and provincial military commands. Through restructuring, the proportion of the Navy, Air Force and Second Artillery Force in the PLA has been raised by 3.8 percent while that of the Army has been lowered by 1.5 percent.

Streamlining the headquarters and directly affiliated units as well as educational institutions: More than 3,000 departments of and over 400 units directly affiliated to the headquarters at and above the regimental level have been cut. A considerable number of agricultural and sideline production units, cultural and sports units, military representative offices at railway stations and material supply organs have been closed. The PLA has also closed 15 educational institutions and 31 training organizations.

Improving the structure of services and arms: The Army has cut a number of combined corps, divisions and regiments, increased the number of combined corps whose order of battle is corps, brigade and battalion, and set up units with new and high-tech weaponry and equipment. The Navy and Air Force have cut some ship groups and aviation divisions, regiments and stations, and set up some high-tech surface ship, aviation and ground-to-air missile units. A number of reserve infantry divisions have been dismantled, but the number of divisions (brigades) of other arms has increased.

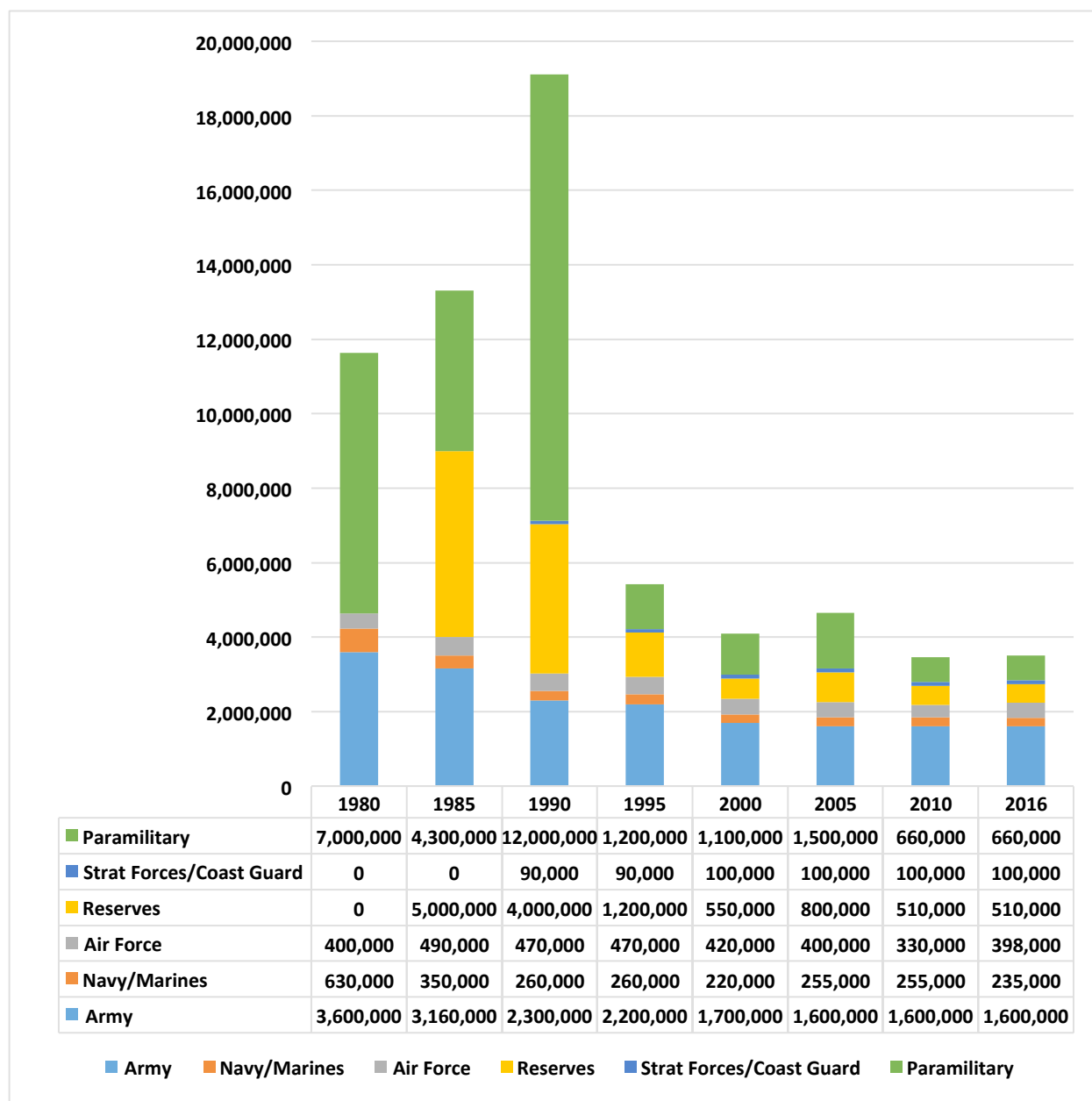
The PLA has reduced the number of its officers by 170,000. More than 150 officer posts at or above the corps level have been eliminated, nearly 70,000 posts formerly taken by officers are now filled with non-commissioned officers (NCOs), and over 20,000 posts formerly taken by NCOs are now filled with contract civilians.

As **Figure 7.1** shows, the authorized personnel in the various branches of the PLA have decreased significantly over the past 30 years, with the exception of the SAF, and in the past couple of years have leveled out, according to outside sources. The reductions in the army, navy, reserves, and paramilitary forces have been particularly striking. Additionally, these reductions are set to continue as Xi Jinping has outlined the importance of continued PLA reduction going forward.

The problem lies in how the cuts were made, how effective the remaining personnel are, and how well China has reformed its military intake and training. Here, it is important to note that far too many countries make changes in doctrine, but not in detailed operations and by holding realistic and demanding exercises. To put it bluntly, there is a natural tendency in militaries to emphasize hierarchy and discipline, but as the U.S. has learned the hard way, only actual combat or the most realistic and demanding exercise experience really counts. China lacks the recent combat experience, and too little unclassified data is available on its exercise activity to make solid judgments. Every military can issue the equivalent of good press releases on its exercises, but the resulting content is usually meaningless.



**Figure 7.1: Trends in PLA Personnel**



Source: IISS *Military Balance*, 1985-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

### ***Personnel Share by Service and Force Element***

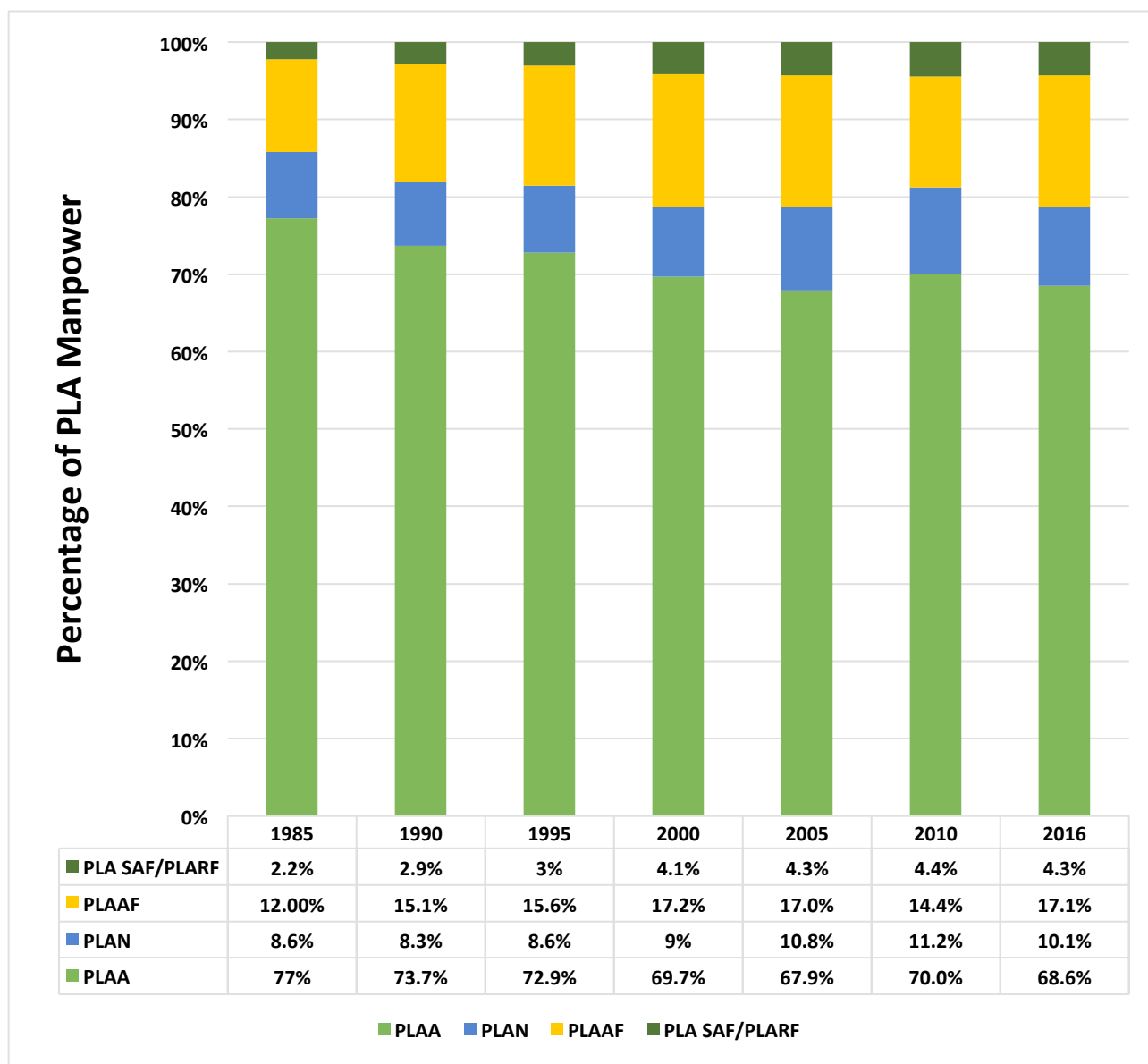
**Figure 7.2** shows a different way of portraying the historical changes in the PLA's force structure and personnel numbers. These trends indicate that the personnel reductions have disproportionately affected the PLAA, while the other services and the SAF have gained ground in relative terms.

This change in China's force structure is in line with the imperatives generated by the Local Wars doctrine, as quick, decisive wars under conditions of informatization that require relatively more naval, air, and missile assets than do total wars or even Deng Xiaoping's "Local Warfare under Modern Conditions" military doctrine. It also is in line with a conversion from mass ground forces that win or lose on the basis of attrition to modern warfare.

In addition, the concept of "integrated joint operations" requires substantial forces other than ground forces; consequently, the dominance of the PLAA is eroding vis-à-vis the other services and the SAF. Combined with the inclusion of the heads of the PLAN, PLAAF, and SAF in the CMC,<sup>361</sup> it is possible to infer that the changes in personnel reflect changes in relative funding and prestige, and it can similarly be inferred that the recent leveling trend of personnel numbers reflects an achieved goal in force numbers while the PLA focuses on human capital that can provide a more technologically sophisticated and multi-dimensional offensive and defensive operations.

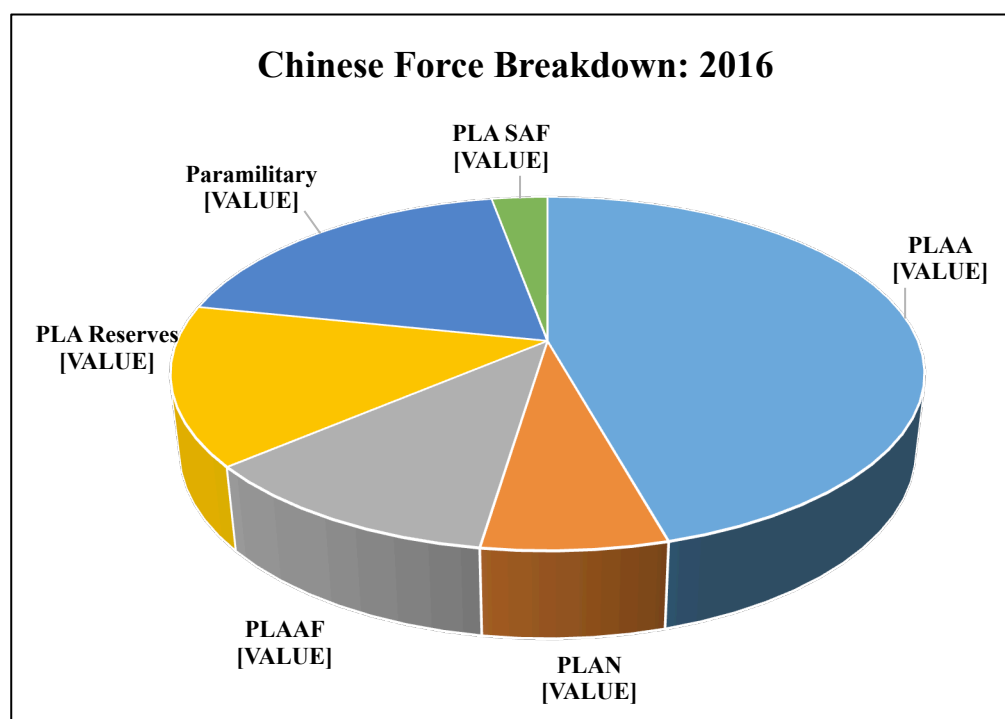
At the same time, the Army is still by far the largest and most bureaucratically influential branch of the military and will likely retain its position of power for at least the next decade. The PLAA's current dominance in personnel is clear. The Army accounts for more than two-thirds of all PLA forces (just under 70%). The force reductions in the PLAA, have, however, increased the PLAN and the PLAAF's share of total PLA personnel; they currently command 10% and 17% of the PLA, respectively. The PLARF's 100,000 personnel make up 4% of all PLA forces. This breakdown is shown in **Figure 7.3**.

**Figure 7.2: Shifts in Percentage of Total Personnel by Service: 1985-2016**



Source: IISS *Military Balance*, 1985-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 7.3: Active and Reserve Personnel by Service in the PLA: 2016**



Source: IISS *Military Balance*, 2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

### ***Shifts in the PLA's Personnel System***

The changes in the PLA's personnel structure clearly reflect the fact its overall personnel system is shifting in response to the increasing human capital requirements of the PLA's modern military doctrine and its more complex technology. These requirements require the PLA to focus on quality over quantity. It must reshape its total personnel pool to retain qualified personnel, increase individual and small unit proficiency, and attract highly-educated recruits.

As part of this effort, the PLA is attempting to build a professional NCO corps and increase the average level of education among the officer corps by rebalancing the personnel system, recruiting high-level human capital into the PLA, providing opportunities for increased qualification among the non-conscript PLA, and offering greater compensation for the entire force.

The 2016 Department of Defense Report on China states:<sup>362</sup>

In September 2015, President Xi also announced that the PLA would reduce its force by 300,000 personnel by the end of 2017, a move widely expected to result in fewer non-combat personnel, such as those specialized in arts and culture, administrative duties, or academic work. China's official media also report the cuts will help to rebalance the proportion of forces among the services in ways that will raise the relative importance the PLA Navy (PLAN) and PLA Air Force (PLAAF).

At the operational level, the PLA may intend to continue to convert some divisions into brigades in order to increase its overall combat capabilities and enhance mobility. Although the majority of these conversions appear to have been accomplished prior to 2015, additional actions may have been paused in 2015 due to the wider PLA reorganization. This is part of an overall modernization effort to streamline the force and to reduce non-combat positions such as entertainment units or headquarters staffs. The PLA is also placing non-

commissioned officers in positions traditionally held by officers or assigning civilians to take over some duties.

### **Rebalancing the Personnel System**

There are several signs that China is making a real effort to develop the right kind of force quality. The PLA is currently rebalancing its personnel system by replacing many conscript and officer positions with NCO positions. Prior to new regulations issued in 1999, conscripts served for three to four years. However, in 1999, the CMC adjusted the conscription obligation to two years, and, in order to account for the drop in conscript numbers, augmented the authorized size of the NCO force.<sup>363</sup> This change occurred across the PLA, affecting all branches and the SAF. Complementing this change is a continuing reduction in the number of officers in the PLA and a transfer of many of their duties to the NCO corps.<sup>364</sup>

### **Recruiting High-Level Human Capital into the PLA**

Another indicator is that the PLA is attempting to recruit personnel with higher levels of education and/or technical proficiency into the PLA. By offering bonuses up to \$3,500 to college graduates who volunteer for the armed forces, the PLA managed to recruit more than 100,000 college graduates in 2009, a number still below the official goal of 130,000.<sup>365</sup> As part of this effort to recruit college-educated personnel, Chinese media regularly advertise the need for college-educated recruits.<sup>366</sup>

The PLA's efforts to recruit civilians with technical skills has led to regulations, issued in 2010, in which civilians with specialized skills can be recruited into the military and be granted an NCO rank.<sup>367</sup> This option enables skilled civilians to skip the hardships of the first two years of conscripted ranks.

The PLA also directly targets college graduates for officer positions through the National Defense Students program, which is roughly equivalent to the US Reserve Officer Training Corps (ROTC).<sup>368</sup>

In 2011 and 2012, Chinese media reported a strengthened effort to obtain recruits currently in or graduated from college. New benefits included relaxed restrictions on height, weight, tattoos, and ear piercings, as well as signing bonuses based on years of college completed, loans, and tuition subsidies.<sup>369</sup> In order to further target college graduates, the PLA offered benefits for veterans seeking advanced degrees and employment, providing exemptions from postgraduate entrance exams and preferential hiring for public sector positions.<sup>370</sup>

State media report trends that may indicate a successful effort by the PLA to recruit and retain college graduates. One report states that approximately half of the college students and graduates recruited in 2009 entered officer training in 2011, ostensibly after a two-year period as an enlisted soldier.<sup>371</sup>

### **Creating Opportunities for Increased Qualification**

A third indicator is that the PLA has augmented its ability to provide education and training to military personnel. Military academies currently exist for officer and NCO training, with the NCO education accomplished at three specialized academies or at officer academies with specialized courses for NCOs.<sup>372</sup>

Moreover, the PLA does more than merely offer qualifications to the NCO corps; as one analyst states, NCOs are required to take advantage of qualification opportunities.<sup>373</sup>

As of 2008, all NCO's are required to earn one or more certificates of professional qualification relevant to their duties. Since 1999, when the professional skill appraisal system was started, more than 860,000 NCO's throughout the PLA are reported to have obtained professional qualification certificates recognized in the civilian community, as well as the army. The target date for all units to implement the full scope of professional skills testing is the end of 2012; those NCO's who do not pass their tests will not be promoted.

One way that NCOs and officers gain qualifications within the PLA is to take short-term specialty training at participating military academies. In addition to classroom instruction, the PLA has promoted and made available other means of qualification such as correspondence and online courses.<sup>374</sup>

The PLA has a large formal military education system for its officer corps, with three tiers of academy that offer technical, bachelor, master's, and doctorate degrees. Basic PLA academies offer three and four year technical and bachelor degrees that turn civilians into second lieutenants. In addition to intermediate and senior-level PLA academies that confer masters and doctoral degrees, the PLA has begun sending officers to civilian institutions to earn advanced degrees.<sup>375</sup>

### **Greater Compensation for PLA Personnel**

Quality also costs money. The PLA is increasing the benefits and pay of its service members to encourage qualified personnel to enter and, just as importantly, remain with the PLA. Consequently, pay raises were authorized in 2006, 2008, and 2011. NCOs received a substantial pay raise in 2011 – rumored to be motivated in part by political rationales – that saw salaries and benefits increase up to 40%, though civil servants at comparable ranks still make up to twice as much.<sup>376</sup>

In addition, the PLA is offering tuition allowances to college students who postpone their studies for service in the PLA.<sup>377</sup>

The section in the 2014 DoD China report covering “military doctrine and training” stated that:<sup>378</sup>

...during 2013, the PLA continued its push toward year-round military training and aligned its recruiting cycle with China's post-secondary academic calendar to attract better educated recruits. The recruiting period now begins in August rather than October.

Additionally, the PLA is laying the foundation for future changes in military doctrine. To develop a new cadre of officers, the PLA is reshuffling its academies to cultivate junior officers proficient with and capable of leveraging technology in all warfighting functions for joint operations. The National University of Defense Technology, for example, launched a yearlong joint operations staff officer course to serve as a pilot for a future national-level program. The course allows junior officers to rotate to the command elements of other PLA services to enhance their skills in joint operations planning and preparation.

### ***Shifts in Reserve and Militia Force Structure***

A sustained shift in the structure of the PLA's reserve and militia forces has been a critical and often overlooked element of China's military modernization program. While reliable quantitative data are unavailable, Chinese statements indicate that the reserve and militia forces are shifting from mass formations designed to reinforce PLA maneuver forces to smaller auxiliary formations dedicated to logistics, technical, and air defense roles that better serve reservists with limited readiness and exercise experience.

## PLA Reserve Forces

As the previous **Figure 7.1** showed, China's reserve forces consist of roughly 510,000 servicemen and servicewomen. Most reserve forces today are staffed by civilians, many of whom are demobilized from the ground force.<sup>379</sup>

Reserve officers are chosen mainly from qualified retired servicemen, civil officials, cadres of the people's armed forces departments, cadres of the militia and civilian technicians with the appropriate military specialties. Reserve soldiers are chosen mainly from qualified discharged soldiers, trained primary militia members, and civilians with the appropriate military specialties.

Information on PLAN, PLAAF, and PLARF reserves, and their quality and training/exercise experience, is largely unavailable, but their numbers are reported to have increased.<sup>380</sup> While quantitative data are unavailable, multiple reports, as well as China's white papers, indicate that the force structure of the PLA's reserve forces are shifting from their previous emphasis on combat/maneuver units to force structures based on specialized units and logistics units.<sup>381</sup>

As the 2010 white paper stated,<sup>382</sup>

To be able to respond to emergencies in peacetime and to fight in war, the focus of the reserve force is shifting from quantity and scale to quality and efficiency, from a combat role to a support role, and from the provision of general-purpose soldiers to soldiers with special skills. It is working to become an efficient auxiliary to the active force and a strong component of the national defense reserve.

It is likely that reserve forces are structured to provide support to regular PLA units during contingencies, especially in the field of logistics. Although some reserve units are staffed with personnel specializing in information warfare, it is unclear what role reserve forces will play in the future beyond basic service providers.

## PLA Militia Forces

The PLA is supported by militias that are under the command of local military district governments. They consist of young men organized in a standard military command structure. There are primary and ordinary militias: according to the 2010 white paper, the primary militia comprises about 8 million men,<sup>383</sup> but numbers for ordinary militias are unavailable.

These militia forces are also undergoing a sustained shift in force structure. Once again, reliable quantitative indicators are unavailable. However, Chinese government statements indicate that the militia is shifting from a mass reserve of maneuver forces to a force dedicated to logistics and technical support as well as air defense and internal security. This again seems to be a useful adjustment. It also may take account of the fact that such a force is still far too large to train and fund, and is useful largely as a tool in internal security and regime control.

The 2006 white paper identified the following trends:<sup>384</sup>

Specialized technical units rather than infantry are becoming the backbone of the militia. The proportion of antiaircraft artillery, ground artillery, missile, communications, engineering, anti-chemical, reconnaissance, information and other specialized technical units in the overall militia force is being raised. The building of militia units of the Navy, Air Force and Second Artillery Force is being strengthened.

A new organizational structure of the militia has taken shape, with specialized technical units and units with corresponding specialties serving as the main body, and air defense units, units of the Navy, Air Force and Second Artillery Force, and emergency response units playing a leading role.

The state has increased investment in militia weaponry and equipment, with priority given to equipment for air defense, emergency response and maintenance of stability. The state has phased out a number of outdated weapons.

Militia training reform has been deepened; a four-level system for organizing training is practiced, the four levels being provincial military commands, prefectural military commands, people's armed forces departments of counties (county-level cities or municipal districts) and basic-level people's armed forces departments. Through interlinked training as well as joint training and exercises with active PLA units, the militia has boosted its capabilities of conducting rapid mobilization and carrying out its specialized tasks.

The 2010 white paper further noted,<sup>385</sup>

The militia force gives priority to reinforcing those units which are tasked with defending border and coastal areas, providing service support for different arms and services, and responding in emergencies. It has been realigned to extend from rural to urban areas as well as to areas along important communication lines, from ordinary locations to key sites and areas, and from traditional industries to new and high-tech ones. As a result, its structure and layout have been further improved....

Its capabilities in dealing with both emergencies and wars have been greatly enhanced. The militia strengthens its building of equipment for the purposes of air defense, emergency response, and maintaining stability, supply of new types of air defense weaponry and equipment, and retrofitting and upgrading of existing weapons...

The militia has taken an active part in such operations as counter-terrorism, stability maintenance, emergency rescue, disaster relief, border protection and control, and joint defense of public security, and has played a unique role in accomplishing diversified military tasks. Each year, it mobilizes more than 90,000 militiamen to serve as guards on bridges, tunnels and railways, more than 200,000 to take part in joint military-police-civilian defense patrols, more than 900,000 to participate in emergency response, rescue and relief operations following major natural disasters, and nearly 2 million to engage in the comprehensive control and management of social order in rural and urban areas.

The 2013 white paper provided less detail, and described the militia as follows.<sup>386</sup>

The militia is an armed organization composed of the people not released from their regular work. As an assistant and backup force of the PLA, the militia is tasked with participating in the socialist modernization drive, performing combat readiness support and defensive operations, helping maintain social order and participating in emergency rescue and disaster relief operations.

The militia focuses on optimizing its size and structure, improving its weaponry and equipment, and pushing forward reforms in training so as to enhance its capabilities of supporting diversified military operations, of which the core is to win local wars in informationized conditions.

The militia falls into two categories: primary and general. The primary militia has emergency response detachments; supporting detachments such as joint air defense, intelligence, reconnaissance, communications support, engineering rush-repair, transportation and equipment repair; and reserve units for combat, logistics and equipment support.

The militia's critical infrastructure protection mission is not only in response to domestic threats. PLARF equipment, missile positions, and mobilizations require extensive PAPF and militia protection in light of the PLA's fear of espionage and adversary Special Forces missile suppression missions.<sup>387</sup>

### ***Shifts in the Personnel of the Chinese Security and Paramilitary Forces***

Shifts are also taking place in the personnel of the Chinese security apparatus that affect the Ministry of State Security, China Coast Guard, the Ministry of Public Security, the People's Armed Police Force (PAPF), and the PLA. These shifts reflect a progressively greater concern



with internal unrest centered largely on the Tibetan and Uighur minority populations, but also concern over popular unrest in rural areas, an emphasis on protecting territorial claims in the South and East China Seas, and the Communist Party control over every aspect of the state. The rationale for these shifts is not as clear as it is for the military, and the quality of open source reporting is less clear, but the broad trends involved in the largest elements of Chinese security forces are shown in **Figure 7.4**, and compared with the shifts in the PLA.

### China Coast Guard (CCG)

The growth of the China Coast Guard (CCG) has been followed closely, due to the growing international focus on China's maritime disputes. While full open source data is not available, it seems clear that China has heavily emphasized the civilian Coast Guard as a key tool in asserting maritime claims. The 2016 *IISS Military Balance* estimates that the CCG possesses roughly 330 patrol and coastal combatant ships.<sup>388</sup> This number is projected to grow, with the Department of Defense noting planned coast guard growth going forward:<sup>389</sup>

“China prefers to use its government-controlled, civilian maritime law enforcement agencies in maritime disputes, and uses the PLAN in an overwatch capacity in case of escalation. The enlargement and modernization of the China Coast Guard (CCG) forces will improve China's ability to enforce its maritime claims. The CCG is increasing its total force level at a rapid pace. Over the last five years, China has added more than 100 ocean-going patrol ships to the CCG to increase its capacity to conduct extended offshore operations and to replace old units. In the next decade, a new force of civilian law enforcement ships will afford China the capability to patrol more robustly its claims in the East China Sea and the South China Sea. Overall, the CCG's total force level is expected to increase by 25 percent. Some of these ships will have the capability to embark helicopters, a capability that only a few CCG ships currently have.”

Further complicating estimates of China's maritime force structure is Beijing's increased reliance on its nontraditional maritime militia made up fisherman and their boats—though backed by the PLA. It is impossible to precisely judge the number of ships, personnel, in the maritime militia, and the exact nature of their connection to the PLA. Still, they remain a growing force within Chinese military strategy.

Andrew S. Erickson and Conor M. Kennedy of the Naval War College report in in a June 2016 *Foreign Affairs* article that:<sup>390</sup>

Beijing's maritime militia is different: with thousands of members, it is the world's largest, and it is one of only two, along with Vietnam's, known to send elite irregular forces to harass legally operating foreign vessels.

The maritime militia units are managed by local PLA military commands and are funded by local and provincial governments. To encourage locals to join up, municipalities often promise to pay militia personnel a pension equal to several thousand dollars per year if they are disabled in the line of duty—a sum comparable to other Chinese government pensions and an attractive draw in a rural fishing village.

...Observers should not expect the maritime militia to ease off its activities anytime soon. China's drive to coerce its neighbors in the South China Sea is growing, and its ongoing development and fortification of artificial islands in the region will provide the militia with plenty of support. At the same time, Beijing's efforts to streamline the People's Liberation Army by [cutting 300,000 troops](#) will provide plenty of fresh equipment and manpower for the militia: veterans are highly attractive recruits. Responding to signals from Beijing, local officials along China's coastline are expanding existing militia units and establishing new ones. Consider Beihai, a city in China's southern Guangxi Province. In 2013, that city was home to two maritime militia detachments, with around 200 personnel. In 2015, it boasted at least [ten detachments and more than 2,000 personnel](#).

### **Ministry of State Security (MSS)**

No clear data are available on the trends for the Ministry of State Security. As noted in the previous chapter, it serves under the PRC's State Council and conducts foreign and domestic intelligence and counter-intelligence collection. MSS agents perform covert activities, both inside and outside of China.<sup>391</sup>

### **Ministry of Public Security (MPS)**

The same lack of reliable trend data affects the Ministry of Public Security. As noted earlier, it is the highest-level administrative body for Chinese law enforcement forces and it oversees approximately 1.9 million police personnel throughout China. These police forces have “many functions including domestic patrol, traffic control, detective, anti-crime, anti-riot, and anti-terrorism.”<sup>392</sup>

### **People's Armed Police Force (PAPF)**

The People's Armed Police Force (PAPF; also called the People's Armed Police or PAP) serves as an internal security force.<sup>393</sup> In addition, it acts as a light infantry reserve in the event of war and takes part in reconstruction and rescue efforts after national emergencies.<sup>394</sup>

The PAPF's 660,000+ personnel are spread between the Internal Security Forces, the Border Defense Force (including the Coast Guard), the China Marine Surveillance Agency, the Maritime Safety Administration, and the Fisheries Enforcement Command. Some PAPF units are responsible for border security and for guarding critical infrastructure,<sup>395</sup> including critical military infrastructure.

Various elements of the PAPF have played a growing role in China's confrontations with its neighbors over their conflicting maritime and EEZ claims in the Pacific ranging from Northeast Asia to the South China Sea. In some cases, it is not clear whether the main reason for such efforts has been driven by the central government or provincial governments, but it is clear that they reflect national policy and are at least coordinated – if not directed – with China's top level leadership in Beijing.

The 2014 DoD report on Chinese Military Power discussed China's domestic use of paramilitary forces in various regions of the country over the past year as follows:<sup>396</sup>

In 2013, China continued to follow the pattern of using security forces to quell incidents ranging from anti-foreign sentiment to socio-economic protests. PAP units, particularly the mobile security divisions, also continued to receive extensive equipment upgrades. China activated security forces several times in 2013 in response to incidents of violence and also in preparation for sensitive anniversaries such as the July 5 anniversary of the 2009 Uyghur riots in Urumqi.

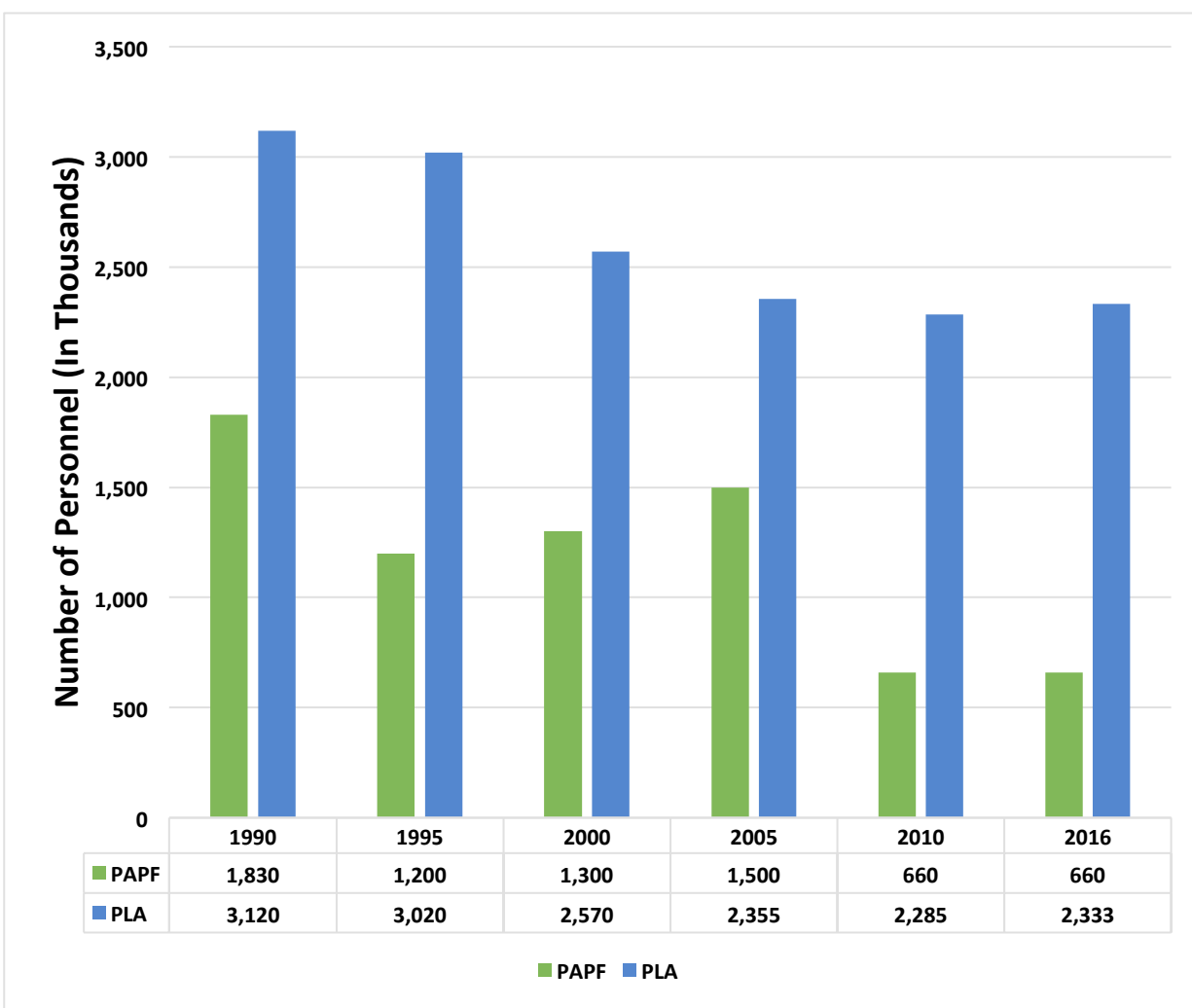
In April, China dispatched more than 1,000 paramilitary police to Xinjiang after riots resulted in the death of 21 people. Later in June, at least 1,000 paramilitary police shut down large sections of Urumqi and conducted 24-hour patrols in military vehicles after clashes left 35 people dead. In October, paramilitary police were deployed to Biru County in the Tibet Autonomous Region to crack down on Tibetans who protested an order to fly the Chinese national flag at home.

The 2016 DoD report on China elaborates even further on the PAP:<sup>397</sup>

China's national internal security forces consist primarily of the People's Armed Police (PAP), the Ministry of Public Security (MPS), the Ministry of State Security (MSS), and the PLA. China's leaders rely on these forces to address challenges ranging from protests over political, social, environmental, or economic problems to suspected terrorist attacks. In recent years, China has focused increasingly on protests perceived as linked to foreign influences and, separately, the East Turkestan Independence Movement, which China's leaders believe is a terrorist group connected to ethnic Uighur nationalists in the Xinjiang autonomous region. China blames Uighur "separatists" for terrorist attacks in China, which have increased markedly since early 2014, and has imposed strict security in Xinjiang to curb potential attacks.

The PAP is a paramilitary component of China's armed forces whose primary mission is internal security and domestic stability. It falls under the dual authority of the CMC and the State Council. Although the PAP has units for a variety of functions, such as border security and firefighting, the most numerous are for internal security. PAP units are organized into "contingents" in each province, autonomous region, and centrally administered city, as well as a smaller number of "mobile divisions" available to deploy anywhere in the country in response to escalating internal crises.

**Figure 7.4: Historical Trends in Absolute PLA and PAPF Personnel**



Source: IISS *Military Balance*, 1990-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## CHAPTER 8: MODERNIZATION, TRAINING, AND THE ROLE OF ARMS AND TECHNOLOGY IMPORTS AND EXPORTS

The patterns in Chinese military modernization are a key focus of every chapter in this analysis. They are reflected in every aspect of China's security and military forces, and are a key part of Chinese doctrine and public statements. For example, China's 2006 Defense White Paper states that it has been pursuing a three-step strategy to modernize its armed forces. It indicates that China has sought to create a "solid foundation" by 2010, and reach another phase of "major progress" by 2020. And, that it continues to seek a capability of "winning informationized wars by the mid-21st century."<sup>398</sup>

Virtually every aspect of the Chinese armed forces has undergone significant equipment modernization in the past two decades. The PLA has, however, been steadily less transparent in reporting the details of its modernization efforts in recent years, and its official media sources have down played the importance of many of the trends analyzed by outside experts.

As might be expected, faster progress has also occurred in some areas and other areas prove to be more resistant to change. This equipment modernization is strongly influenced by the PLA's ability to modernize its tactics, strategy, training, and communications networks – an important, but frequently overlooked process.

### *The US Intelligence Community's Assessment*

If one looks at the broad patterns in China's modernization efforts, the U.S. view of Chinese modernization has focused on the key developments that affect U.S. interests. The U.S. intelligence community summarized its views on China's objective in modernizing its forces in testimony before Congress in 2015.

Lieutenant General Vincent R. Stewart, Director of the DIA stated:<sup>399</sup>

China's People's Liberation Army (PLA) is building a modern military capable of defending China's "core interests" of preserving its political system, protecting territorial integrity and sovereignty (China views these to include Taiwan and other contested claims to land and water), and ensuring sustainable economic and social development.

The PLA remains focused on transforming the army into a fully mechanized force. The PLA is converting its divisions into brigades to increase lethality and improve combat capabilities. China's national-level training focus has been on brigade-level exercises that stress unit combat mission capabilities under realistic conditions, long distance mobility, and command and control. We expect these trends to continue.

The PLA Navy continues to expand its operational and deployment areas. China's first aircraft carrier, commissioned in late 2012, will not reach its full potential until it acquires a fully operational fixed-wing air regiment, but we expect the navy will make progress toward its goal this year.

The South China Sea (SCS) remains a potential flashpoint. Overlapping claims among China, Vietnam, the Philippines, Malaysia, Taiwan, and Brunei—exacerbated by large-scale construction or major steps to militarize or expand law enforcement—has increased tensions among claimants. This has prompted an increase in defense acquisition, to include submarine capabilities, in some of these countries.

In 2014, China twice deployed submarines to the Indian Ocean. The submarines probably conducted area familiarization to form a baseline for increasing China's power projection. China continues production of JIN-class nuclear-powered ballistic missile submarines and submarine-launched ballistic missiles. We expect China to conduct its first nuclear deterrence patrols this year.

The PLA Air Force (PLAAF) is approaching modernization on a scale unprecedented in its history. China now has two stealth fighter programs - the third and fourth J-20 prototypes, which conducted their first flights in March and July 2014. Further PLAAF developments are anticipated.

China's nuclear arsenal currently consists of 50-60 ICBMs. China is adding more survivable road-mobile systems, enhancing its silo-based systems, and developing a sea-based nuclear deterrent. They are also augmenting more than 1,200 conventional short-range ballistic missiles deployed opposite Taiwan with a limited but growing number of conventionally armed, medium-range ballistic missiles, including the DF-16, which will improve China's ability to strike regional targets. China continues to deploy growing numbers of the DF-21D anti-ship ballistic missile and is developing a tiered ballistic missile defense system, having successfully tested the upper-tier capability on two occasions.

James R. Clapper, Director of National Intelligence, focused on the role of espionage in China's modernization goals and objectives:<sup>400</sup>

Chinese economic espionage against US companies remains a significant issue. The "advanced persistent threat" activities continue despite detailed private sector reports, public indictments, and US demarches, according to a computer security study. China is an advanced cyber actor; however, Chinese hackers often use less sophisticated cyber tools to access targets. Improved cyber defenses would require hackers to use more sophisticated skills and make China's economic espionage more costly and difficult to conduct.

### ***Uncertain Patterns of Change***

China's public statements increasingly understate some of these realities and the scale of China's efforts, but it is still important to examine China's official public statements in order to understand the logic and drivers behind its military modernization program.

Like all the developments in China's military forces, PLA's modernization efforts must also be analyzed in the context of China's overall strategy. Chinese military modernization involves the whole spectrum of armed forces development: war-fighting doctrine, strategic and tactical guidelines, training methods, C4ISR, procurement services, interoperability among PLA services, equipment, and human resources management. An assessment of China's equipment modernization cannot be viewed purely in technical and quantitative terms, but must focus on the qualitative changes in China's deterrent and warfighting capabilities and establish benchmarks for judging China's actual performance relative to its stated goals.

Accordingly, PLA modernization and force development cannot simply be compared to the US or other Western militaries, but rather according to the demands and capabilities set by China and PLA's military doctrine. Given the centrality of the Local Wars theory, the PLA's modernization must be assessed in terms of the trends in the PLA's ability to deter, exert strategic influence, and fight and win Local Wars.

These assessments are not easy to make. Quantitative and service-specific analyses of PLA military modernization and force development are provided in the following chapters. However,

advances in given areas of force organization, tactics, weaponry technology are difficult to tie to actual warfighting capabilities.

China fought its last international war in 1979, a war that was relatively limited in scope and lasted barely a month. Virtually no members of the armed forces possess any war-fighting experience. Although the lack of experience is difficult to quantify and compare with other indicators, it has the potential to become a significant disadvantage in an armed conflict against experienced enemy forces.

Military modernization also proceeds asymmetrically -- especially in large organizations like the PLA. While some units may use cutting-edge technology that provides war-fighting superiority, it is almost certain that large parts of the armed forces keep outdated and inoperable equipment and have a low standard of training, and a number of American analysts of the PLA have observed such actions.<sup>401</sup>

### ***PLA Training Practices: A Critical Aspect of Modernization***

Training, however, does help set the stage for addressing the broad patterns in how modernization is preceding and its effectiveness. Over the last two decades, the PLA has made a sustained effort to improve the quality and realism of the training received by its personnel. In addition, it has augmented its scenario-specific training, especially for situations that require specialized forces.

The CMC issued new training guidelines in 1999, which were codified by the GSD into an “Outline of Military Training and Evaluation” (OMTE) in 2002. The 2002 OMTE set uniform standards and led to an increased focus in many training areas such as combined arms and joint operations, force-on-force training, rapid reaction, information countermeasures, and comprehensive logistical support.<sup>402</sup>

It is impossible to determine the exact effects of the OMTE, but one analyst asserts that the new guidelines have considerably improved training quality.<sup>403</sup> He cites a lack of truly joint, large-scale, or force-on-force exercises in the PLA prior to the 1999 regulations and the 2002 OMTE. Specifically, he argues that the PLA’s training before 1999 was heavily scripted and limited by a lack of funding, experience, and equipment.<sup>404</sup>

Corroborating this view, multiple Chinese government media sources from the early 2000s speak of the need to add “realism” to training.<sup>405</sup> Over the course of the decade, this exhortation among official PRC media markedly increased, but changed in tone to a sense of accomplishment as “scripted” exercises were supposedly reduced and units began to “train as you fight.”<sup>406</sup>

The Chinese 2015 defense white paper continued this focus on enhanced realistic training to use China’s modernization and called for joint operations under increased information technology.<sup>407</sup>

The PLA will continue to attach strategic importance to combat training in realistic conditions, and strictly temper the troops according to the Outline of Military Training and Evaluation (OMTE). It will constantly innovate operational and training methods, improve military training criteria and regulations, and work to build large-scale comprehensive training bases in an effort to provide real-combat environments for training.

The PLA will continue to conduct live-setting training, IT-based simulated training, and face-on-face confrontation training in line with real-combat criteria, and strengthen command post training and joint and combined training. It will intensify training in complex electro-magnetic environments, complex and unfamiliar terrains, and complex weather conditions. It will also set up a training supervision and inspection system, so as to incorporate real-combat requirements into training.

## **Military Operations Other Than War**

These shifts in the PLA's shifts training practices have broadened to include more challenging training subjects. Following the release of the 2009 OMTE, which was a major revision of the 2002 document, additional training skills were emphasized such as operating in complex weather, terrain, and electromagnetic conditions and conducting military operations other than war (MOOTW).<sup>408</sup>

China's 2015 defense white paper specifically highlighted the necessity to train for MOOTW and defining it as: emergency rescue and disaster relief, counter-terrorism and stability maintenance, rights and interest protection, guard duty, international peacekeeping, and humanitarian assistance and disaster relief. The paper stated:<sup>409</sup>

They [China's armed forces] will work to incorporate MOOTW capacity building into military modernization and PMS, and pay special attention to establishing emergency command mechanisms, building emergency forces, training professionals, supporting task-specific equipment, and formulating relevant policies and regulations. Military emergency-response command systems will be tuned into state emergency management mechanisms. China's armed forces will persist in unified organization and command, scientific employment of forces, rapid and efficient actions, and strict observation of related policies and regulations.

The U.S Department of Defense view of these developments has emphasized China's ability to adapt to new security threats and employing its military forces in peacetime, which clearly supports China's "New Historic Missions". The Department of Defense's 2015 Chinese military white paper provided examples of the type of China's increasing MOOTW operations where China that provides operational expertise to its armed forces, even though they are peacetime operations.<sup>410</sup>

According to Chinese media, between 2008 and 2014, the PLA employed more than 2.4 million active-duty forces, roughly 7.82 million militia and reservists, and more than 6,700 aircraft sorties for MOOTW. During the Haiti earthquake crisis in 2010, China donated millions of dollars and provided a search-and-rescue team, medicine, medical staff, and equipment. HARMONIOUS MISSION 2013 conducted medical port calls in Brunei, Maldives, Pakistan, India, Bangladesh, Burma, Indonesia, and Cambodia. Also in 2013, China engaged in successful maritime security cooperation counter-piracy exercises in the GOA, comprised of PLA Navy combatants, as well as helicopters and a Special Forces element.

In November 2013, the PLA hosted a two-day domestic HA/DR tabletop exercise. China also deployed its hospital ship to the Philippines in November 2013 following Typhoon Haiyan. The PLA Navy's and the CCG's 2014 search and rescue efforts are unprecedented parts of the MH370 recovery effort. 2014 also marked the first year China participated in the RIMPAC exercise; during the exercise the PLA Navy's hospital ship conducted personnel exchanges, military medicine exchanges, medical evacuation and mass casualty training. Additionally, the PLA continues to support UN PKO and participate in military exercises as a member of the SCO. Increased emphasis of MOOTW provides the PLA experience with joint operations and various command and control scenarios. Depending on the nature of the operation, PLA resources for MOOTW can be under the control of local commanders or directed at the highest levels of civilian and military leadership, allowing the PLA to respond rapidly to unexpected events.

The 2016 DoD report discussed MOOTW operations as follows:

The PLA continues to prepare for military operations other than war (MOOTW) including emergency response, counterterrorism, international rescue, HA/DR, PKO, and various other security tasks. China's 2015 DWP noted that the PLA will continue to incorporate MOOTW into its readiness preparations and vision of modernization. In practice, the military shares many of these missions with the People's Armed Police (PAP), a domestically oriented paramilitary force.

In 2015, the PLA sent more than 1,000 personnel to contribute to HA/DR in Nepal following a powerful earthquake there in April. The PLA characterized the operation as China's largest-ever deployment of armed

forces personnel abroad for humanitarian aid. Last year, the PLA also supported 10 UN PKO and continued to participate in several bilateral and multilateral military exercises focused on MOOTW.

## **Joint Operations**

The capability to execute Joint operations is another key indication of broad progress in military modernization. The PLA has made significant progress in its efforts to train its forces for joint operations. The PLA reportedly did not conduct true joint operations during the 1980s and 1990s. Formations from different services carried out tasks in proximity to one another rather than coordinate actions under a single unified headquarters. However, by the middle of the first decade of the 21<sup>st</sup> century, the PLA was reportedly conducting joint training exercises with forces that were operating far from their garrison locations.<sup>411</sup>

The poor outcome of China's previous joint exercises led to the creation of a new term in 2004, "Integrated Joint Operations." This term was intended to both capture the need for true joint operations and to emphasize the role of support forces in joint operations.<sup>412</sup>

By the end of the decade, many official media reports on the SAF focused on military exercises taking place under "complex electromagnetic conditions," or conditions in which an adversary is waging electronic warfare against a PLA unit.<sup>413</sup> There is also evidence that the new term led to tangible changes in training, such as the focus on the use of electronic warfare support forces.

For example, a multi-service joint exercise called "Joint Action 2014" took place in which PLA Army, Navy, Air Force, SAF, PAPF, militia and reserve forces utilized a joint command and control platform across various military regions while conducting and evaluating mobilization and combat scenarios. Similarly, other large-scale PLA exercises in 2014 that resembled the 2013 exercise "Mission Action" used joint command and control while exercising its logistics and mobilizing forces on long distance maneuvers.<sup>414</sup>

It seems likely, however, that China still has problems. Although new Chinese students at mid- and upper-level military academies are receiving training in commanding joint operations, and new C4ISR equipment has been introduced, problems persist in translating training in the theory of joint operations to actual operational effectiveness. Unreliable and non-standardized C3I platforms make training for joint operations difficult.

After a 2012 Lanzhou MR exercise, the chief of the GSD Training Department stated that further development and research was required to "formalize and standardize the equipment that has been fielded and to solve problems encountered using it in training." Furthermore, a 2012 report in the *Nanfang Zhoumo* referred to "restrictions of the organization structure and the command system." The report does not elaborate as to the nature of these "restrictions."<sup>415</sup>

## **Focus on C4ISR and Information Technology**

As the previous chapters have shown, China sees C4ISR and Information Technology as critical aspects of its strategy; this is reflected in its military modernization efforts. China has placed an increasing importance on C4I capabilities so that its integrated command and control systems can allow the PLA to execute fluid joint operations. The PLA is investing heavily in the enhancement of all C4ISR and logistics capabilities, drawing on resources of the civilian computer and high-tech industries.<sup>416</sup> Given that military modernization is virtually impossible without comprehensive, modern C4ISR capabilities, the success of China's efforts in this regard will be a key factor in determining the success of China's modernization strategy.



The 3<sup>rd</sup> Plenum of the Central Committee of the 18<sup>th</sup> CPC Congress called for “soundly setting up the joint operations command organ of the CMC and the theater joint operations command institutions.” This guidance could bring significant changes to the PLA command structure and shows that the PLA has taken action to address the importance of improving C4ISR capabilities in the past decade.

The DoD 2016 report stated:<sup>417</sup>

China continues to prioritize C4I modernization as a response to trends in modern warfare that emphasize the importance of rapid information sharing, processing, and decision-making. The PLA seeks to modernize itself both technologically and organizationally to command complex, joint operations in near and distant battlefields with increasingly sophisticated weapons.

The PLA views technological improvements to C4I systems as essential to improve the speed and effectiveness of decision-making while providing secure and reliable communications to fixed and mobile command posts. The PLA is fielding advanced automated command systems like the Integrated Command Platform (ICP) to units at lower echelons across the force. The adoption of the ICP enables multi-service communications necessary for joint operations. These C4I advancements are expected to shorten the command process. The new technologies introduced into the PLA enable information sharing—intelligence, battlefield information, logistical information, and weather reports—on robust and redundant communications networks, to improve commanders’ situational awareness. In particular, the transmission of ISR data in near real-time to commanders in the field could facilitate the commanders’ decision-making processes and make operations more efficient.

These technical improvements have greatly enhanced the PLA’s flexibility and responsiveness. “Informationized” operations no longer require in-person meetings for command decision-making or labor-intensive processes for execution. Commanders can issue orders to multiple units at the same time while on the move, and units can rapidly adjust their actions through the use of digital databases and command automation tools. The PLA also seeks to improve its C4I capabilities by reforming its joint command institutions at the national and regional levels.

The PLA increasingly relies on modern IT applications. The evidence for this includes the PLA’s increased efforts to create an advanced C4ISR network among the PLA branches and services, IT-enabled weapon systems, the proliferation of information warfare units, and efforts to recruit highly qualified civilian IT experts. PLA leaders understand that conducting “integrated joint operations” is virtually impossible without effective, decentralized C4ISR networks, and they have identified the PLA’s deficiencies in this sector as a key stumbling block to efforts at joint operations.<sup>418</sup>

While the PLA recognizes the great importance of exploiting C4ISR and information technology, security sector modernization is contingent upon both civilian and military determinants, most notably China’s five-year economic development plans. An unexpected economic crisis or changes in technology accessibility may significantly delay the application of modern weapons systems as well as investments in human capital.

### **Amphibious Operations**

China is also modernizing its capability to project power. Until the late 1990s, amphibious operations were not considered a high priority for training purposes. However, by the turn of the millennium, the PLA had shifted its focus; in April 2000, the PLA acknowledged that the Nanjing and Guangzhou MRs had concentrated on amphibious operations. In addition, it has been reported that the Shenyang, Beijing, and Jinan MRs receive enough amphibious training to act as follow-on forces for any amphibious campaign.<sup>419</sup>

To build capacity in amphibious operations, the PLA has developed joint amphibious operation training areas and conducted amphibious exercises involving large numbers of forces. One analyst estimates that one-third to one-quarter of PLA forces have received some type of amphibious warfare training.<sup>420</sup>

### ***Arms Trade and Technology Transfer: The Role of Imports***

China is steadily modernizing its military industrial base and Chinese arms imports have been reduced significantly since 2005, due in part to its increasing defense industry capability. In broad terms, China no longer relies on weapons imports to modernize its army. China has shown the ability to develop indigenous weapons systems without outside assistance. Examples of advanced indigenous weapons systems include the J-10 and J-20 aircraft. The PLAN also operates advanced, indigenously designed surface combatants such as the *Luyang* guided missile destroyer and the *Jiankai* guided missile frigate. However, a sudden cessation of imports would certainly significantly delay weapons development and procurement.

Nevertheless, China is also modernizing its approach to arms transfers in ways that provide an important indication of its overall progress in modernization. China continues to import completed weapon systems and promote reverse engineering, foreign assisted development, cyber espionage of foreign weapons' system plans, and licensed production. Additionally, China's defense industry has benefitted from civilian imported goods and technology that have been dually used to modernize its military forces, despite Western arms embargoes to China since 1989.

### **Dual Use Imports and Reverse Engineering**

The DoD 2016 white paper on Chinese military forces also states that China continues to supplement technology shortfalls through dual-use goods and reverse engineering:<sup>421</sup>

China continues to supplement indigenous military modernization efforts through the acquisition of targeted foreign technologies, including engines for aircraft, tanks, and naval vessels; solid state electronics and microprocessors, guidance and control systems; enabling technologies such as cutting-edge precision machine tools; advanced diagnostic and forensic equipment; and computer-assisted design, manufacturing, and engineering. China often pursues these foreign technologies for the purpose of reverse engineering or to supplement indigenous military modernization efforts.

China's acquisition of such dual-use goods poses a problem in constructing a comprehensive picture of the PLA's overall technological capabilities. Recent DoD reports have stated that China is pursuing a systematic effort to exploit dual-use goods for modernizing its armed forces.<sup>422</sup> The dominance of state-run companies, in combination with a government-mandated policy of secrecy, makes it very difficult to track the potential applications of single items. In light of the information provided in the yearly DoD reports, it seems likely that China is undertaking systematic efforts to exploit dual-use goods for military purposes.

### **The Cost of China's Arms Imports**

The data available on the cost of Chinese arms exports and imports are uncertain for many reasons, and estimates often differ sharply by source. The Stockholm International Peace Research Institute or SIPRI, however, is one of the most respected sources of unclassified data on arms transfers and SIPRI is almost certainly correct in ranking China as the third largest arms importer from 2011-2015,<sup>423</sup> though there has been a significant decrease in imports in the past decade. Indeed, in the previous SIPRI report focusing on 2008-2012<sup>424</sup>, China was the world's number two importer of arms.

According to SIPRI, China was responsible for 7.1% of the world's arms imports during 2006-2010, but that percentage fell to 4.7% in 2011-2015.<sup>425</sup> **Figure 8.1** shows the SIPRI estimate China's total arms imports for the past 20 years and demonstrates the recent decline in imports and while Russia remains China's most consistent supplier. **Figure 8.2** shows the scale of military exports from Russia to China, while **Figure 8.3** shows the value of Russian exports to China relative to all of the PRC's military imports.

### Russia's Impact on Chinese Military Modernization

The 2016 DoD report on China describes Russia's importance to China as a weapons supplier as:<sup>426</sup>

China seeks some high-tech components and major end items from abroad that it has difficulty producing domestically—particularly from Russia and Ukraine. China has purchased advanced Russian defense equipment such as the SA-X-21b (S-400) SAM system, and is pursuing the Su-35 fighter aircraft as well as a new joint-design and production program for a heavy-lift helicopter and diesel-electric submarines based on the Russian PETERSBURG/LADA-class. China purchased ten used IL-76 transport aircraft from Russia, three IL-78 aircraft refitted for aerial refueling from Ukraine, an additional 52 Mi-171 multi-role medium-lift helicopters, and at least 130 AL-31F turbo-fan jet engines. China is partnering with Russia to purchase electronic components as well as creating joint production facilities located within Russia. China also has signed significant purchase contracts with Ukraine in recent years, including contracts for assault hovercraft and aircraft engines.

The decreasing value of Russian arms imports does reflect China's rising reliance on its own technology and industrial base. **Figure 8.3** reflects the decreasing absolute value of Russian arms imports to China. When compared to the double-digit growth in China's announced defense budgets, it becomes clear that the value of Russian arms imports, relative to the PRC's overall defense budget, is steadily decreasing. One report from the Congressional Research Service (CRS) stated that this trend is a result of Chinese efforts to integrate and reverse engineer existing technology.

As a 2015 CRS report notes:<sup>427</sup>

A key Russian arms client in Asia has been China, which purchased advanced aircraft and naval systems. Since 1996, Russia has sold China Su-27 fighter aircraft and agreed to their licensed production. It has sold the Chinese quantities of Su-30 multi-role fighter aircraft; Sovremenny-class destroyers equipped with Sunburn anti-ship missiles, and Kilo-class Project 636 diesel submarines. Russia has also sold the Chinese a variety of other weapons systems and missiles. Chinese arms acquisitions seem aimed at enhancing its military projection capabilities in Asia, and its ability to influence events throughout the region. One U.S. policy concern is to ensure that it provides appropriate military equipment to U.S. allies and friendly states in Asia to help offset any prospective threat China may pose to such nations. There have been no especially large recent Russian arms agreements with China. The Chinese military is currently focused on absorbing and integrating into its force structure the significant weapon systems previously obtained from Russia, and there has also been tension between Russia and China over China's apparent practice of reverse engineering and copying major combat systems obtained from Russia, in violation of their licensed production agreements.

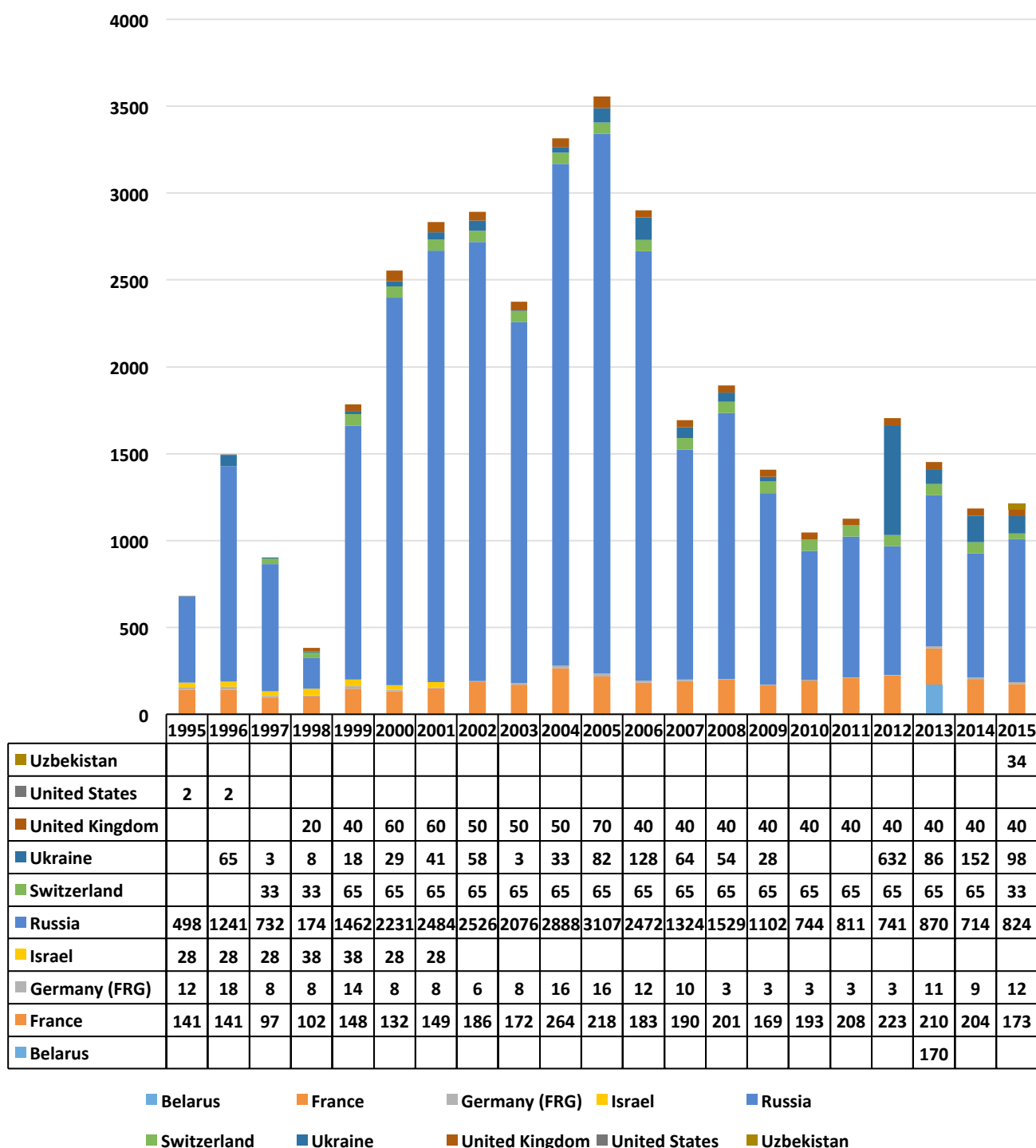
In 2014, Russian arms agreements with developing nations included two Kilo submarines for more than \$1.2 billion and around 200 T-90 battle tanks for approximately \$1 billion with Algeria. Russia also signed an agreement with China for S-400 air defense systems totaling nearly \$3 billion, and an agreement with India for anti-tank shells at over \$432 million.

While China is increasingly able to develop its own weapons, China's continued reliance on reverse engineering reflects some level of reliance on foreign technology that is likely to continue

for at least another decade. Many of China's most modern weapons systems, especially in aircraft, are Russian imports or copies, such as the Su-27, Su-30, and J-11.

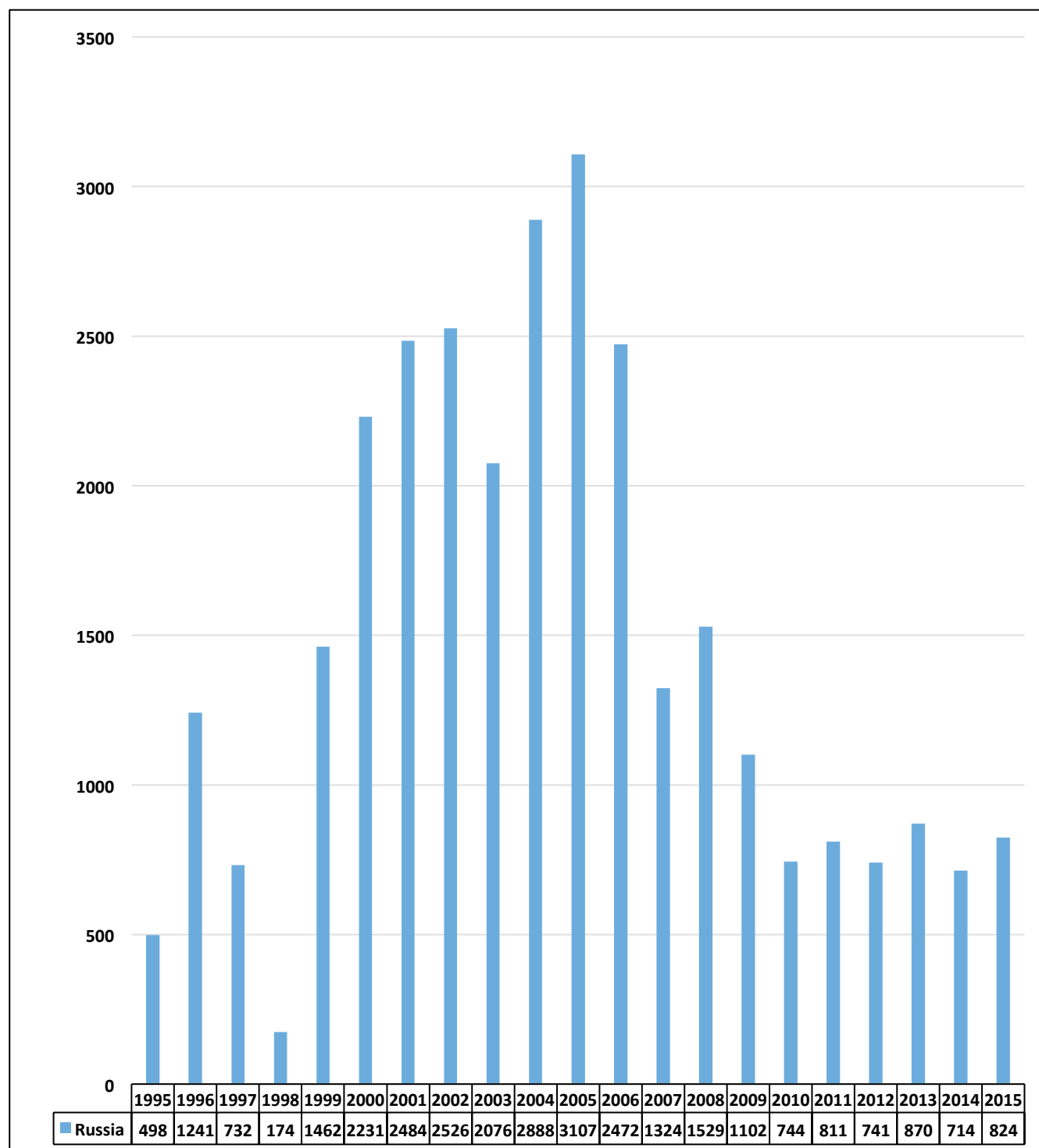
Some indigenous weapons systems rely on foreign technologies. Helicopter, radar, and engine technologies, for example, are being imported, or produced under license from Russia and Europe.<sup>428</sup>

*Figure 8.1: Total Arms Imports to China, 1994 – 2014 (US\$ millions, 1990 prices)*



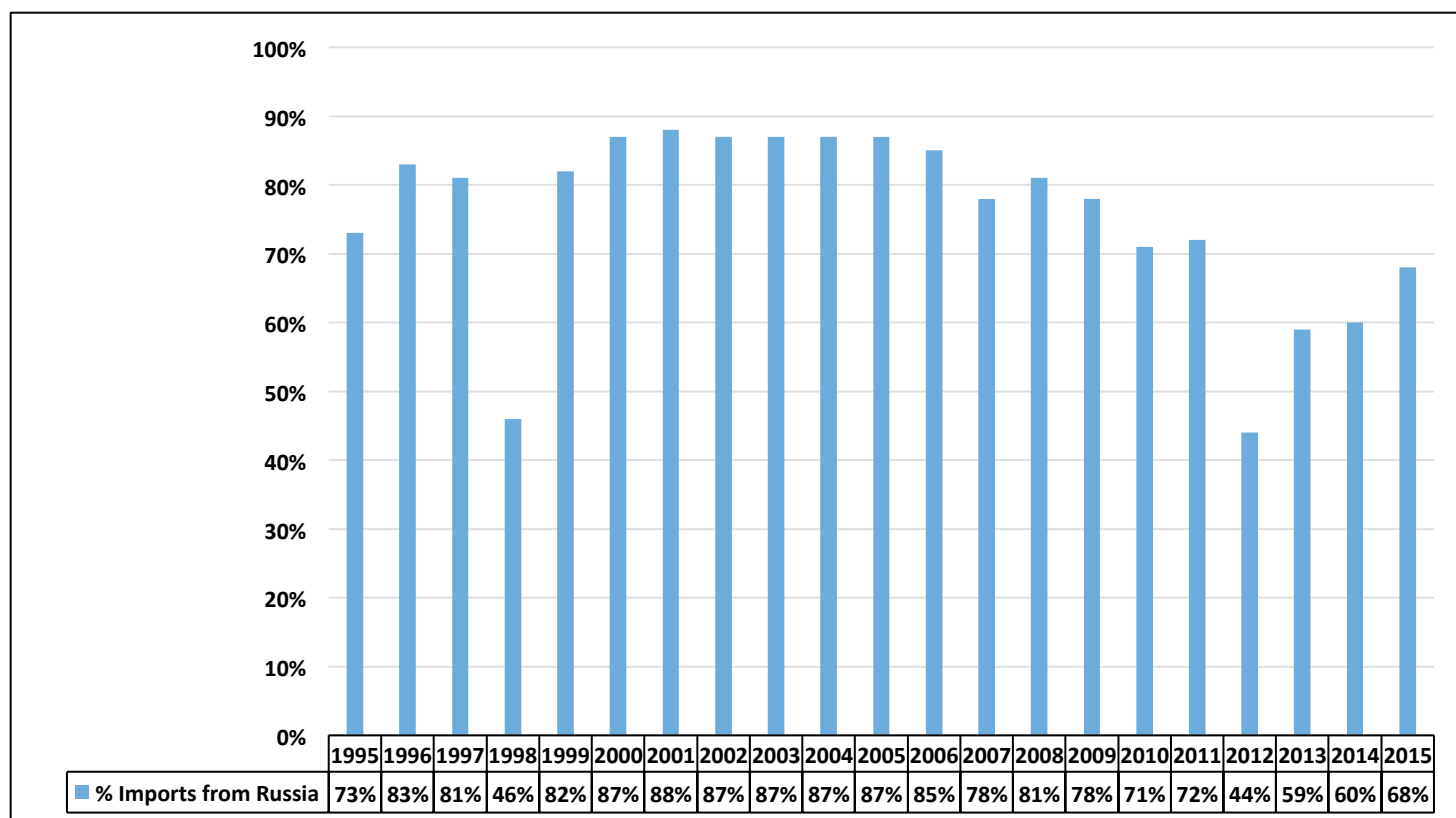
Source: SIPRI, “Arms Transfers Database, Importer/Exporter TIV Tables,” accessed October 24, 2016, [http://armstrade.sipri.org/armstrade/html/export\\_values.php](http://armstrade.sipri.org/armstrade/html/export_values.php).

**Figure 8.2: Value of Russian Arms Exports to China, 1994-2014**  
(US\$ millions, 1990 prices)



Source: SIPRI, "Arms Transfers Database, Importer/Exporter TIV Tables," accessed October 24, 2016, [http://armstrade.sipri.org/armstrade/html/export\\_values.php](http://armstrade.sipri.org/armstrade/html/export_values.php).

**Figure 8.3: Percentage of Overall PRC Arms Imports from Russia, 1994-2014**



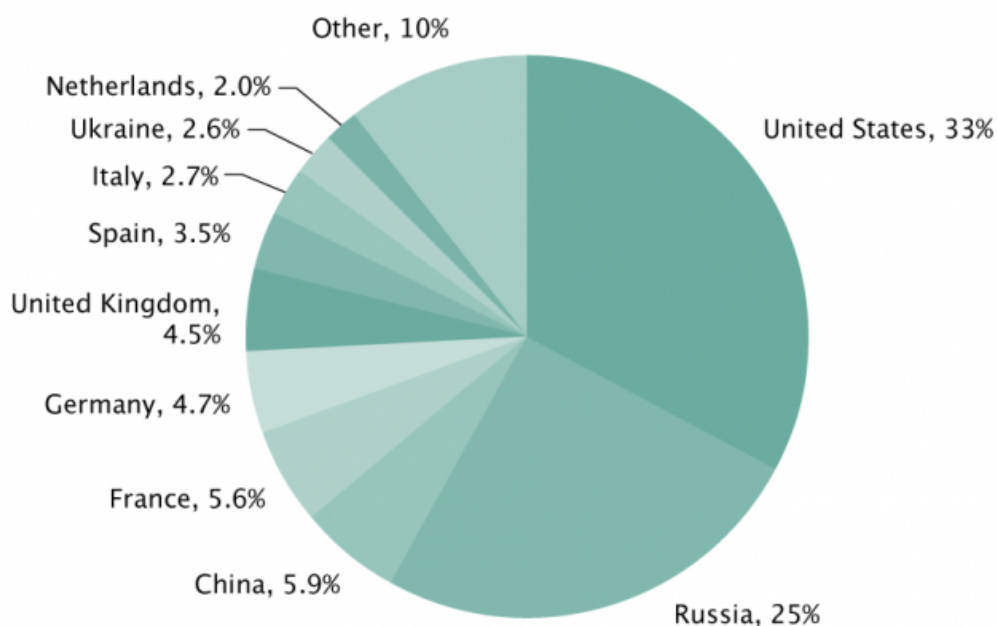
Source: SIPRI, “Arms Transfers Database, Importer/Exporter TIV Tables,” accessed October 24, 2016, <http://armstrade.sipri.org/armstrade/page/values.php>.

### ***Arms Trade and Technology Transfer: The Role of Exports***

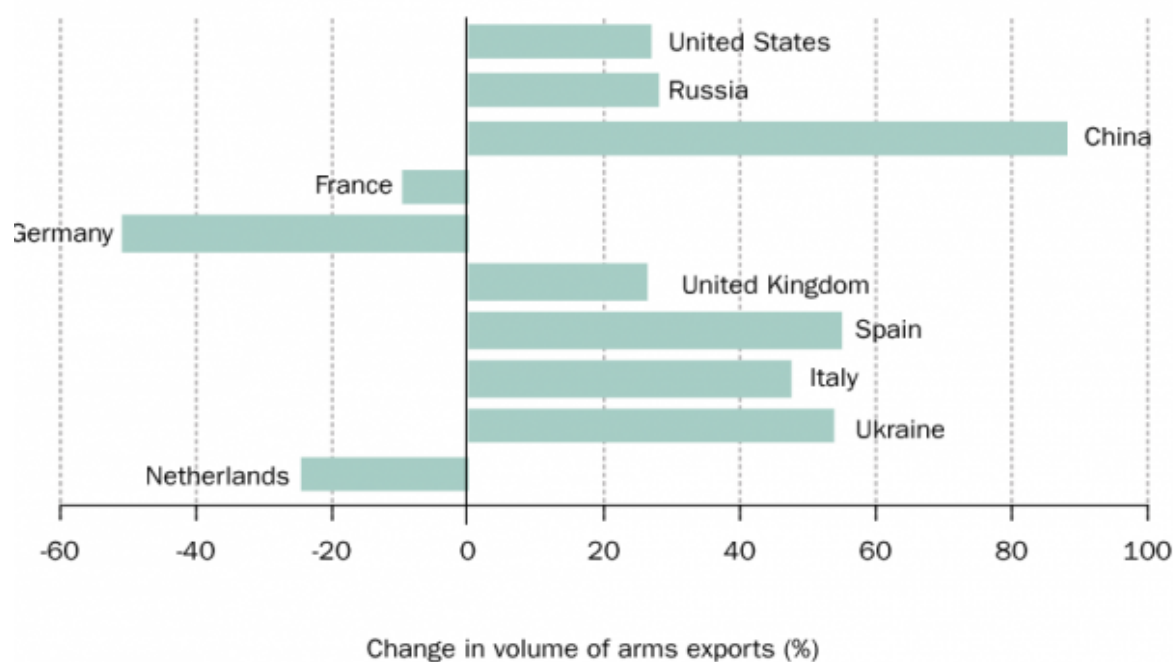
China’s progress in military modernization is also broadly reflected in the fact Chinese arms imports have been increasingly offset by increases in its arms exports. SIPRI made this clear in 2013, when it announced that China had become the 5<sup>th</sup> largest arms exporter by volume in the world.<sup>429</sup> In 2015, later SIPRI announced that Chinese weapons exports had increased 143 percent in the last 5 years, now making it the third largest arms exporter in the world, although significantly behind the US and Russia.<sup>430</sup>

This remains true in SIPRI’s 2016 report as **Figure 8.4** depicts. Furthermore, **Figure 8.5** shows the substantial percentage increase in China’s imports since 2010.

**Figure 8.4: Top Arms Exporters from 2011-2015 as Percent of Global Share of Exports**



**Figure 8.5: Changes in Major Arms Exports Since 2006-2010 by Ten Largest Exporters in 2011-2015**



Source: SIPRI, "International Arms Transfers," accessed October 25, 2016. <https://www.sipri.org/research/armament-and-disarmament/arms-transfers-and-military-spending/international-arms-transfers>



## Putting China's Arms Exports in Context

Chinese arms sales also help fund many key aspects of Chinese military modernization and the development of its military industrial base. The 2016 DoD report reported that:<sup>431</sup>

China's defense firms are marketing and selling arms throughout the world with the bulk of their sales to the Asia-Pacific and Sub-Saharan African regions. In 2015, China's arms exports probably increased modestly as China's domestic defense industry improved. From 2010 to 2014, China signed about \$15 billion in arms export agreements for conventional arms worldwide, ranging from general purpose materiel to major weapons systems.

Pakistan remains China's primary customer for conventional weapons. China engages in both arms sales and defense industrial cooperation with Pakistan, including LY-80 surface-to-air missile systems, F-22P frigates with helicopters, main battle tank production, air-to-air missiles, and anti-ship cruise missiles. In June 2014, Pakistan started co-producing the first two of 50 Block 2 JF-17s, which is an upgraded version of the Block I JF-17.

China is the largest supplier of arms to the Sub-Saharan Africa region, which was China's second highest sales region between 2010 and 2014, with about \$4 billion in sales. Sub-Saharan African countries view China as a provider of low-cost weapons with generally fewer end-use monitoring conditions relative to other arms suppliers. China tends to provide favorable payment arrangements. China's top customers in this region are South Sudan, Sudan, and Ethiopia.

It also described the other aspects of China's motivation in expanding its arms exports:<sup>432</sup>

China primarily conducts arms sales in conjunction with economic aid and development assistance to support broader foreign policy goals such as securing access to natural resources and export markets, promoting its political influence among host-country elites, and building support in international forums. To a lesser extent, arms sales also reflect the profit-seeking activities of individual arms trading companies in China and efforts to offset China's defense-related research and development costs.

From the perspective of China's arms customers, most of which are developing countries, Chinese arms are less expensive than those offered by the top international arms suppliers, although they are also generally considered to be of lower quality and reliability. Chinese arms also come with fewer political strings attached, which is attractive to those customers who may not have access to other sources of arms for political or economic reasons.

A 2015 CRS report provided the following brief history of Chinese arms exports in ways that made it clear that China's overall modernization efforts are still very much a work in progress.<sup>433</sup>

It was not until the Iran-Iraq war in the 1980s that China became an important arms supplier, one willing and able to provide weaponry when other major suppliers withheld sales to both belligerents. During that conflict, China demonstrated that it was willing to provide arms to both combatants in quantity and without conditions. Subsequently, China's arms sales have been more regional and targeted in the developing world. From 2011 to 2014, the value of China's arms transfer agreements with developing nations has averaged over \$3 billion annually. During the period of this report, the value of China's arms transfer agreements with developing nations was highest in 2013 at \$4.2 billion (in current dollars). China's arms agreements total in 2014 was \$2.2 billion. China's totals can be attributed, in part, to continuing contracts with Pakistan, a key historic client. More broadly, China's sales figures reflect several smaller valued weapons deals in Asia, Africa, and the Near East, rather than especially large agreements for major weapons systems.

Comparatively, few developing nations with significant financial resources have purchased Chinese military equipment during the eight-year period of this report. Most Chinese weapons for export are less advanced and sophisticated than weaponry available from Western suppliers or Russia. China, consequently, does not appear likely to be a key supplier of major conventional weapons in the developing world arms market in the immediate future. That said, China has indicated that increasingly it views foreign arms sales as an important market in which it wishes to compete, and has increased the promotion of its more advanced aircraft in an effort to secure contracts from developing countries. China's weapons systems for export seem based upon designs obtained from Russia through previous licensed production programs. Nonetheless, China's likely

client base will be states in Asia and Africa seeking quantities of small arms and light weapons, rather than major combat systems.

China has also been an important source of missiles to some developing countries. For example, China has supplied battlefield and cruise missiles to Iran and surface-to-surface missiles to Pakistan. According to U.S. officials, the Chinese government no longer supplies other countries with complete missile systems. However, Chinese entities are suppliers of missile-related technology. Such activity raises questions about China's willingness to fulfill the government's stated commitment to act in accordance with the restrictions on missile transfers set out in the Missile Technology Control Regime (MTCR). Because China has military products—particularly its missiles—that some developing countries would like to acquire, it can present an obstacle to efforts to stem proliferation of advanced missile systems to some areas of the developing world.<sup>4</sup>

China continues to be the source of a variety of small arms and light weapons transferred to African states. The prospects for significant revenue earnings from these arms sales are limited. China likely views such sales as one means of enhancing its status as an international political power, and increasing its ability to obtain access to significant natural resources, especially oil. The control of sales of small arms and light weapons to regions of conflict, especially to some African nations, has been a matter of concern to the United States and others. The United Nations also has undertaken an examination of this issue in an effort to achieve consensus on a path to curtail this weapons trade comprehensively. During July 2012, the United Nations attempted to reach agreement on the text of an Arms Trade Treaty (ATT), aimed at setting agreed standards for member states regarding what types of conventional arms sales should be made internationally, and what criteria should be applied in making arms transfer decisions. At the end of the month-long period, set aside for negotiations, this effort failed to achieve the necessary consensus on a treaty draft. China, while not a member of the group of U.N. states negotiating the final draft, made it publicly clear that it did not support any treaty that would prevent any state from making its own, independent, national decision to make an arms sale.<sup>5</sup> The U.N. adopted the treaty as a resolution following a vote on April 2, 2013; China and Russia abstained. The treaty entered into force on December 24, 2014. To date, 78 states have ratified the treaty, with the United States as a signatory.

In 2014, Lieutenant General Michael T. Flynn, the former director of the Defense Intelligence Agency, summarized China's arms exports in similar terms:<sup>434</sup>

China is expanding as a supplier of advanced conventional weapons, supplementing its traditional exports of basic battlefield equipment such as small arms, artillery and armored vehicles to include more advanced examples of long-range multiple launch rocket artillery, improved surface to air missile systems and anti-ship cruise missiles, and unmanned aerial vehicles, several of which are armed variants. China's rapid development of new products, aggressive marketing, and relatively low pricing will allow more countries with limited access to advanced weapons to acquire some of these capabilities.

### **Tracking the Trends in Chinese Arms Transfers**

The CRS report has issued an estimate of conventional arms transfers to developing nations based on data provided by U.S. government experts. It is not possible to compare its data directly to those provided by SIPRI, but they reflect similar trends.

The CRS report defines "Developing nations" as excluding the United States, Russia, Europe, Canada, Japan, Australia, and New Zealand. Its data do not specify the quality, sophistication, or even the names of the systems transferred, and the CRS report further explains the data it uses as follows:<sup>435</sup>

All arms transfer and arms delivery data in this report are for the calendar year or calendar year period given. This applies to U.S. and foreign data alike. United States government departments and agencies publish data on U.S. arms transfers and deliveries but generally use the United States fiscal year as the computational time period for these data. As a consequence, there are likely to be distinct differences noted in those published totals using a fiscal year basis and those provided in this report which use a calendar year basis.

The values of arms transfer agreements (or deliveries) in this report refer to the total values of conventional arms orders (or deliveries as the case may be), which include all categories of weapons and ammunition,

military spare parts, military construction, military assistance and training programs, and all associated services.

These tables examine conventional arms deliveries and conventional arms transfer agreements (represents orders for future delivery). All tables present data from 2007 to 2014.

**Figures 8.6 and 8.7** do show that although China's arms transfer agreements are still limited in value when compared to those of other countries, the value of such agreement has grown. Furthermore, they show that almost all Chinese transfer agreements have gone to the developing world – again reflecting the real world limits to Chinese military modernization.

**Figure 8.6: Worldwide Arms Transfer Agreements, 2007-2014 and Suppliers' Share with Developing World (in millions of current 2014 US dollars)**

<b>Supplier</b>	<b>Worldwide Agreements Value 2007-2010</b>	<b>Percentage of Total with Developing World</b>
United States	98178	67.13%
Russia	38300	93.73%
France	20700	87.92%
United Kingdom	13100	92.37%
China	9700	98.97%
Germany	11400	62.28%
Italy	10000	53.00%
All Other European	23700	59.07%
All Others	14000	70.00%
<b>TOTAL</b>	<b>239079</b>	<b>74.41%</b>

<b>Supplier</b>	<b>Worldwide Agreements Value 2011-2014</b>	<b>Percentage of Total with Developing World</b>
United States	152100	75.40%
Russia	46900	88.91%
France	17000	83.53%
United Kingdom	10100	93.07%
China	13000	100.00%
Germany	15400	81.82%
Italy	7900	60.76%
All Other European	29500	75.59%
All Others	19200	78.13%
<b>TOTAL</b>	<b>312400</b>	<b>75.54%</b>

<b>Supplier</b>	<b>Worldwide Agreements Value 2014</b>	<b>Percentage of Total with Developing World</b>
United States	36223	82.22%
Russia	10200	99.02%
France	4400	97.73%
United Kingdom	300	66.67%
China	2200	100.00%
Germany	900	66.67%
Italy	1300	61.54%
All Other European	10700	91.59%
All Others	4300	93.02%
<b>TOTAL</b>	<b>71823</b>	<b>86.02%</b>

Source: U.S. government.

Source: Catherine A. Theohary, *Conventional Arms Transfers to Developing Nations, 2007-2014*, Congressional Research Service, December 21, 2015, p. 23.

*Figure 8.7: Worldwide Arms Transfer Deliveries, 2007-2014 and Suppliers' Share with Developing World (in millions of current 2014 US dollars)*

Supplier	Worldwide Deliveries Value 2007-2010	Percentage of Total to Developing World
United States	45981	67.4%
Russia	24500	96.3%
France	8400	50.0%
United Kingdom	10400	50.0%
China	8900	100.0%
Germany	15900	33.3%
Italy	5000	46.0%
All Other European	21900	43.4%
All Others	27500	21.1%
<b>TOTAL</b>	<b>168481</b>	<b>56.8%</b>

Supplier	Worldwide Deliveries Value 2011-2014	Percentage of Total to Developing World
United States	65934	67.8%
Russia	38300	91.4%
France	15600	53.8%
United Kingdom	11800	49.1%
China	8200	98.8%
Germany	7100	46.5%
Italy	7500	54.7%
All Other European	27400	49.6%
All Others	27900	25.1%
<b>TOTAL</b>	<b>209734</b>	<b>62.0%</b>

Supplier	Worldwide Deliveries Value 2014	Percentage of Total to Developing World
United States	12180	62.8%
Russia	9200	91.3%
France	5100	49.0%
United Kingdom	3000	53.3%
China	1800	100%
Germany	1800	61.1%
Italy	1200	41.7%
All Other European	5900	45.8%
All Others	6600	28.8%
<b>TOTAL</b>	<b>46780</b>	<b>44.0%</b>

Source: U.S. government.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 28.

**Figure 8.8: Arms Transfer Agreements with Developing Nations, by Supplier, 2007-2014 (in millions of constant 2014 US dollars)**

	2007	2008	2009	2010	2011	2012	2013	2014	TOTAL 2007-2014
United States	13,366	30,631	14,819	14,609	58,635	11,805	18,319	29,783	191,967
Russia	10,145	6,048	16,464	7,332	6,233	16,077	10,372	10,100	82,772
France	1,499	6,272	10,276	2,156	4,966	3,008	2,339	4,300	34,816
United Kingdom	11,298	0	1,215	1,294	528	5,912	3,051	200	23,499
China	2,882	2,464	3,315	2,049	3,381	3,527	4,271	2,200	24,088
Germany	1,960	3,360	2,541	108	106	4,979	7,220	600	20,874
Italy	1,268	1,904	1,436	1,294	1,162	1,556	1,424	800	10,844
All Other European	2,306	5,040	5,193	3,019	2,958	6,638	3,356	9,800	38,311
All Others	2,421	2,240	4,641	1,617	3,381	3,112	4,881	4,000	26,293
TOTAL	47,145	57,960	59,902	33,477	81,350	56,613	55,232	61,783	453,463
Dollar inflation Index(2014=1)a	0.8674	0.8928	0.9050	0.9275	0.9465	0.9641	0.9834	1	

Source: U.S. government.

a. Based on Department of Defense Price Deflator

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 30.

**Figure 8.9** demonstrates that Chinese arms transfer agreements with Asia are larger than those to any other region, when measured in dollars. But, **Figure 8.10** shows China has a lead in Africa when the percentage value of total agreements is measured by region.

**Figure 8.9: Percentage of Each Supplier's Agreements Value by Region, 2007-2014**

	Asia		Near East		Latin America		Africa		TOTAL	
	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014
United States	20.26%	20.77%	71.36%	75.74%	4.01%	2.55%	4.37%	0.94%	100.00%	100.00%
Russia	47.63%	43.17%	22.01%	51.32%	25.91%	2.64%	4.46%	2.88%	100.00%	100.00%
France	9.89%	49.65%	38.46%	46.10%	50.00%	2.13%	1.65%	2.13%	100.00%	100.00%
United Kingdom	10.74%	8.51%	88.43%	86.17%	0.83%	4.26%	0.00%	1.06%	100.00%	100.00%
China	42.11%	41.86%	32.63%	13.95%	6.32%	14.73%	18.95%	29.46%	100.00%	100.00%
Germany	46.48%	32.54%	46.48%	64.29%	5.63%	1.59%	1.41%	1.59%	100.00%	100.00%
Italy	42.31%	20.83%	40.38%	66.67%	13.46%	10.42%	3.85%	2.08%	100.00%	100.00%
All Other European	37.86%	26.46%	40.71%	32.29%	15.00%	32.29%	6.43%	8.97%	100.00%	100.00%
All Others	65.31%	43.54%	11.22%	36.05%	16.33%	12.24%	7.14%	8.16%	100.00%	100.00%
Major West European <sup>a</sup>	20.19%	31.54%	54.23%	63.33%	24.18%	3.42%	1.41%	1.71%	100.00%	100.00%
TOTAL	30.81%	29.30%	49.48%	60.06%	14.94%	6.60%	4.77%	4.04%	100.00%	100.00%

Source: U.S. government.

a. Major West European category includes France, United Kingdom, Germany, and Italy.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 33.

**Figure 8.10: Percentage of Total Agreements Value by Supplier to Regions, 2007-2014**

	Asia		Near East		Latin America		Africa	
	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014
United States	24.39%	32.89%	53.48%	58.51%	9.96%	17.90%	33.94%	10.77%
Russia	31.23%	24.86%	8.98%	14.41%	35.03%	6.74%	18.87%	12.03%
France	3.29%	9.67%	7.96%	4.38%	34.28%	1.84%	3.54%	3.01%
United Kingdom	2.37%	1.10%	12.17%	5.46%	0.38%	2.45%	0.00%	1.00%
China	7.31%	7.46%	3.53%	1.21%	2.26%	11.64%	21.23%	38.10%
Germany	6.03%	5.66%	3.75%	5.46%	1.51%	1.23%	1.18%	2.01%
Italy	4.02%	1.38%	2.39%	2.16%	2.64%	3.06%	2.36%	1.00%
All Other European	9.68%	8.15%	6.48%	4.85%	7.91%	44.11%	10.62%	20.05%
All Others	11.69%	8.84%	1.25%	3.57%	6.03%	11.03%	8.26%	12.03%
Major West European <sup>a</sup>	15.71%	17.81%	26.27%	17.45%	38.80%	8.58%	7.08%	7.02%
<b>TOTAL</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

Source: U.S. government.

a. Major West European category includes France, United Kingdom, Germany, and Italy.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p.34.

In terms of deliveries, **Figure 8.11** shows that China is supplying arms primarily to developing countries, though the value of those transferred arms is relatively low. Moreover, between 2007 and 2014, China only provided a small percentage of all the conventional arms delivered to the developing world, according to **Figure 8.12**. The value of delivered arms per year has fluctuated greatly between 2007 and 2014, as shown by **Figure 8.13**.

**Figure 8.11: Arms Deliveries to Developing Nations, by Supplier, 2007-2014 (in millions of current US dollars)**

	2007	2008	2009	2010	2011	2012	2013	2014	2007-2014
United States	7,712	6,924	8,081	8,263	8,081	8,295	20,645	7,654	75,365
Russia	5,200	6,400	5,400	6,600	8,400	9,400	8,800	8,400	58,600
France	1,000	800	700	1,700	1,100	2,200	2,600	2,500	12,600
United Kingdom	1,100	1,300	1,200	1,600	1,500	1,100	1,600	1,600	11,000
China	1,700	2,200	1,800	3,200	1,700	2,100	2,500	1,800	17,000
Germany	600	1,400	1,900	1,400	1,200	900	100	1,100	8,600
Italy	200	200	600	1,300	1,400	1,400	800	500	6,400
All Other European	1,600	2,300	2,500	3,100	4,700	3,100	3,100	2,700	23,100
All Others	900	1,000	1,900	2,000	2,200	1,700	1,200	1,900	12,800
<b>TOTAL</b>	<b>12,377</b>	<b>15,669</b>	<b>16,080</b>	<b>20,982</b>	<b>22,280</b>	<b>21,983</b>	<b>20,906</b>	<b>20,576</b>	<b>150,853</b>

Source: U.S. government.

Note: Developing nations category excludes the United States, Europe, Canada, Japan, Australia, and New Zealand. All data are for the calendar year given except for U.S. MAP (Military Assistance Program), IMET (International Military Education, and Training), and Excess Defense Article data, which are included for the particular fiscal year. All amounts given include the values of all categories of weapons, spare parts, construction, all associated services, military assistance, excess defense articles, and training programs. Statistics for foreign countries are based upon estimated selling prices. All foreign data are rounded to the nearest \$100 million.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 41.

**Figure 8.12: Arms Deliveries to Developing Nations, by Supplier, 2007-2014 (expressed as a percent of total, by year)**

	2007	2008	2009	2010	2011	2012	2013	2014
United States	38.54%	30.74%	33.56%	28.33%	26.69%	27.47%	49.93%	27.19%
Russia	42.01%	40.84%	33.58%	31.46%	37.70%	42.76%	42.09%	40.82%
France	8.08%	5.11%	4.35%	8.10%	4.94%	10.01%	12.44%	12.15%
United Kingdom	8.89%	8.30%	7.46%	7.63%	6.73%	5.00%	7.65%	7.78%
China	13.74%	14.04%	11.19%	15.25%	7.63%	9.55%	11.96%	8.75%
Germany	4.85%	8.93%	11.82%	6.67%	5.39%	4.09%	0.48%	5.35%
Italy	1.62%	1.28%	3.73%	6.20%	6.28%	6.37%	3.83%	2.43%
All Other European	12.93%	14.68%	15.55%	14.77%	21.10%	14.10%	14.83%	13.12%
All Others	7.27%	6.38%	11.82%	9.53%	9.87%	7.73%	5.74%	9.23%
Major West European <sup>a</sup>	23.43%	23.61%	27.36%	28.60%	23.34%	25.47%	24.39%	27.70%
<b>TOTAL</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>	<b>100.00%</b>

Source: U.S. government.

a. Major West European category includes France, United Kingdom, Germany, and Italy.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 43.

**Figure 8.13** demonstrates the importance of the Asian arms market to China, with arms deliveries to Asia making up about half of all Chinese deliveries in 2007-2010 and 2011-2014. China did not have the lead in terms of the value of delivered arms to Africa between 2007 and 2014. Nevertheless, China delivered a substantial amount of conventional arms to Africa during these years.

**Figure: 8.13: Percentage of Supplier Deliveries Value by Region, 2007-2014**

**Table 18. Percentage of Supplier Deliveries Value by Region, 2007-2014**

	Asia		Near East		Latin America		Africa		TOTAL	
	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014	2007-2010	2011-2014
United States	27.72%	40.55%	20.97%	15.44%	21.51%	18.67%	29.79%	25.35%	100.00%	100.00%
Russia	52.97%	50.29%	31.78%	29.43%	13.14%	17.14%	2.12%	3.14%	100.00%	100.00%
France	52.38%	19.05%	35.71%	64.29%	9.52%	11.90%	2.38%	4.76%	100.00%	100.00%
United Kingdom	31.37%	28.57%	52.94%	67.86%	5.88%	3.57%	9.80%	0.00%	100.00%	100.00%
China	53.41%	50.00%	27.27%	23.75%	5.68%	7.50%	13.64%	18.75%	100.00%	100.00%
Germany	53.85%	25.00%	28.85%	65.63%	5.77%	9.38%	11.54%	0.00%	100.00%	100.00%
Italy	36.36%	46.34%	45.45%	29.27%	4.55%	21.95%	13.64%	2.44%	100.00%	100.00%
All Other European	40.00%	14.42%	23.16%	41.35%	18.95%	23.08%	17.89%	21.15%	100.00%	100.00%
All Others	56.90%	65.71%	12.07%	10.00%	24.14%	12.86%	6.90%	11.43%	100.00%	100.00%
Major West European <sup>a</sup>	44.31%	27.70%	40.12%	58.69%	6.59%	11.27%	8.98%	2.35%	100.00%	100.00%
<b>TOTAL</b>	<b>49.12%</b>	<b>41.12%</b>	<b>30.23%</b>	<b>36.24%</b>	<b>12.31%</b>	<b>15.07%</b>	<b>8.33%</b>	<b>7.56%</b>	<b>100.00%</b>	<b>100.00%</b>

Source: U.S. government.

a. Major West European category includes France, United Kingdom, Germany, and Italy.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 45.



Figures 8.14 to 8.16 show how the types of conventional arms China exports into each region compared with the exports of other countries. Chinese arms exports to the Near East and Africa consisted primarily of artillery, APCs, and armored cars. The Asian market also received artillery, APCs, and armored cars in addition to large numbers of surface-to-air missiles and smaller numbers of tanks and self-propelled guns.

**Figure 8.14: Numbers of Weapons Delivered by Suppliers to Developing Nations, 2007-2014**

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
<b>2007-2010</b>						
Tanks and Self-Propelled Guns	635	720	500	390	440	40
Artillery	274	50	420	130	540	1,050
APCs and Armored Cars	244	430	820	560	1,770	550
Major Surface Combatants	0	0	3	15	4	6
Minor Surface Combatants	0	10	98	57	40	98
Guided Missile Boats	0	2	0	0	7	0
Submarines	0	1	0	5	0	0
Supersonic Combat Aircraft	60	170	40	50	90	70
Subsonic Combat Aircraft	0	0	20	50	20	80
Other Aircraft	74	10	120	30	140	20
Helicopters	50	230	20	120	60	70
Surface-to-Air Missiles	532	7,290	1,730	670	721	270
Surface-to-Surface Missiles	0	20	0	0	0	20
Anti-Ship Missiles	142	190	80	60	40	20
<b>2011-2014</b>						
Tanks and Self-Propelled Guns	104	530	140	170	550	20
Artillery	230	170	130	20	730	650
APCs and Armored Cars	419	860	430	960	840	410
Major Surface Combatants	0	5	5	7	4	2
Minor Surface Combatants	0	6	45	68	76	85
Guided Missile Boats	0	0	2	2	0	11
Submarines	0	3	0	2	0	1
Supersonic Combat Aircraft	48	130	20	20	60	50
Subsonic Combat Aircraft	0	0	0	40	0	20
Other Aircraft	58	20	50	80	220	40
Helicopters	2	340	30	170	30	40
Surface-to-Air Missiles	835	9,420	1,390	350	420	910
Surface-to-Surface Missiles	0	90	0	50	0	0
Anti-Ship Missiles	144	180	80	230	0	40

Source: U.S. government.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 53.

**Figure 8.15: Numbers of Weapons Delivered by Suppliers to Asia and the Pacific**

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
<b>2007-2010</b>						
Tanks and Self-Propelled Guns	115	340	230	100	50	0
Artillery	111	50	200	10	90	30
APCs and Armored Cars	25	160	140	120	610	100
Major Surface Combatants	0	0	3	5	4	4
Minor Surface Combatants	0	8	16	4	2	38
Guided Missile Boats	0	2	0	0	0	0
Submarines	0	0	0	3	0	0
Supersonic Combat Aircraft	18	110	20	20	0	30
Subsonic Combat Aircraft	0	0	20	40	0	20
Other Aircraft	0	10	60	20	60	10
Helicopters	8	70	10	30	10	20
Surface-to-Air Missiles	135	1,400	1,620	270	0	270
Surface-to-Surface Missiles	0	10	0	0	0	10
Anti-Ship Missiles	132	150	80	10	0	0
<b>2011-2014</b>						
Tanks and Self-Propelled Guns	24	230	90	30	10	10
Artillery	83	10	20	20	120	50
APCs and Armored Cars	0	410	0	540	250	20
Major Surface Combatants	0	5	5	2	0	1
Minor Surface Combatants	0	6	2	23	0	18
Guided Missile Boats	0	0	2	0	0	2
Submarines	0	2	0	2	0	1
Supersonic Combat Aircraft	0	110	10	0	10	30
Subsonic Combat Aircraft	0	0	0	40	0	10
Other Aircraft	20	0	20	50	100	10
Helicopters	0	250	10	50	20	10
Surface-to-Air Missiles	429	310	460	230	130	340
Surface-to-Surface Missiles	0	20	0	0	0	0
Anti-Ship Missiles	122	110	80	60	0	0

Source: U.S. government.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 54.

*Figure 8.16: Numbers of Weapons Delivered by Suppliers to Near East*

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
<b>2007-2010</b>						
Tanks and Self-Propelled Guns	460	310	60	0	80	10
Artillery	134	0	120	100	290	50
APCs and Armored Cars	180	240	160	130	820	200
Major Surface Combatants	0	0	0	0	0	0
Minor Surface Combatants	3	0	0	30	22	19
Guided Missile Boats	0	0	0	0	7	0
Submarines	0	1	0	0	0	0
Supersonic Combat Aircraft	34	40	0	20	60	0
Subsonic Combat Aircraft	0	0	0	0	0	0
Other Aircraft	44	0	20	0	20	0
Helicopters	28	30	0	30	0	30
Surface-to-Air Missiles	397	4,210	0	400	400	0
Surface-to-Surface Missiles	0	10	0	0	0	10
Anti-Ship Missiles	0	40	0	50	30	20
<b>2011-2014</b>						
Tanks and Self-Propelled Guns	80	190	0	0	60	10
Artillery	147	20	50	0	240	20
APCs and Armored Cars	419	40	0	280	430	140
Major Surface Combatants	0	0	0	5	3	0
Minor Surface Combatants	0	0	0	13	33	1
Guided Missile Boats	0	0	0	0	0	0
Submarines	0	1	0	0	0	0
Supersonic Combat Aircraft	32	10	0	20	20	0
Subsonic Combat Aircraft	0	0	0	0	0	0
Other Aircraft	19	20	0	10	60	10
Helicopters	0	40	0	70	0	20
Surface-to-Air Missiles	406	5,410	650	120	20	270
Surface-to-Surface Missiles	0	70	0	50	0	0
Anti-Ship Missiles	20	70	0	170	0	40

Source: U.S. government.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 55.

*Figure 8.17: Numbers of Weapons Delivered by Suppliers to Africa*

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
<b>2007-2010</b>						
Tanks and Self-Propelled Guns	60	20	210	0	310	30
Artillery	0	0	100	0	80	970
APCs and Armored Cars	0	30	480	150	110	180
Major Surface Combatants	0	0	0	0	0	0
Minor Surface Combatants	0	0	80	3	4	29
Guided Missile Boats	0	0	0	0	0	0
Submarines	0	0	0	2	0	0
Supersonic Combat Aircraft	8	0	20	0	20	20
Subsonic Combat Aircraft	0	0	0	10	20	0
Other Aircraft	0	0	20	10	20	0
Helicopters	0	70	10	40	40	10
Surface-to-Air Missiles	0	120	0	0	290	0
Surface-to-Surface Missiles	0	0	0	0	0	0
Anti-Ship Missiles	0	0	0	0	0	0
<b>2011-2014</b>						
Tanks and Self-Propelled Guns	0	20	50	0	480	0
Artillery	0	0	60	0	300	580
APCs and Armored Cars	0	10	420	140	120	250
Major Surface Combatants	0	0	0	0	1	0
Minor Surface Combatants	0	0	43	22	37	55
Guided Missile Boats	0	0	0	2	0	9
Submarines	0	0	0	0	0	0
Supersonic Combat Aircraft	16	10	10	0	20	0
Subsonic Combat Aircraft	0	0	0	0	0	10
Other Aircraft	0	0	20	10	20	10
Helicopters	0	20	10	10	10	0
Surface-to-Air Missiles	0	0	280	0	240	300
Surface-to-Surface Missiles	0	0	0	0	0	0
Anti-Ship Missiles	0	0	0	0	0	0

Source: U.S. government.

Source: Catherine A. Theohary, Conventional Arms Transfers to Developing Nations, 2007-2014, Congressional Research Service, December 21, 2015, p. 57.

## ***Arms Trade and Technology Transfer: The Role of Espionage***

China's modernization has also been shaped by one of the most extensive efforts in industrial espionage in military history—an effort whose success has had a broad impact on many of the key weapons developments and military technology efforts described in the following chapters. The close relationship between the Chinese government and its domestic military industrial sector has meant that China has made extensive use of industrial espionage. China also uses its private sector to directly advance its military and national security priorities. The U.S. Department of Defense has provided detailed timelines of key Chinese espionage activities.

The DoD annual report on China for 2013 focused on the key role such efforts play in Chinese military modernization.<sup>436</sup>

China uses a large, well-organized network of enterprises, defense factories, affiliated research institutes, and computer network operations to facilitate the collection of sensitive information, export-controlled technologies, and basic research and science supporting U.S. defense system modernization. Many of the organizations making up China's military-industrial complex have both military and civilian research and development functions.

This network of government-affiliated companies and research institutes often enables the PLA to either access, transfer, or purchase sensitive and dual-use technologies or maintain contact with knowledgeable U.S. and foreign experts under the guise of civilian research and development. Chinese defense enterprises and research institutes target technology conferences and symposia, legitimate contracts and joint commercial ventures, partnerships with foreign firms, and joint development projects to obtain specific technologies or military capabilities.

The DoD reports for 2013, 2014, and 2015 identified many specific incidents from 2010 onwards. The 2013 report stated that:<sup>437</sup>

As in previous years, China utilized its intelligence services and employed other illicit approaches that involve violations of U.S. laws and export controls to obtain key national security technologies, controlled equipment, and other materials not readily obtainable through commercial means or academia. Based on investigations conducted by the law enforcement agencies of the Department of Defense, Department of Justice, Department of Homeland Security, and Department of Commerce, China continues to engage in activities designed to support military procurement and modernization. These include economic espionage, theft of trade secrets, export control violations, and technology transfer.

In August 2010, Noshir Gowadia was convicted of providing China with classified U.S. defense technology. This assisted China in developing a low-signature cruise missile exhaust system capable of rendering a cruise missile resistant to detection by infrared missiles.

In September 2010, Chi Tong Kuok was convicted for conspiracy to illegally export U.S. military encryption technology and smuggle it to Macau and Hong Kong. The relevant technology included encryption, communications equipment, and Global Positioning System (GPS) equipment used by U.S. and NATO forces.

In September 2010, Xian Hongwei and Li were arrested in Hungary and later extradited to the United States for conspiring to procure thousands of radiation-hardened Programmable Read-Only Microchips, classified as defense items and used in satellite systems, for the China Aerospace and Technology Corporation. Both defendants pleaded guilty and were sentenced in September 2011 to two years in prison.

In January 2012, Yang Bin was arrested in Bulgaria and later extradited to the United States based on a December 2011 criminal indictment related to the attempted export of military-grade accelerometers used in "smart" munitions, aircraft, and missiles.

In July 2012, Zhang Zhaowei, a naturalized Canadian citizen, was arrested while entering the United States, based on a sealed January 2011 indictment alleging Zhang attempted to illegally acquire and export military gyroscopes used in unmanned aerial systems and for tactical missile guidance.

In September 2012, Zhang Mingsuan was arrested in the United States and indicted after attempting to acquire up to two tons of aerospace-grade carbon fiber. In a recorded conversation, Zhang claimed he urgently needed the fiber in connection with a scheduled Chinese fighter plane test flight.

The 2014 report added more events to this timeline.<sup>438</sup>

In December 2012, federal prosecutors indicted Chinese nationals Yuan Wanli and Song Jiang for export-control and money laundering violations in connection with a scheme to obtain U.S. dual-use programmable logic devices tested to military specifications. While operating from China, Yuan used a fake website and e-mail addresses created using the name of a legitimate New York-based company to conceal his identity and mislead U.S. suppliers. Yuan is associated with China Wingwish Group Co., Ltd., a China-based company involved in the procurement of dual-use technology.

In March 2013, Chinese national Liu Sixing received 70 months in prison for lying to Federal agents, transporting stolen property, and violating the Arms Export Control Act, the International Traffic in Arms Regulations, and the Economic Espionage Act. Despite his training in U.S. export control laws, Liu stole thousands of files from his U.S. employer in 2010 detailing the performance and design of guidance systems for missiles, rockets, target locators, and unmanned aerial vehicles and transported them to China. While there, Liu delivered presentations describing the technology at several Chinese universities, the Chinese Academy of Sciences, and conferences organized by Chinese government entities.

In May 2013, Chinese national Ma Lisong pled guilty to violating the International Emergency Economic Powers Act after attempting to export weapon-grade carbon fiber to China. Based in China and using an alias, Ma e-mailed a U.S. undercover agent in February 2013 and negotiated the purchase of five tons of export-controlled carbon fiber. Authorities arrested Ma in the United States after he attempted to ship a sample he requested back to China.

In August 2013, Chinese national Zhang Mingsuan pled guilty to violating the International Emergency Economic Powers Act by attempting to export thousands of pounds of high-grade carbon fiber for use by the Chinese military. During a recorded conversation in 2012, Zhang claimed he urgently needed the fiber in connection with a scheduled test flight of a Chinese fighter plane.

In addition, multiple cases identified since 2009 involved non-ethnic Chinese U.S. citizens and naturalized Chinese U.S. citizens or permanent resident aliens procuring and exporting export controlled items to China. These efforts included attempts to procure and export radiation-hardened programmable semiconductors and computer circuits used in satellites, restricted microwave amplifiers used in weapon guidance systems and communications or radar equipment, high-grade carbon fiber, export-restricted technical data, and thermal imaging cameras.

So did the 2015 report.<sup>439</sup>

In October 2013, a Federal grand jury returned a seven-count indictment against Chinese national, Liu Yi, for unlawfully accessing and disclosing trade secrets from a U.S. technology company. Liu, a former employee, allegedly used a laptop provided by the company during his employment to access and download information related to technology the company was developing for possible use in U.S. nuclear submarines and fighter aircraft.

In December 2013, Chinese national Zhang Mingsuan received 57 months in jail for violating the International Emergency Economic Powers Act by attempting to export thousands of pounds of high-grade carbon fiber for use by the Chinese military. During a recorded conversation in 2012, Zhang claimed he urgently needed the fiber in connection with the scheduled test flight of a Chinese fighter plane.

In July 2014, Chinese national Cai Bo pled guilty to violating the Arms Export Control Act and the International Traffic in Arms Regulations while attempting to export sensors primarily manufactured for the U.S. Department of Defense. Beginning in March 2012, Cai—employed by a Chinese technology company at the time—conspired with his cousin Chinese national Cai Wenhong to smuggle the sensors out of the United States for a Chinese customer.

In August 2014, a Federal grand jury returned a five-count indictment of Chinese national Su Bin related to a computer hacking scheme involving the theft of trade secrets from U.S. defense contractors. The indictment alleges Su worked with unindicted co-conspirators in China to infiltrate U.S. computer systems and obtain information related to U.S. military programs such as the C-17, F-22, and F-35.

In addition, multiple U.S. criminal indictments and investigations since 2009 involved non-ethnic Chinese U.S. citizens and naturalized Chinese U.S. citizens or permanent resident aliens procuring and exporting controlled items to China. These included efforts to acquire and transfer sensitive or military-grade equipment such as radiation-hardened programmable semiconductors and computer circuits, restricted microwave amplifiers, high-grade carbon fiber, export-restricted technical data, and thermal imaging cameras.

And, the 2016 DoD report:<sup>440</sup>

China uses a variety of methods to acquire foreign military and dual-use technologies, including cyber activity and exploitation of the access of Chinese nationals—such as students or researchers—acting as procurement agents or intermediaries. China very likely uses its intelligence services and employs other illicit approaches that violate U.S. laws and export controls to obtain key national security and export-restricted technologies, controlled equipment, and other materials unobtainable through other means.

In November 2014, U.S. authorities arrested a named Chinese national employed by a U.S. defense contractor enroute to China with sensitive proprietary documents containing equations and test results used in the development of technologically advanced titanium for U.S. military aircraft. Earlier, after the individual returned from a trip to China in August 2014, U.S. Customs and Border Protection officers found the individual in possession of undeclared cash, Chinese corporation-establishment documents, and a mostly-completed application for a Chinese state-controlled aviation and aerospace research center. The application claimed work on the engines for the U.S. F-22 and F-35 fighter aircraft.

In May 2015, U.S. authorities arrested Chinese national Zhang Hao based on a 32 count indictment charging Zhang and five other named Chinese defendants with economic espionage and the theft of trade secrets. The indictment alleged Zhang and the other co-conspirators stole source codes, specifications, design layouts, and other documents related to thin-film bulk acoustic resonator (FBAR) dual-use technology from U.S. companies. The stolen material supported the creation of a Chinese FBAR fabrication facility and joint venture providing FBARs to commercial and military entities.

In addition, multiple U.S. criminal indictments and investigations since 2009 involve non-ethnic-Chinese U.S. citizens and naturalized Chinese U.S. citizens or permanent resident aliens procuring and exporting controlled items to China. These activities included efforts to acquire and to transfer sensitive or military-grade equipment such as radiation-hardened programmable semiconductors and computer circuits, restricted microwave amplifiers, high-grade carbon fiber, export-restricted technical data, and thermal imaging systems.

As with most covert initiatives it is likely that this is just the visible tip of the iceberg, and that there are additional attempts both successful and unsuccessful.<sup>441</sup>

### ***The Shape of the Modernization to Come***

The preceding chapters have already explained the strategic and doctrinal rationales for many aspects of Chinese military modernization. The following chapters explore the details by service and key military missions. This chapter has shown that China is seeking to match its training to the modernization of its tactics and technology, and the broad impact of its imports and sales of weapons and technology.

Unfortunately, there is no clear way to summarize the scale and nature of the changes taking place in China's military research and development and procurement efforts, the scale of the changes in its military industrial base, and the costs of such efforts. As noted earlier, seeking progress in complex operations and joint operations is not the same as making it, and training does not

necessarily substitute for combat experience. What does seem clear is that China is firmly committed to seeking peer status with the U.S. and Russia in overall modernization, and that this will pose a steadily growing challenge over time.



## CHAPTER 9: THE PLA ARMY

The PLAA has steadily reduced its overall force size, and focused on developing modern capabilities and systems in critical areas of the future battlefield. Since the mid-1980s China has steadily restructured its forces to rely more on quality and modernization rather than quantity and these trends have continued in recent years.

In September 2015 Xi Jinping announced the intention to cut PLA personnel by 300,000 before 2017. The expectation is that the PLAA and ground forces will make up a good portion of the cut. Taylor Fravel of MIT notes, “Ground forces will likely face the brunt of the reduction, but in the past reductions have been used to streamline layers of command and bureaucracy within the P.L.A.”<sup>442</sup>

One key goal behind these changes has been to improve the PLAA’s ability to fight “Local War under Conditions of Informatization” by increasing its ability to move quickly, deliver devastating blows without relying on sheer mass, and defend itself from enemy electronic warfare (EW) and air attacks. As a result, the PLAA is more capable of responding to regional contingencies on the Eurasian mainland than it was in the past.

There are some parallels in these Chinese changes with those in the U.S. The U.S. armed forces are reducing ground forces and modernizing air and naval forces. This is a result of Washington shifting its strategic focus away from deploying large ground forces in the Iraq and Afghanistan wars and instead emphasizing strategic partnerships and the capability to fight a potential near-peer conflict.

**Figure 9.1** below shows the DoD’s estimate of the PLAA’s current strength. **Figure 9.2** provides a DoD map of the deployment of the PLAA Group Armies that was issued in April 2015. According to Lieutenant General Vincent R. Stewart:<sup>443</sup>

China’s People’s Liberation Army (PLA) is building a modern military capable of defending China’s “core interests” of preserving its political system, protecting territorial integrity and sovereignty (China views these to include Taiwan and other contested claims to land and water), and ensuring sustainable economic and social development. The PLA remains focused on transforming the army into a fully mechanized force. The PLA is converting its divisions into brigades to increase lethality and improve combat capabilities. China’s national-level training focus has been on brigade-level exercises that stress unit combat mission capabilities under realistic conditions, long distance mobility, and command and control. We expect these trends to continue.

The PLAA has also been affected by the new round of PLA reforms that began at the start of 2016. The 2016 DoD report states:<sup>444</sup>

In late 2015, the PLA began to establish a headquarters for its ground forces, creating a separate PLA Army (PLAA) service. Previously, leadership of ground units was integrated into the PLA’s four general departments, which were each represented on the CMC.

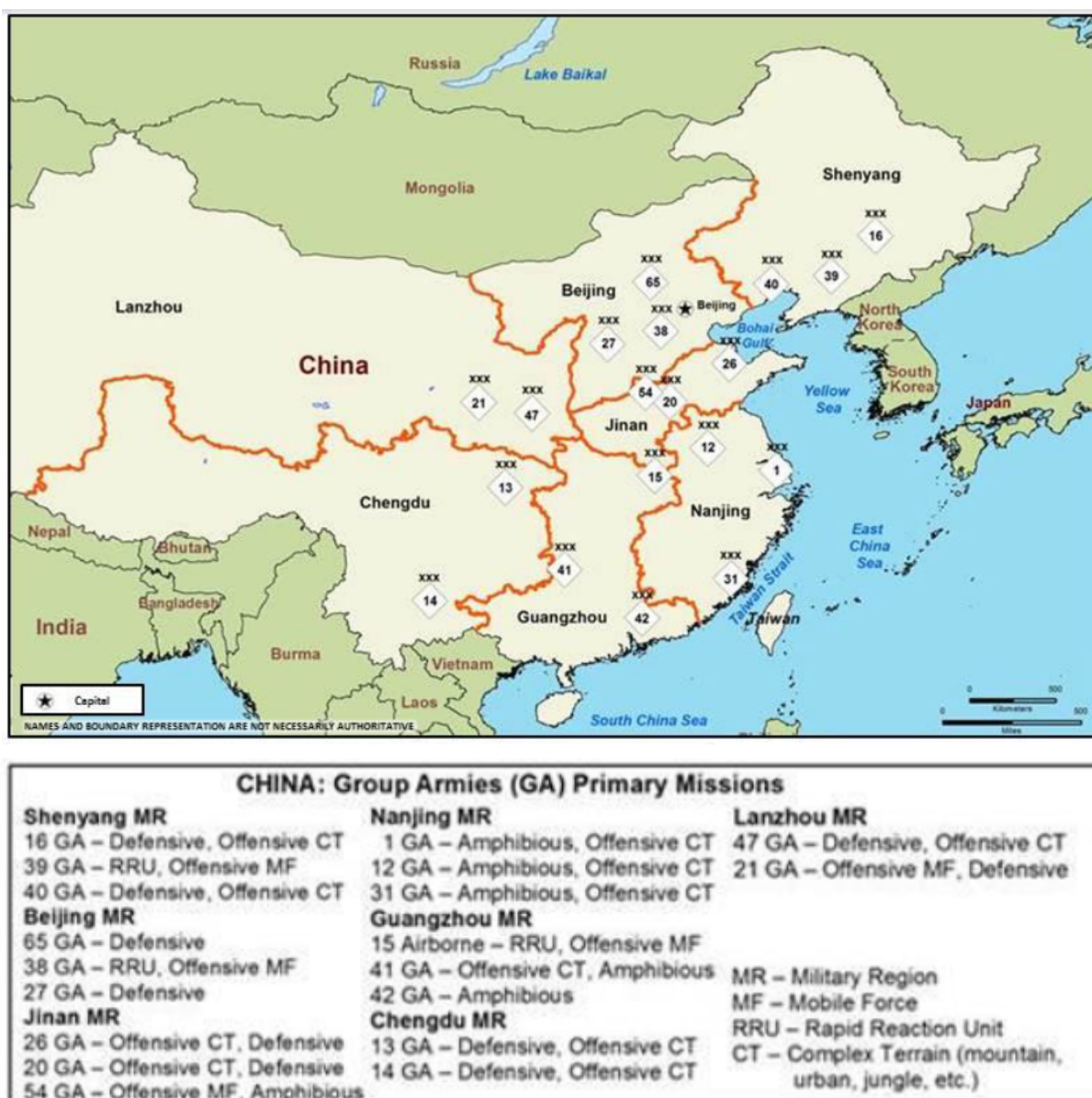
*Figure 9.1: PLAA Force Strength in 2015*

China	
	<i>Total</i>
<b>Personnel (Active)</b>	1.25 million
<b>Group Armies/Army Corps</b>	18
<i>Infantry Divisions</i>	12
<i>Infantry Brigades</i>	23
<i>Mechanized Infantry Divisions</i>	7
<i>Amphibious Mechanized Infantry Divisions</i>	2
<i>Mechanized Infantry Brigades</i>	25
<i>Armor Divisions</i>	1
<i>Armor Brigades</i>	17
<i>Amphibious Armor Brigades</i>	1
<i>Army Aviation Brigades and Regiments</i>	11
<i>Artillery Brigades</i>	22
<i>Airborne Divisions</i>	3
<i>Marine Brigades</i>	2
<b>Tanks</b>	7,000
<b>Artillery Pieces</b>	8,000

Note: PLA ground forces are organized into Group Armies. Infantry, armor, and artillery units are organized into a combination of divisions and brigades deployed throughout the PLA's seven military regions.

Source: DoD, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2016*, April 2016, 107.

**Figure 9.2: Deployment of PLAA Group Armies**



Source: DoD, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2015*, April 2015.

## *Shifts in Force Structure*

**Figure 9.3** provides a more detailed picture of the key changes in PLAA force structure, and equipment. The open source data on these shifts has significant uncertainties and is often in conflict. It also is not possible to tie it to the specific changes in the order of battle, force deployments, and roles and missions of given elements of the PLAA with any accuracy. Nevertheless, **Figure 9.3** is almost certainly correct in reflecting the broad trends involved and their overall impact on the PLAA.

The first is a nearly 50% reduction in Group Armies (GAs) within the PLAA. This reduction coincides with a significant decrease in army divisions within the PLAA, much of which can be accounted for by the nearly 100% reduction in infantry, artillery, and air defense divisions. In addition, there have been moderate reductions in motorized and armored divisions. The two exceptions to this general trend have been the development of a moderate increase in mechanized divisions and air defense reserve divisions.

The reductions in large unit formations also coincide with significant increases in smaller formations such as brigades and specialized regiments. Although reliable data before 1995 on brigade numbers within the PLAA are not available, the trends since 1995 indicate moderate increases in armored and mechanized brigades, as well as significant increases in motorized, artillery, and AD brigades. In addition, there have been considerable increases in the number of specialized signals regiments, and, despite a decline earlier in the 2000s, there are also significant numbers of engineering regiments. These changes indicate that mechanization and specialization have increased relatively within the PLAA.

**Figure 9.3** also shows the decreasing number of large formations such as divisions, especially infantry divisions, and the simultaneously increasing number of smaller units, such as brigades and specialized regiments.

These general trends toward smaller forces and specialization indicate that the PLAA has and is reforming itself to meet the demands of winning “Local War under Conditions of Informatization.” The reduction of larger formations, the increase of smaller and specialized formations, and the reduction in the number of GAs all enable the creation of a leaner, more agile, and more mobile force capable of quickly moving from one Military Region (MR) within China to a contingency on any of China’s borders. This skill would better enable the PLAA to win local contingencies which, according to the Local Wars construct, would be immediate instances of conflict that would be limited in time and place: the goal of the PLAA would be to create the circumstances needed for a Chinese victory at the negotiating table, for which speed is a requirement of political success.

**Figure 9.3: PLA Ground Forces Force Structure, 1985-2015**

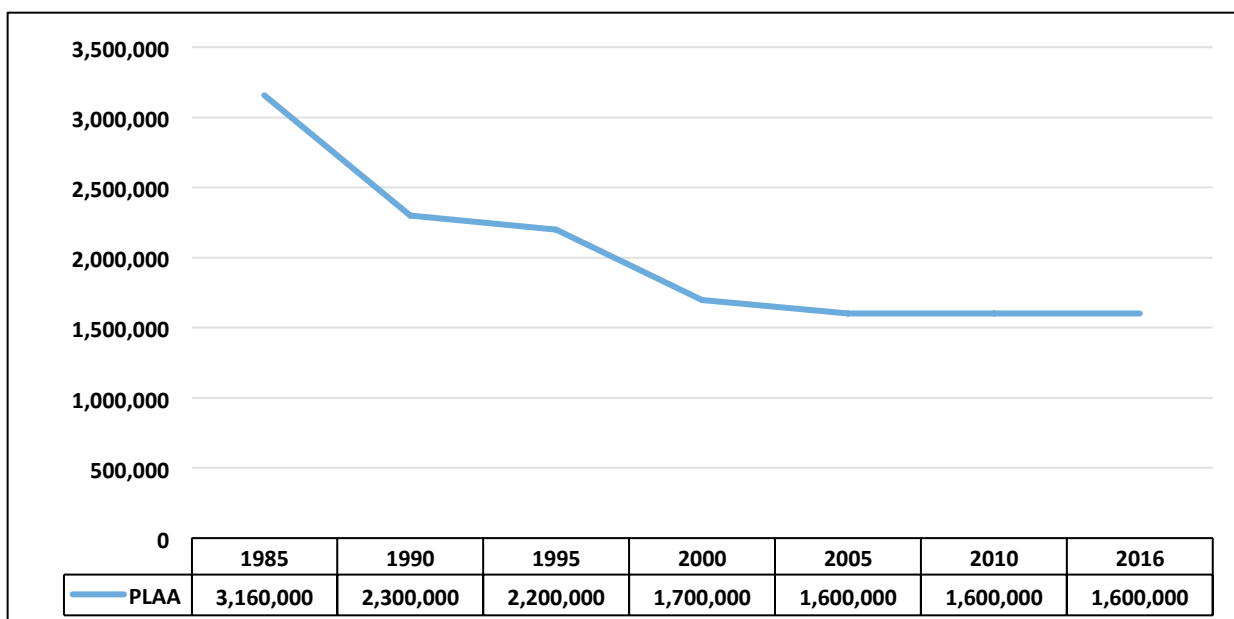
Army Combat Units							
	1985	1990	1995	2000	2005	2010	2016
Army Group	35	24	24	21	18	18	18
Armored Division	13	10	10	10	9	8	1
Infantry Division	118	80	78	44	15	0	0
Mechanized Infantry Division	?	?	2	7	5	8	7
Motorized Infantry Division	?	?	0	0	24	15	11
Amphibious Assault Division	?	?	0	0	2	2	2
Artillery Division	17	some	5	5	7	2	0
Air-Defense Artillery Division	16	16	0	0	0	0	0
Armored Brigade	?	?	2	12	12	8	16
Mechanized Infantry Brigade	?	?	0	?	1	7	20
Motorized Infantry Brigade	?	?	0	?	22	21	20
Infantry Brigade	?	?	0	13	0	0	0
Artillery Brigade	some	?	0	20	14	16	19
Air-Defense Artillery Brigade	?	?	5	4	12	?	?
Anti-Tank Brigade	?	?	0	0	1	0	0
Air-Defense Brigade	some	some	0	0	9	21	22
Anti-Tank Regiment	?	?	0	0	4	0	0
Helicopter Regiment	?	2 groups	some	7	0	0	0
Engineer Regiment	51	50	15	0	0	15	19
EW Regiment	0	0	0	0	0	0	10
Signals Regiment	21	?	0	0	0	50	50
Army Reserves							
	1985	1990	1995	2000	2005	2010	2016
Infantry Division	?	30+	?	50 inf, arty, AD, 100 inf, arty reg	30	?	18
Air-Defense Division	?	?	?	some	13	?	17
Logistic Support Brigade	?	?	?	?	7	?	9
Artillery Division	?	?	?	some	3	?	3

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Jane's. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

### ***Shifts in Personnel***

As noted in Chapter 7, these changes in force structure have been matched by changes in PLAA personnel. **Figure 9.4** shows that there has been a nearly 50% reduction in PLAA Personnel since 1985. These cuts in personnel, in combination with the increase in specialized and smaller formations, indicates a PLAA focus on agility and mobility over mass, a shift that necessitates higher human capital and higher quality equipment. In addition, reducing personnel reduction has cut personnel and overall costs in ways that free resources for modernization efforts and improvements in human capital.

**Figure 9.4: Historical Trends in Total PLAA Personnel, 1985-2015**



	1985	1990	1995	2000	2005	2010	2015
<b>Personnel</b>	9,000,000+	4,230,000	4,130,000	3,570,000	4,655,000	3,455,000	3,503,000
<b>Active</b>	4,000,000	3,120,000	3,020,000	2,470,000	2,355,000	2,285,000	2,333,000
<b>Conscript</b>	?	1,350,000	1,275,000	1,000,000	990,000	?	?
<b>Army</b>	3,160,000	2,300,000	2,200,000	1,700,000	1,600,000	1,600,000	1,600,000
<b>Navy</b>	350,000	260,000	260,000	220,000	255,000	255,000	235,000
<b>Air Force</b>	490,000	470,000	470,000	420,000	400,000	330,000	398,000
<b>Strategic Missile Forces</b>	?	90,000	90,000	100,000+	100,000	100,000	100,000
<b>Paramilitary</b>	?	incl. in reserve	1,200,000	1,100,000	1,500,000	660,000	660,000
<b>Reserve</b>	5,000,000	1,200,000 (Paramil.)	?	500-600,000	800,000	510,000	510,000

Source: IISS *Military Balance*, 1985-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

### ***Trends in Equipment***

Total manning, however, is a marginal measure of force quality at best – a fact confirmed by how rarely force ratios in personnel have shaped the outcome of operations relative to strategy, tactics, leadership, force organization, training, and technology.

**Figure 9.5** provides data on the shifts in PLAA equipment holdings from 1985-2016.<sup>445</sup> It shows that there have been significant improvements and the introduction of newer classes of weapons and upgrades to existing models in almost all critical categories of weapons, including Main Battle Tanks (MBTs), Armored Infantry Fighting Vehicles (AIFVs), Armored Personnel Carriers (APCs), self-propelled artillery, and Air Defense (AD) weaponry. Other key equipment trends include the retirement of vintage Soviet systems and the deployment of advanced 90s-type MBTs, AIFV/APCs, self-propelled artillery, and self-propelled AD systems.

**Figure 9.5** also helps illustrate the impact of consistent movement away from a large force dependent on masses of personnel and lower quality weaponry to a smaller force reliant on better-trained personnel and improving weapon systems. The balance between modern and non-modern equipment is shown in later figures.



*Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part One*

Army Equipment							
	1985	1990	1995	2000	2005	2010	2016
<b>MAIN BATTLE TANKS</b>	8,550	7,500-8,000	7,500-8,000	7,060	7,580	6,550	6,540
T-34	some	0	700	0	0	0	0
T-54	some	some	some	0	0	0	0
Type-59/59D/59-II	some	6,000	6,000	5,500	5,000	4,000+	3,050
Type-69-I	some	200	200	150	0	0	0
Type-79	0	some	some	500	300	300	200
Type-80	0	some	some	0	0	0	0
Type-85	0	some	some	0	0	0	0
Type-88A/88B/88C	0	0	0	900	1,000	500	300
Type 96/96A	0	0	0	0	1,200	1,500	2,200
Type 96G	0	0	0	0	0	0	0
Type 98A/99	0	0	0	10+	80	250	540
Type-99A2	0	0	0	0	0	0	250
<b>LIGHT TANKS/RECCE</b>	?	2,000	2,000	2,000	1,000	1,000	900
Type-05 AAV	?	?	?	?	?	?	250
Type-62	some	1,200	800	800	400	400	250
Type-63/63A	some	800	1,200	1,200	600	400	150
Type-09	0	0	0	0	0	0	250
<b>AIFV</b>	?	some	some	4,800+	1,000	1,140	3,950
Type-03	0	0	0	0	0	40	0
Type-04/04A	0	0	0	0	0	300	850
Type-05	?	0	0	some	1,000	200	300
Type-86/86A	?	0	0	some	1,000	600	1,250
Type-92	0	0	0	0	0	0	550
Type-92B	0	0	0	0	0	0	600
<b>Armored Personnel Carrier</b>	2,800	2,800	2,800	5,500	3,500+	3,300+	5,020
Type-531C/D/E	some	some	some	0	0	0	0
YW-534	0	some	some	0	0	0	0
Type-85 (Type 89 or	0	some	some	0	0	0	0
Type-55 (BTR-40)	some	some	some	0	0	0	0
Type-56 (BTR-152)	Some	some	some	0	0	0	0
Type-09	0	0	0	0	0	100	120
Type-63	some	some	some	1,800	2,300	2,000	2,400
Type-89I	0	0	0	some	300	300	1,750
Type-77II	0	0	0	some	200	200	0
Type-92 (WZ 551)	0	0	0	some	600+	600+	700
Type-93	0	0	0	0	0	0	50
WZ-523/553	0	0	0	some	100	100	0
<b>BMD-3</b>	0	0	0	100	0	0	0

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

*Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part Two*

Army Equipment							
	1985	1990	1995	2000	2005	2010	2016
<b>ARTILLERY</b>	<b>12,800</b>	<b>14,500+</b>	<b>14,500+</b>	<b>15,800+</b>	<b>17,700+</b>	<b>17,700+</b>	<b>13,178+</b>
<i>Towed</i>	some	14,500	14,500	12,000	14,000	14,000	6,140
<u>85mm</u> Type-56	some	0	0	0	0	0	0
<u>100mm</u>	some	some	some	some	some	some	0
Type-59 (M-1944)	?	some	some	some	some	some	0
Type-89	0	some	some	0	0	0	0
<u>122mm</u>	some	some	6,000	some	some	some	3,800
Type-54-1 (M-30)	some	some	some	some	some	some	some
Type-60 (D74)	some	some	some	some	some	some	some
Type-83	0	some	some	some	some	some	some
Type-96 (D-30)	some	some	some	0	0	some	some
<u>130mm- Type 59/59-I (M-46)</u>	Some	some	1,000	some	some	some	234
<u>152mm</u>	some	some	1,400+	some	some	some	2,106
Type-54 (D1)	0	some	some	some	some	some	some
Type-56	some	0	0	0	0	0	0
Type-66 (D20)	some	some	1,400	some	some	some	some
Type-83	0	some	some	some	0	0	0
<u>155mm- Type-88 WAC-21</u>	0	0	30	300+	150	150	0
	<b>1985</b>	<b>1990</b>	<b>1995</b>	<b>2000</b>	<b>2005</b>	<b>2010</b>	<b>2016</b>
<i>Self-Propelled</i>	some	some	some	1,200	1,200	1,280+	2,280
<u>122mm</u>	some	some	some	some	700	700+	1,600
Type-53I	some	0	0	0	0	0	0
Type-54I	0	some	some	0	0	0	0
Type-70I	0	0	0	some	200	200	0
Type-85	0	0	some	0	0	0	0
Type-89	0	0	0	some	500	500	700
Type-07/07B	0	0	0	0	0	some	450
Type-09	0	0	0	0	0	0	300
<u>152mm- Type-83A/B</u>	0	some	some	some	500	500	390
<u>155mm- Type-05</u>	0	0	0	0	0	50	290

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part Three**

Army Equipment							
	1985	1990	1995	2000	2005	2010	2016
<b>Multiple Rocket Launcher</b>	4,500	3,800	3,800	2,500	2,400+	2,400+	1,872+
<u>107mm</u>	some	some	some	0	0	some	some
Type-63 (towed)	some	some	some	0	0	some	54
Type-63 (self-propelled)	0	0	0	0	0	0	some
<u>122mm</u>	some	some	some	some	some	some	1,643
Type-63	some	0	0	0	0	0	0
Type-81	0	some	some	some	some	some	1,250
Type-83	0	some	some	0	0	0	0
Type-89 (self-propelled)	0	0	0	some	some	some	375
Type-10	0	0	0	0	0	0	18
<u>130mm</u>	some	some	some	some	some	some	0
Type-63	some	some	some	0	0	some	0
Type-70 (self-propelled)	0	some	some	some	some	some	0
Type-82	0	0	some	some	some	some	0
Type-85	0	0	some	0	0	0	0
<u>132mm- BM-13-16</u>	some	some	some	0	0	0	0
<u>140mm- BM-14-16</u>	some	some	some	0	0	0	0
<u>180mm</u>	some	0	0	0	0	0	0
<u>273mm- Type-83</u>	0	some	some	some	some	0	0
<u>284mm- Type-74 minelayer</u>	0	some	some	0	0	0	0
<u>300m- Type-03</u>	0	0	0	0	0	some	175
<u>320mm- Type-96 (WS-1)</u>	some	some	some	some	some	0	0
<u>400mm- WS-2/WS-2D</u>	0	some	some	0	0	some	0
<u>425mm- Type-762 mine clearance</u>	0	some	some	0	0	0	0

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 9.5: PLA Major Weapons and Equipment, 1985-2016 – Part Four**

	1985	1990	1995	2000	2005	2010	2016
<i>Gun/Mortar</i>	some	some	some	some	some	some	2,886
<u>81mm-</u> Type-W87	0	0	0	some	some	some	0
<u>82mm</u>	some	some	some	some	some	some	some
Type-53 (M-37)	some	some	some	some	some	some	some
Type-67	0	0	0	some	some	some	some
Type-82	0	0	0	some	some	some	some
Type-84	0	some	0	0	0	0	0
Type-87	0	0	0	0	0	0	Some
YW-304 (self-propelled)	0	some	0	0	0	0	0
<u>100mm</u>	0	0	0	some	some	some	some
Type-71	0	0	0	some	some	some	0
Type-89	0	0	0	0	0	0	some
<u>120mm</u>	some	some	some	some	some	some	300
Type-55	some	some	some	some	some	some	0
Type-W86	0	some	0	0	0	0	0
2S23 NONA-SVK	0	0	0	0	0	100	0
Type-05 (PLL-05)	0	0	0	0	0	50	200
Type-05A (PLZ-05A)	0	0	0	0	0	0	100
<u>160mm-</u> Type-56 (M-160)	some	some	some	some	some	some	0

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## ***Trends in MBTs, AIFV/APCs, Artillery, and Multiple Rocket Launchers (MRLs)***

**Figures 9.6 and 9.7** supplement the data in **Figure 9.5** by showing the historical changes in the PLAA's inventory of MBTs, AIFV/APCs, Artillery, and Multiple Rocket Launchers (MRLs). These systems have been chosen to illustrate the trends in total PLAA weapons holdings both because they are integral to any land force's combat power and because there exist consistent data on Chinese holdings of these systems. While it would be useful to include PLAA AD holdings, there simply are not enough data on AD to meaningfully analyze it quantitatively.

- **Figure 9.6** shows that the number of MBTs and MRLs in the PLAA have dropped significantly since 1985, and the number of artillery pieces has also significantly dropped since its peak in 2010. In contrast, the number of AIFV/APCs has markedly increased during this time period, an outcome that is unsurprising given the increased mechanization within the PLAA's force structure.
- **Figure 9.7** compares PLAA weapon system numbers to the size of the PLAA's modern weapons system inventory. Such a comparison is necessary in order to better ascertain the PLAA's combat power as well as to track its development towards a force capable of winning Local Wars.

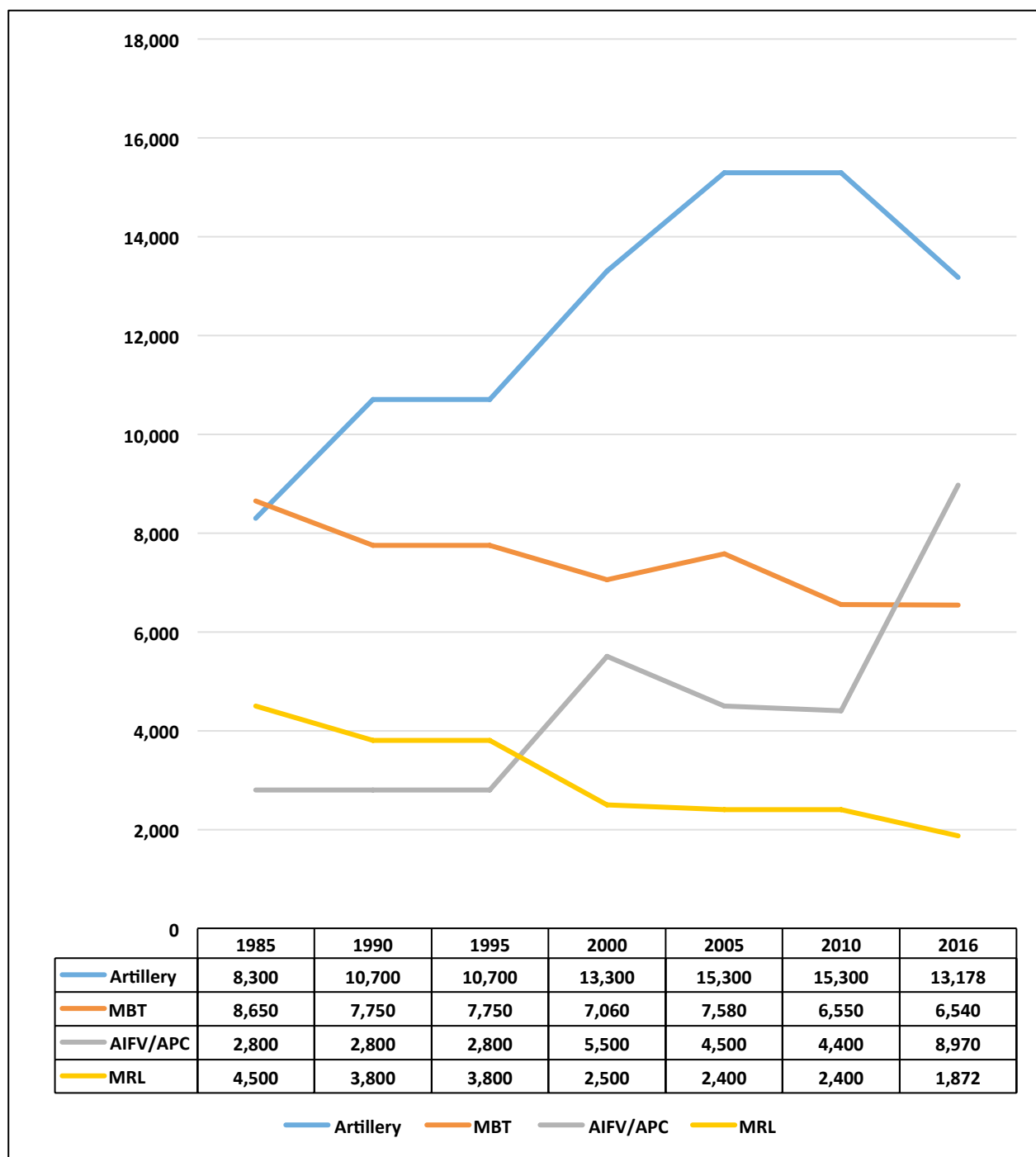
As **Figure 9.7** shows, the relative reduction in major PLA weapons systems shown in **Figure 9.6** coincides with an overall increase in the number of modern systems in the PLAA inventory. Consequently, the PLAA, while reducing its overall force size, is replacing large numbers of its obsolete equipment with much more capable systems.

The weapons systems considered modern are defined as follows:

- Modern MBTs are tanks with sufficient armor, firepower, and electronics to hold third generation or near-third generation capabilities. Third generation tanks have composite and reactive armor, typically fire rounds of 120 mm or larger, and have gun-stabilizers and advanced fire control electronics.
- Modern AIFV/APCs are personnel carriers capable of keeping pace with third generation tanks and surviving in a comparable battlefield environment.
- Self-propelled artillery comprises artillery pieces that are built into motorized chassis and capable of movement without the aid of supporting vehicles.
- MRLs are generally not differentiated between towed and self-propelled because reliable data on self-propelled MRLs are not available.

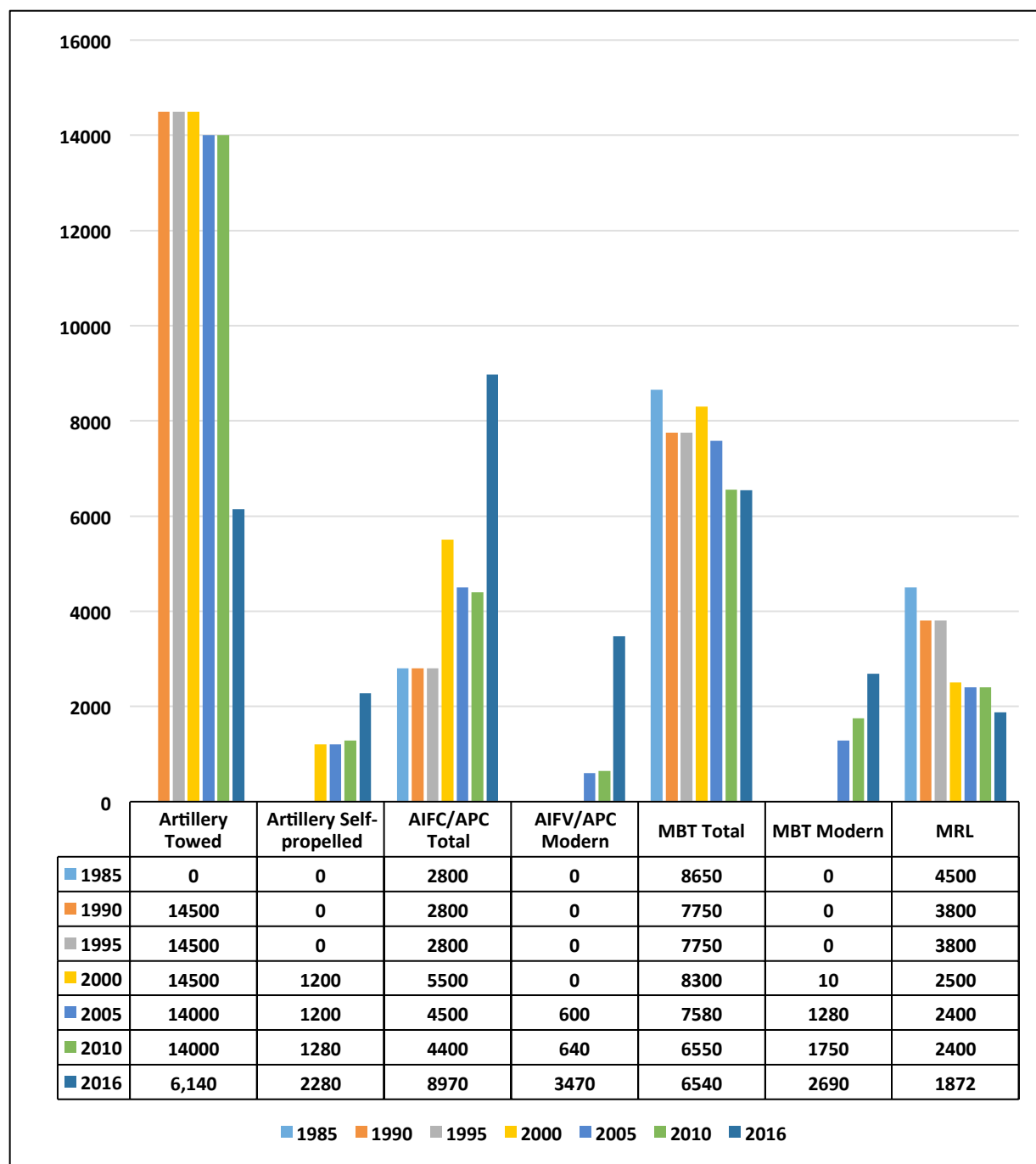
This practice has implications for the PLAA's tactics and strategy. The Local Wars concept requires the PLAA to rapidly overwhelm a regional adversary before political dynamics end the conflict. Moreover, in that short time, the PLAA must obtain the military advantages necessary to ensure success in subsequent negotiations. A more modern force, especially one with modern equipment concentrated into elite units with an increasing capability to conduct integrated joint operations, enables the PLAA to conduct this type of warfare while still in the process of modernization. In fact, the DoD's *Military and Security Developments Involving the People's Republic of China 2016* indicated that the PLAA was deploying its modern weaponry in this manner, through joint exercises, preparing the PLAA for a Taiwan invasion scenario.<sup>446</sup>

**Figure 9.6: Summary Trends in PLA Major Weapon System Inventory, 1985-2016**



Source: IISS *Military Balance*, 1985-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 9.7: Historical PLAA Equipment Inventory of Major Weapon Systems, 1985-2016**



Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## *Equipment Modernization*

The modernization of the PLAA's major weapons system has occurred through a combination of discarding obsolete equipment and procuring modern, information technology-enabled equipment. The major effect has been to mechanize a force once heavily comprised of infantry and motorized forces and to integrate weaponized information technology into mechanized systems.

The PLAA's efforts to develop third generation armored systems, as well as high-end MBTs in the Type-99, have led to concentrations of powerful armored formations. These concentrations of modern combat power, especially in the regions opposite Korea and Taiwan as well as in Beijing, are seen by some military analysts as forming quick reaction forces for the most likely contingencies the PLAA may have to face.<sup>447</sup>

- **Figure 9.8** displays the PLAA's procurement of modern main weapon systems. The procurement began with artillery in 1995 and included MBTs and AIFV/APCs in 2000. Over the last two decades, the modernization of the PLAA has continued at a sustained pace.
- **Figure 9.9** provides indicators of the PLAA's modernization progress. As the data indicate, the PLAA has experienced a sharp rise in the percentage of its equipment that is considered modern. Approximately 52% of all artillery is self-propelled, 41% of MBTs are third generation, and 40% of AIFV/APCs are modern. These numbers are in stark contrast to 0%, 0.1%, and 0%, respectively, in the year 2000. Consequently, the PLAA has engaged in an effective modernization program that has significantly increased the modern equipment of the PLAA, significantly altering the composition of the PLAA.

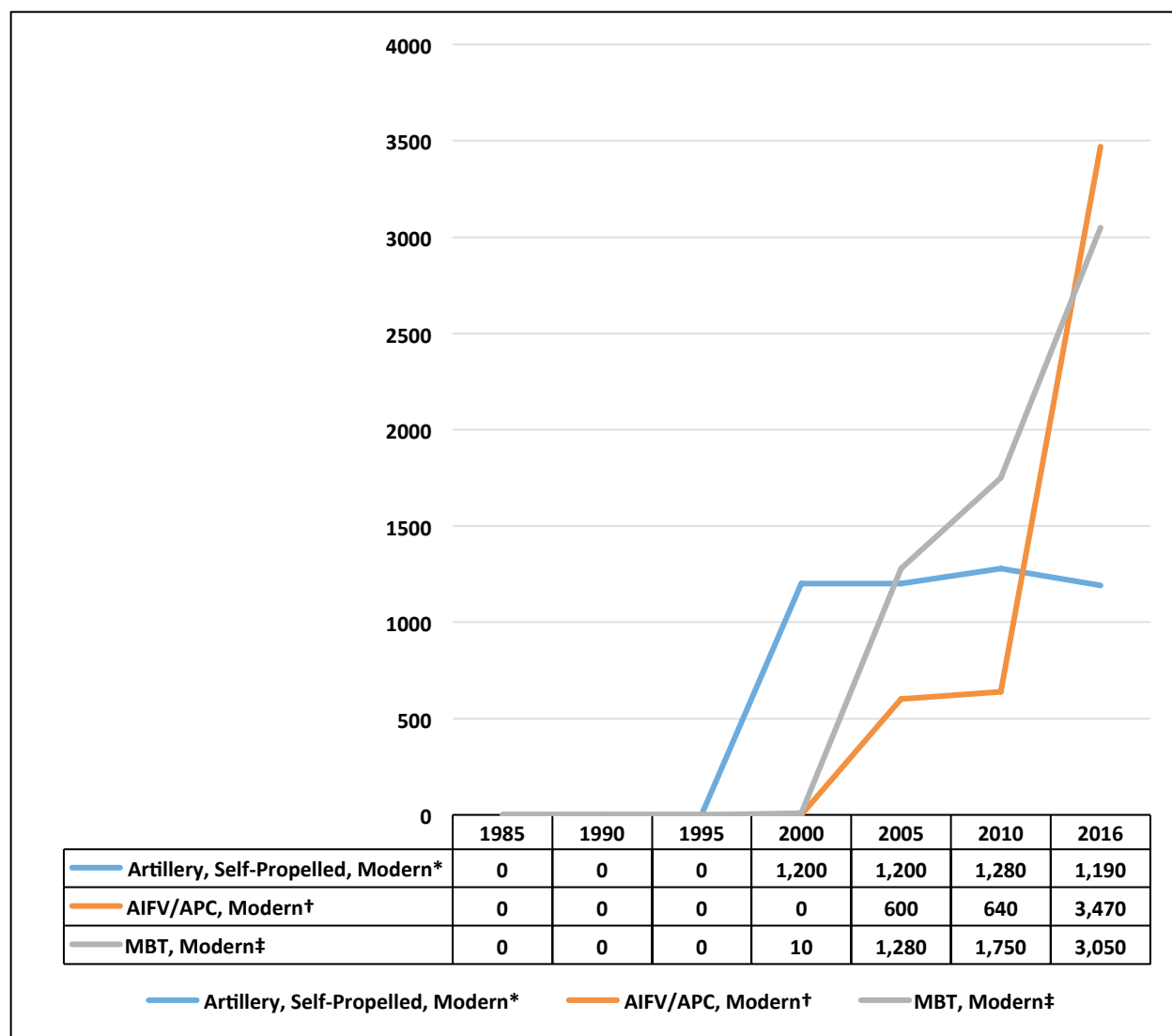
The PLAA's ability to successfully fight Local Wars, as well as its combat power, is strongly affected by the composition of its ground force. This metric enables the observer to track PLAA modernization progress, determine how much or which part of the PLAA is capable of fighting Local Wars, and, in turn, observe indicators of the PLA's total combat power. However, it is important to reiterate that quantitative measures do not show the intangibles of leadership, morale, training, and combat skill and thus, alone, cannot provide a full picture of combat power.

In the case of the PLAA, a relatively more modern force, assuming the personnel manning that force have been adequately trained and led, enables more demanding strategic and tactical maneuvers and battle plans. The ability to rapidly shift MRs and then fight in a border region in good order requires excellent communications, reliable equipment, and potent combat power concentrated in relatively smaller formations.

Moreover, given the time sensitivity predicted by the Local Wars construct, it is unlikely that slow-moving, obsolete secondary or tertiary echelons will reach the battlefield in time to determine diplomatic outcomes. Consequently, the level of modernization of the PLAA has direct effects both on the combat power of the PLAA and also on the types of missions it can conduct and the number of adversaries it can simultaneously fight or deter.



**Figure 9.8: Historical Trends in the PLAA's Modern Major Weapon Inventory, 1985-2016**



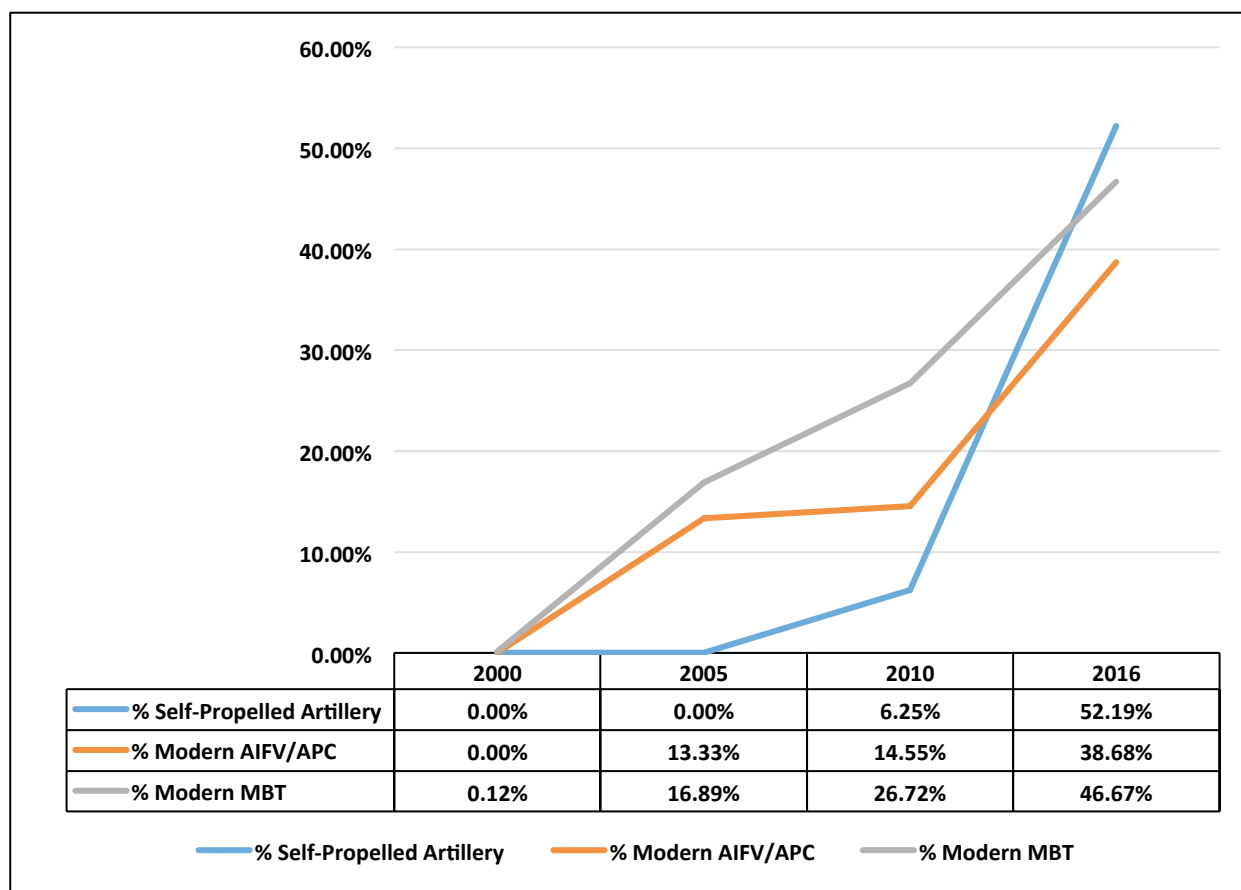
\*The following systems are considered modern: Type 07 (PLZ-07), Type 07B (PLZ-07B), Type 09 (PLC-09), Type 09 (PLL-09), Type 05 (PLZ-05)

†The following systems are considered modern: Type 04 (ZBD-04), Type 04A (ZBD-04A), Type 05 AAAV (ZBD-05), Type 09 (ZBL-09), Type-09A (ZBL-09A), Type 89, and Type 93.

‡The following systems are considered modern: Type 96, Type 96A, Type 98, Type 99, Type 99A

Source: IISS, *Military Balance* 1985-2016.

**Figure 9.9: Pace of PLAA Modernization – Percent of Modern Weapon Systems, 2000-2016**



Source: IISS, *Military Balance* 2000-2016.

### The US Official View of PLAA Modernization

The DoD's 2014 report on China provided the following assessment of the impact of this modernization:<sup>448</sup>

Although preparing for potential conflict in the Taiwan Strait remains the focus and primary driver of China's military modernization program, steadily increasing tensions in the East China and South China Seas, along with growing interests and influence abroad, have caused a substantial uptick in the PLA's preparations for a range of missions beyond China's immediate periphery.

China is investing in military programs and weapons designed to improve extended-range power projection and operations in emerging domains such as cyberspace, space, and electronic warfare. Current trends in China's weapons production will enable the PLA to conduct a range of military operations in Asia well beyond China's traditional territorial claims. Key systems that either have been deployed or are in development include ballistic missiles (including anti-ship variants), anti-ship and land-attack cruise missiles, nuclear submarines, modern surface ships, and an aircraft carrier. The need to ensure trade, particularly oil supplies from the Middle East, has prompted the PLA Navy to join international counterpiracy operations in the Gulf of Aden.

Tensions with Japan over maritime claims in the East China Sea and with several Southeast Asian claimants to all or parts of the Spratly and Paracel Islands in the South China Sea have increased. In the coming years, instability on the Korean Peninsula could produce a regional crisis involving China's military. The desire to protect energy investments in Central Asia, along with potential security implications from cross-border

support to ethnic separatists, could provide an incentive for military investment or intervention in this region if instability surfaces.

In addition to developing new capabilities to protect security and energy interests regionally, China's political leaders have charged the PLA with developing capabilities for missions in non-traditional security areas, such as peacekeeping, humanitarian assistance/disaster relief, and counterterrorism operations. Then-President Hu Jintao's 2004 announcement of the PLA's "New Historic Missions," for example, promoted: increased PRC participation in UN peacekeeping missions; greater PLA involvement in humanitarian assistance/disaster relief exercises; deployment of China's ANWEI-class military hospital ship (the PEACE ARK) throughout East Asia and to the Caribbean; PLA participation in four joint military exercises with SCO members, the most prominent being the PEACE MISSION series, with China and Russia as the main participants; and China's continued counterpiracy deployments to the Gulf of Aden that began in December 2008.

The following year, the 2015 DoD report provided further background on the modernization of PLA missions, capabilities, and potential force utilization:<sup>449</sup>

The PLA continues its long-term investment in its ground forces, focusing on creating the ability to fight and win land wars against modern, well-equipped, and trained enemy forces. 2014 saw continued emphasis on increasing PLA Army ability to deploy operational campaign-level forces across long distances quickly. PLA Army modernization continues to focus on expanded special operations forces (SOF); improved rotary-wing army aviation with precision-guided munitions (including dedicated air-to-air missiles for helicopter-to-helicopter aerial combat); and C2 capabilities with improved networks providing real-time data sharing within and between units.

Production and fielding of improved, increasingly standardized PLA Army wheeled and tracked armored vehicles, advanced air defense systems and electronic warfare (EW) capabilities continues as well. Advanced long-range artillery systems, both conventional and rocket artillery, as well as supporting target acquisition systems continue to enter the force, providing PLA Army tactical- and operational-level units with world-class long-range strike capabilities.

The 2015 DoD report also described the impact of such modernization on the role of the PLA Army in a Taiwan conflict:<sup>450</sup>

Increasingly armed with more modern systems such as armed attack helicopters, the PLA Army is conducting joint training exercises that will prepare them for a Taiwan invasion scenario. The PLA Army often conducts training, including amphibious landing training, under realistic conditions, including all-weather and at night. Improved networks provide real-time data transmissions within and between units, enabling better C2 during operations. Additionally, the PLA Army's ongoing fielding of advanced air defense equipment is significantly enhancing the self-defense of key C2 elements and other critical assets assessed as likely tasked for potential use against Taiwan. As the number of these new systems grows in the PLA Army, the ability of an amphibious invasion force to defend cross-strait amphibious lodgments successfully against counterattacks by both legacy and advanced weaponry will inevitably increase.

The 2016 DoD report added the following further detail regarding PLAA updates:<sup>451</sup>

In November 2015, the PLA established a separate Army headquarters for its ground forces. The CMC creation in late 2015 of a separate Army headquarters set the conditions for joint operations by leveling the status of the services. This change has required an alteration in the organization of theater commands, which for the first time are establishing separate subordinate theater army headquarters to lead their ground components.

Other aspects of PLAA modernization continued in 2015. The PLA also continued to modernize and to restructure its ground force to create a fully modern army capable of fighting and winning multiple simultaneous regional land wars as the core element of a national joint force. In 2015, the PLAA emphasized mobility exercises across MRs, the mechanization of combat brigades, the creation of high-mobility infantry and combined-arms battalions, and the delivery of advanced command, control, communication, computers, and intelligence (C4I) equipment that provides real-time data-sharing at the division and brigade level. Modernization also involves improved rotary-wing army aviation with precision-guided munitions (including

dedicated air-to-air missiles for helicopter-to-helicopter aerial combat). The PLAA continued to field tracked and wheeled artillery systems, wheeled anti-tank guns, anti-tank guided missiles, wheeled and tracked armored vehicles, and air defense systems which incorporate advanced target-acquisition capabilities. Advanced long-range artillery systems—conventional and rocket—as well as supporting target-acquisition systems continued to enter the force, providing PLAA tactical- and operational-level units with world-class, long-range strike capabilities.

China is also improving the PLA's capability to conduct civil operations. The 2015 DoD report described the PLA's continued use of military operations other than war (MOOTW):<sup>452</sup>

The PLA continues to emphasize Military Operations Other Than War (MOOTW) including emergency response, counter-terrorism, international rescue, HA/DR, peacekeeping, and various other security tasks. China's 2013 Defense White Paper supports the use of its military for these purposes as means of adapting to new changes of security threats and emphasizing the employment of armed forces in peacetime. These missions clearly support the "New Historic Missions" while giving the PLA opportunities to strengthen overseas and domestic operational and mobilization capabilities as well as enhance civil-military relations.

According to Chinese media, between 2008 and 2014, the PLA employed more than 2.4 million active-duty forces, roughly 7.82 million militia and reservists, and more than 6,700 aircraft sorties for MOOTW. During the Haiti earthquake crisis in 2010, China donated millions of dollars and provided a search-and-rescue team, medicine, medical staff, and equipment. HARMONIOUS MISSION 2013 conducted medical port calls in Brunei, Maldives, Pakistan, India, Bangladesh, Burma, Indonesia, and Cambodia. Also in 2013, China engaged in successful maritime security cooperation counter-piracy exercises in the GOA, comprised of PLA Navy combatants, as well as helicopters and a Special Forces element.

In November 2013, the PLA hosted a two-day domestic HA/DR tabletop exercise. China also deployed its hospital ship to the Philippines in November 2013 following Typhoon Haiyan. The PLA Navy's and the CCG's 2014 search and rescue efforts as part of the MH370 recovery are unprecedented. 2014 also marked the first year China participated in the RIMPAC exercise; during the exercise the PLA Navy's hospital ship conducted personnel exchanges, military medicine exchanges, medical evacuation and mass casualty training.

Additionally, the PLA continues to support UN PKO and participate in military exercises as a member of the SCO. Increased emphasis of MOOTW provides the PLA experience with joint operations and various command and control scenarios. Depending on the nature of the operation, PLA resources for MOOTW can be under the control of local commanders or directed at the highest levels of civilian and military leadership, allowing the PLA to respond rapidly to unexpected events.

And, the 2016 DoD added more information on military operations other than war (MOOTW):<sup>453</sup>

The PLA continues to prepare for military operations other than war (MOOTW) including emergency response, counterterrorism, international rescue, HA/DR, PKO, and various other security tasks. China's 2015 DWP noted the PLA will continue to incorporate MOOTW into its readiness preparations and vision of modernization. In practice, the military shares many of these missions with the People's Armed Police (PAP), a domestically-oriented paramilitary force.

In 2015, the PLA sent more than 1,000 personnel to contribute to HA/DR in Nepal following a powerful earthquake there in April. The PLA characterized the operation as China's largest-ever deployment of armed forces personnel abroad for humanitarian aid. Last year, the PLA also supported 10 UN PKO and continued to participate in several bilateral and multilateral military exercises focused on MOOTW.

### **The Japanese Official View of PLAA Modernization**

The 2016 Japanese white paper provided a similar summary description of the ongoing changes in the PLA:<sup>454</sup>

The size of the Chinese ground forces is the largest in the world with approximately 1.6 million personnel. Since 1985, China has continuously sought to modernize its armed forces by curtailing the number of personnel<sup>49</sup> and streamlining organizations and systems in order to improve efficiency. China aims to develop highly capable military forces, while reducing units inferior in equipment and technologies.

Specifically, it is improving mobility by such measures as switching from the past regional-defense model to a nationwide-mobile model, working to motorize and mechanize its infantry. China is also believed to be strengthening its airborne troops (belonging to the Air Force), amphibious forces, and special operations forces and helicopter units. China undertakes efforts to make its military units multifunctional, to build a command system for improvement of its joint operational capabilities and efficient operations, and carries out reforms to improve its logistical support capabilities.

Since 2009, China has annually conducted mobile exercises that cut across multiple military regions such as Stride 2009, Mission Action (2010-2013), and Stride and Firepower (2014-). These are aimed at verifying and improving such capabilities necessary for deployment of Army units to distant areas, specifically as capabilities for the Army's long-distance maneuver<sup>50</sup> and for logistical support including mobilization of militia and public transportation. Furthermore, the Navy and Air Force reportedly took part in Mission Action 2013, and since 2014, have conducted combined military branch and service exercises under Joint Action. These suggest that China intends to improve joint operational capabilities as well.

### ***Shifts in Training, Readiness, and the Capability to “Fight Local Wars”***

The PLAA's investments in technology, human resources, and a modern force structure not only improve its ability to fight wars “under conditions of informatization,” but increases its ability to quickly maneuver forces throughout the country in response to regional contingencies. These shifts in force structure, personnel, and equipment indicate an active PLAA effort to become capable of winning Local Wars. The same is true of reductions in large formations, the development of smaller and more specialized formations, the reduction in Personnel, and the increasing modernity of the PLAA's equipment.

Moreover, the PLAA is supporting these tangible aspects of military modernization with the necessary advances in doctrine and training. The quantitative data presented indicate that, while the PLAA has yet to establish a truly modern force, it has made decisive efforts to transform itself and improve its ability to respond to regional contingencies. However, it is important to note that the effects of these modernization efforts have not been evenly spread across the PLAA. For example, the 2011 DoD report on China noted that, “much of the observed upgrade activity has occurred in units with the potential to be involved in a Taiwan contingency.”<sup>455</sup>

Quantitative comparisons cannot provide all of the indicators needed to adequately judge intangible qualities such as combat skill, leadership, and morale, and therefore cannot alone predict PLAA capabilities. However, the data do provide indicators that chart the development of the PLAA and the trends that influence its ability to fight Local Wars. These indicators – force structure, Personnel, and equipment – point to the conclusion that the PLAA is becoming more capable of fulfilling the missions demanded by the Local Wars doctrine.

The last decade has also seen significant changes in PLAA training that indicate a shift towards more realistic training, joint operations, and trans-and multi-MR operations; the latter two are capabilities needed to fulfill the requirements of the Local Wars doctrine. The most recent edition of the *Outline of Military Training and Evaluation* has promoted unscripted training based on facing an opposition force,<sup>456</sup> and multiple PLAA exercises during the decade required forces to mobilize across long distances that involved multiple MRs.

The U.S. DoD described one large-scale PLAA exercise, Mission Action 2010, as follows,<sup>457</sup>

In October 2010, the PLA conducted its first Group Army-level exercise, which it called MISSION ACTION (SHIMING XINGDONG). The primary participants from the Beijing, Lanzhou, and Chengdu Military Regions practiced maneuver, ground-air coordination, and long-distance mobilization via military and

commercial assets as they transited between MRs. Given that these MRs are located along China's land borders, the exercise scenario was likely based on border conflict scenarios. In addition to providing large-scale mobility and joint experience, the exercise allowed PLA command staff to test their ability to plan and execute a large joint campaign while practicing communication between command elements across dispersed forces. This skill is critical to responding to crises along China's periphery.

More recent exercises continue to demonstrate the PLAA's drive for a more mobile and joint force. The 2016 DoD report stated:<sup>458</sup>

In 2014, the FIREPOWER exercise series trained 10 brigades across a number of training areas. In contrast, the 2015 FIREPOWER series trained 14 brigades at two dedicated live-fire training areas in the Lanzhou MR. Seven artillery brigades deployed to the Qingtongxia training area and seven air defense brigades deployed to the Shandan training area.

In 2015, PLAA academies conducted command-post exercises (CPX) with units conducting STRIDE and acting as the dedicated OPFOR for FIREPOWER exercises. Rather than having commanders and staffs travel to the academies, the PLAA's command software system was used to support training units at their training centers, with the pertinent academy personnel remaining at their academies. Distributed training at this level of sophistication represents a considerable advance for the PLAA, especially since the first academy cadre OPFOR-unit training only was conducted in 2012.

PLAA exercises in 2015 continued the trend of improving rotary-wing army aviation operational capabilities and overall air-ground and C2 capabilities with improved networks providing real-time data sharing within and between units. The production and fielding of improved PLAA wheeled and tracked armored vehicles, advanced air defense systems, and EW capabilities continues, as does the spread of advanced long-range artillery systems along with their supporting target-acquisition systems, including SOF trained for deep-strike reconnaissance. All elements of the PLAA were major players in the extensive JOINT ACTION-2015 series of exercises which included a focus on SOF integration with long-range fire strike assets.

The growth of additional regional training centers with full-time non-cooperative OPFORs, along with dedicated observer-controller personnel to conduct unit training evaluations and training support elements, as seen in the expansion of the STRIDE exercise series noted above, continues to drive realistic training across major portions of the PLAA. The primary limiting factor at this time seems to be the simple availability of training time at the current centers, in comparison with the size of the world's largest ground force. Extensive media coverage of Army exercises in 2015 again underscored a growing national confidence in the PLAA's ability to conduct modern air-land battle.

The DoD's assessment illustrates the PLAA's progress in testing and refining its training, combat skills, and leadership for the likely scenarios predicted by the Local Wars doctrine.

### ***The PLAA and Power Projection***

These changes are growing concerns to several of China's neighbors, particularly India, South Korea, and Vietnam, although they potentially affect other countries like Taiwan, Pakistan, the rest of Southeast Asia, the Central Asian states to the west of China, and Russia. China is not simply a growing Pacific or East Asian power, and the expanding capabilities of the PLAA and the PLA's other services affect all of Asia.

The growth of the PLAA also has an important impact on US power projection capability and strategy. A Chinese army intervention in a Korean conflict seems unlikely but it would have far more impact, and far more air, naval, and missile support than in 1950. It also could come far more quickly than the US could deploy new US Army or Marine Corps combat units in any serious strength. This makes South Korea far more dependent on US air, missile, and naval power.

More broadly, the US military is debating ways to secure "forced entry" into Asia in the case of conflicts involving China, but this raises the question of forced entry by what elements of US forces and to do what?

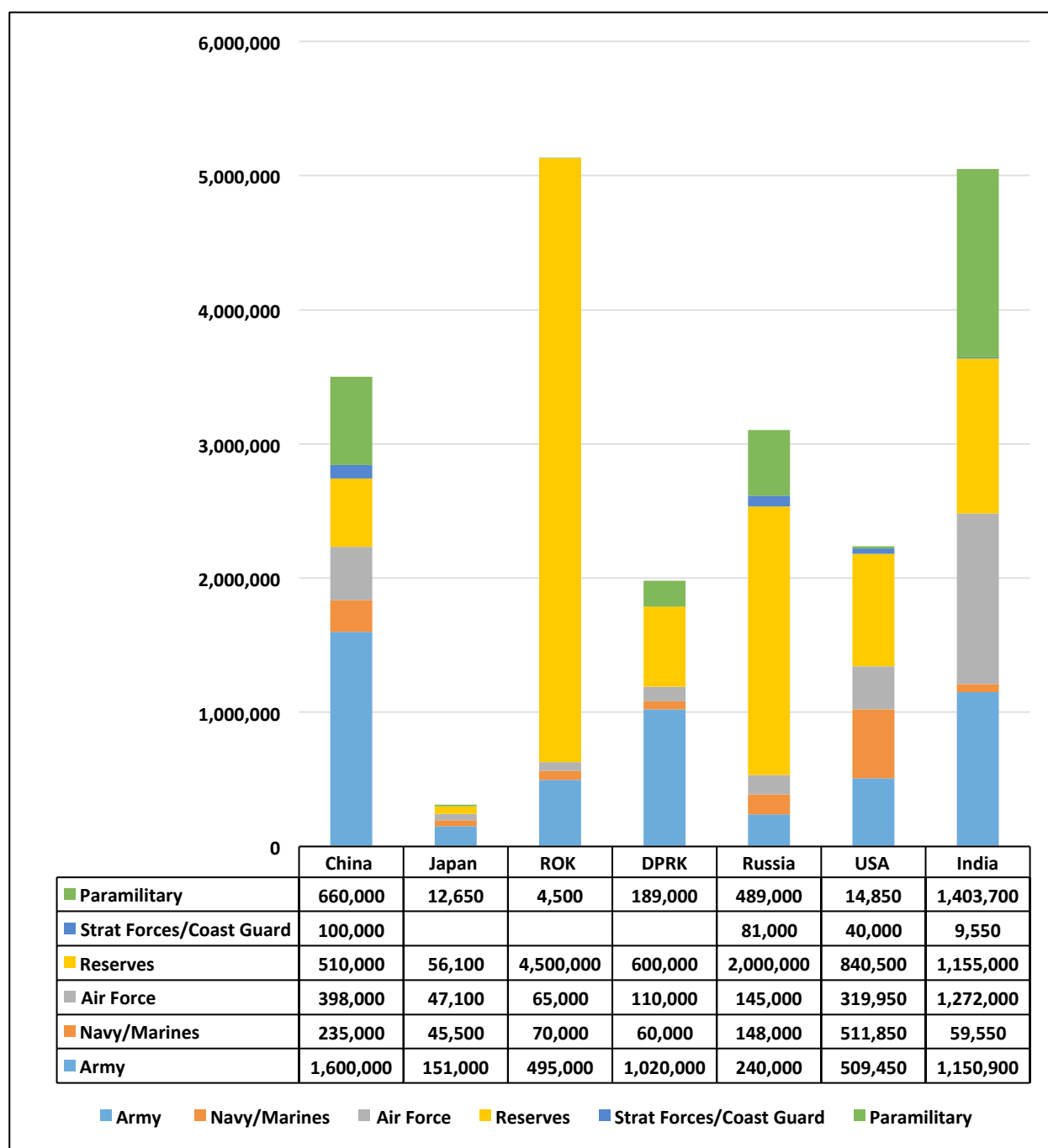
The US might send key specialized force elements like trainers or surface-to-air missile and ballistic missile defense units, but once again, the expansion of the PLAA seems likely to drive US security partnerships towards contingency plans focused on projecting US sea, air, and missile power. Moreover, while the following analyses show that Chinese sea and airpower are still very much in development – particularly in terms of competing with the US in power projection – the existing limits to the PLAA’s modernization already seem to bound the extent to which US ground forces could play a role in or close to China’s mainland outside of South Korea and Japan.

It might have been possible for the US to play a serious role on the ground in a land war in China or Taiwan involving Chinese ground forces in the 1950s – although this was highly debatable even then. That role does not seem credible today, nor does such a US role in Vietnam or any other state on China’s borders.

### ***The PLAA in Comparison to Regional Militaries and the US***

Though the PLA has shrunk over the last two decades as part of its efforts to create a more capable force, and it remains the region’s largest active standing Army in terms of deployed major weapons. **Figure 9.10** shows the size of China’s force in comparison to regional militaries and the total size of US forces worldwide. **Figures 9.11 and 9.12** compares ground forces equipment for the same countries, with heavy ground equipment and artillery pieces broken down by type.

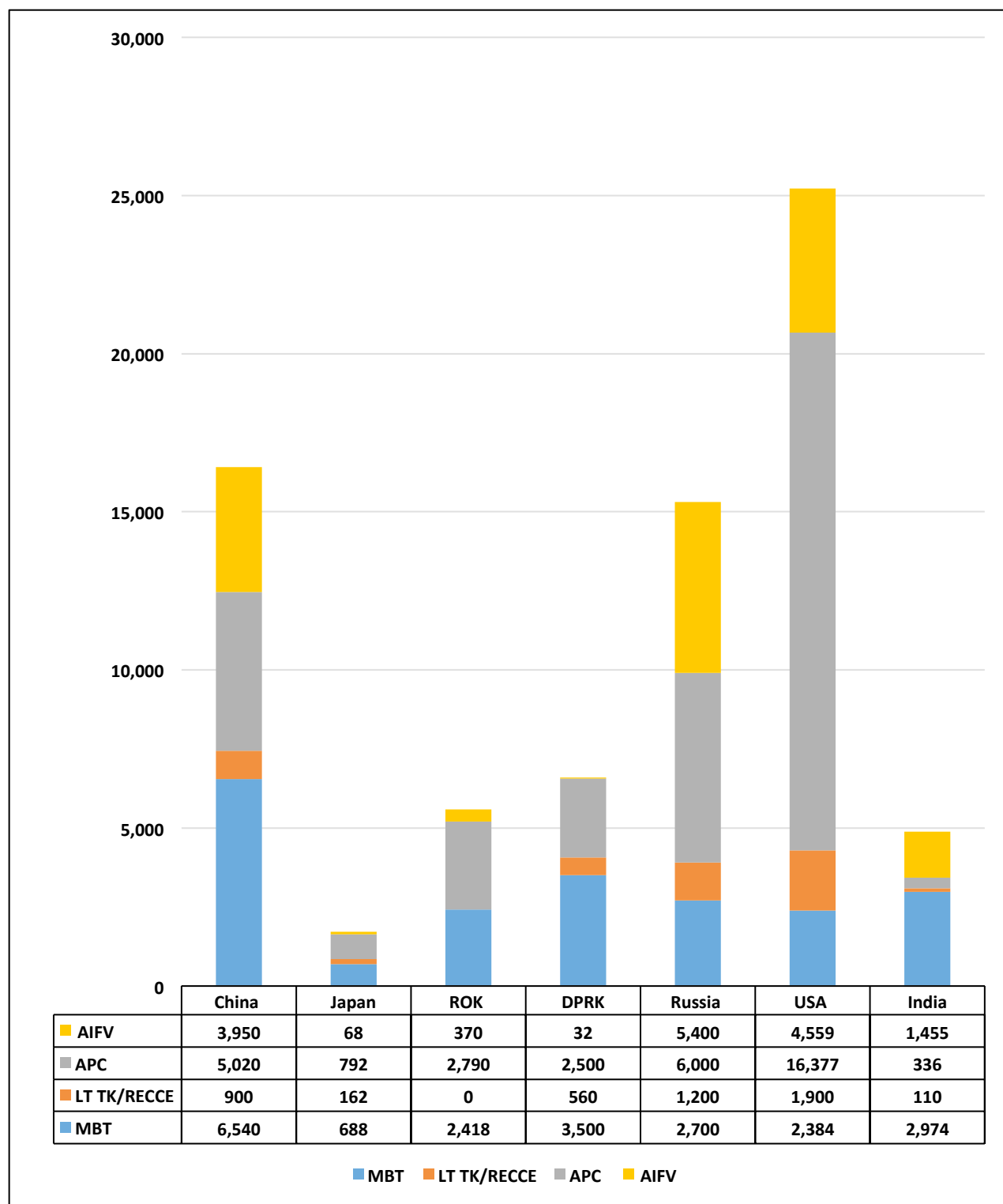
**Figure 9.10: PLA Forces in Comparison to Regional Countries and the US**



Source: IISS *Military Balance*, 2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

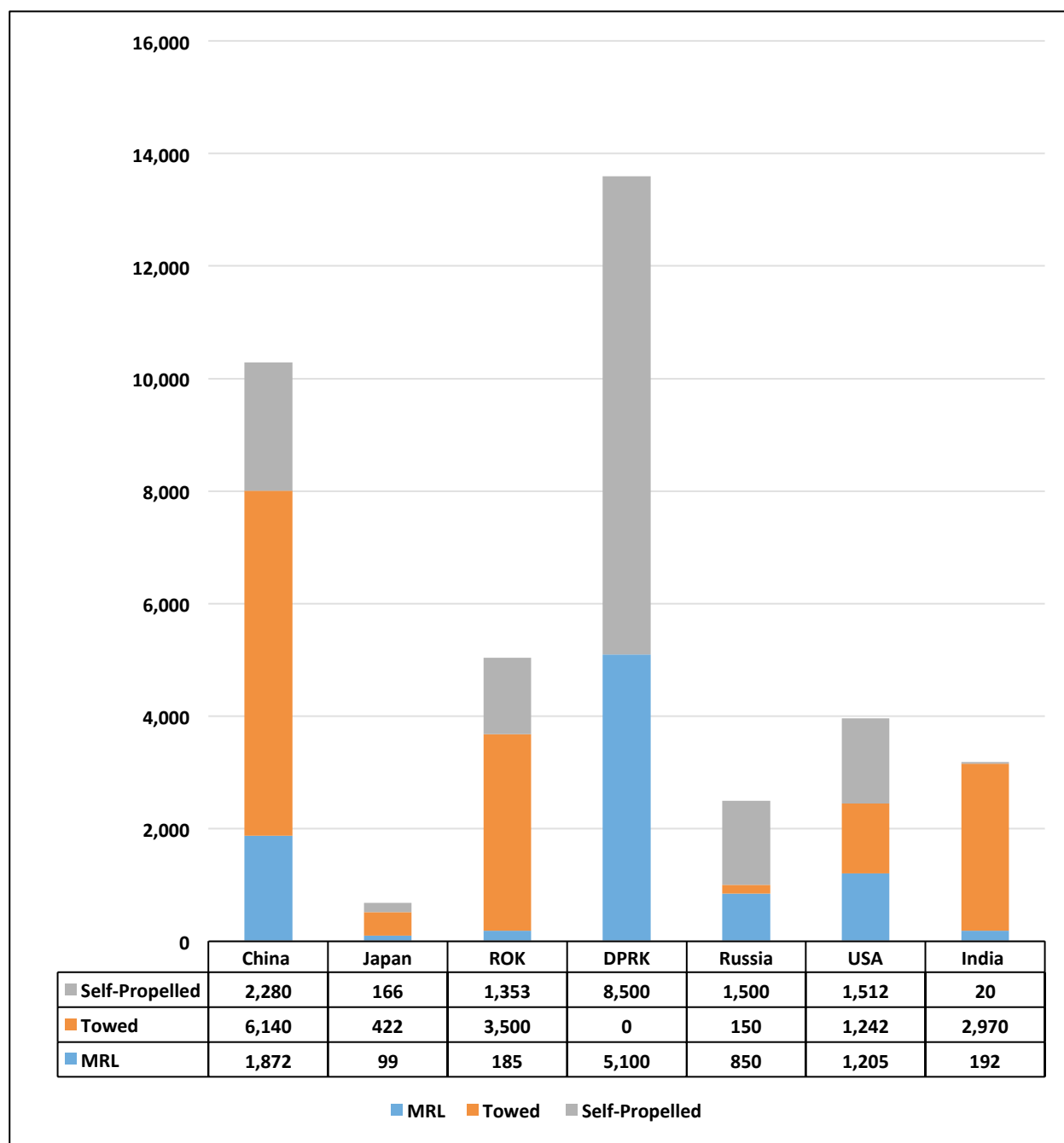


**Figure 9.11: PLAA Ground Forces Equipment in Comparison to Regional Countries and the US**



Source: IISS, *Military Balance 2016*. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 9.12: PLAA Artillery in Comparison to Regional Countries and the US**



Source: IISS, *Military Balance 2016*. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## CHAPTER 10: THE PLA NAVY

The PLA Navy (PLAN) has seen impressive transformation and growth since the 1980s and continues to pursue an ambitious naval modernization program. A “fortress navy” once dependent on land-based support and comprised mostly of patrol craft has shifted towards a force more capable of independent action, comprised of major combatants, and better able to project power along China’s periphery and around the world.

Coupled to China’s improvements in its air and missile capabilities, the PLAN gives China a steadily increasing capability to defend its coasts against any form of attack, project power deeply beyond its coasts, and potentially to limit or deter the U.S. from action in Northeast Asia, the South China Sea, and Taiwan. Over time, it will convert China’s overall mix of naval-air-missile power to a true “blue water” Navy – one capable of operating deep into the Pacific, the Strait of Malacca, and Indian Ocean – as well as launch nuclear-armed missiles from its submarines.

### *PLAN Strategy and Developments*

Many aspects of the PLAN’s modernization were developed during the 1980s, prior to the 1993 promulgation of the Local Wars doctrine pioneered by Admiral Liu Huaqing. The PLAN devised what it called “Offshore Defense” (alternatively translated as “Near Seas Defense”) as a successor to the previous “Coastal Defense” PLAN mission.

The coastal defense doctrine had promoted a PLAN capable of conducting a defense of China’s coasts from the Soviet Pacific fleet in what was predicted to be a largely land-based war.<sup>459</sup> In contrast, offshore defense envisioned a PLAN structured to conduct combat in an area bounded by the first island chain. Proponents of the new doctrine argued that it was necessary to extend China’s maritime active defense perimeter in order to protect China’s vulnerable maritime flank and to reduce the efficacy of adversary long-range precision strike.<sup>460</sup>

In order to achieve these objectives, the PLAN – along with China’s air and missile forces – needed the ability to operate at longer ranges, to rapidly concentrate combat power, and to be capable of defeating an opposing navy in the open ocean. For the PLAN, developing these capabilities required the procurement of more modern vessels and the personnel qualified to crew them.

This theory behind offshore defense fit well into the Local Wars doctrine when the latter was promulgated in 1993. The focus on warfare in local areas, high technology capabilities, and modern vessels all fits into the CMC’s overarching concept.

The South China Sea, and critical sea-lanes of communications, became one of the focal points of the Local Wars doctrine. Sometimes called China’s “Malacca dilemma,” China is dependent on trade and energy imports that go through the Malacca, Sunda, and Lombok Straits – all of which go through the South China Sea on their way to China. These chokepoints present areas of vulnerability to Chinese imports, particularly energy imports. China’s expanding power projection is driven in large part by its need to protect its imports as they go through these vulnerable chokepoints in and around the South China Sea.

China has reacted in three ways. One is building up its navy, along with matching air and missile capabilities. This takes time and China is still a decade away from being a peer competitor to the U.S. in the parts of the Pacific near its coast and Indian Ocean. As a result, China has sought to

find alternatives that will allow it to secure its strategic interests and counter any U.S. effort to block its emergence as a major power.

The Chinese have relied heavily on asymmetrical forces and strategies to achieve their near-term maritime goals. China's active maritime militia—made up largely of fisherman and fishing boats—has been at the center of numerous confrontations with the navies of other neighboring states near disputed maritime territory and resources. While the maritime militia is not officially part of the PLAN, it is backed both financially and strategically by the Chinese military.

- **Figure 10.1:** shows the size of the PLAN in 2015
- **Figure 10.2** below illustrates China's first and second island chains.
- **Figure 10.3 and Figure 10.4** show how these island chains interact with many of China's territorial claims.

The third way is finding alternatives to the Straits that allow it to obtain critical exports like oil and gas from the Gulf and other sources without going through the Straits, and creating "Silk Roads" that offer land and air routes to markets in Europe, Russia, Central Asia, and South Asia.

- **Figure 10.5** shows China's dependence on maritime lines of communication and transit routes as well as efforts to find ways to reduce that dependence.

**Figure 10.1: DoD Estimate on Size of the PLAN**

<b>China</b>		
	<b>Total</b>	<b>East and South Sea Fleets</b>
<b>Aircraft Carriers</b>	1	0
<b>Destroyers</b>	23	16
<b>Frigates</b>	52	40
<b>Corvettes</b>	23	14
<b>Tank Landing Ships/ Amphibious Transport Dock</b>	30	28
<b>Medium Landing Ships</b>	22	16
<b>Diesel Attack Submarines</b>	57	38
<b>Nuclear Attack Submarines</b>	5	2
<b>Ballistic Missile Submarines</b>	4	4
<b>Coastal Patrol (Missile)</b>	86	68

Note: In 2015, the PLA Navy had the largest force of principal combatants, submarines, and amphibious warfare ships in Asia. In the event of a major Taiwan conflict, the East and South Sea Fleets would be expected to participate in direct action against the Taiwan Navy. The North Sea Fleet would be responsible primarily for protecting Beijing and the northern coast, but could provide mission-critical assets to support other fleets.

Source: DoD, *Military and Security Developments Involving the People's Republic of China 2016*, April 2016, 108.

*Figure 10.2: China's First and Second Island Chains*



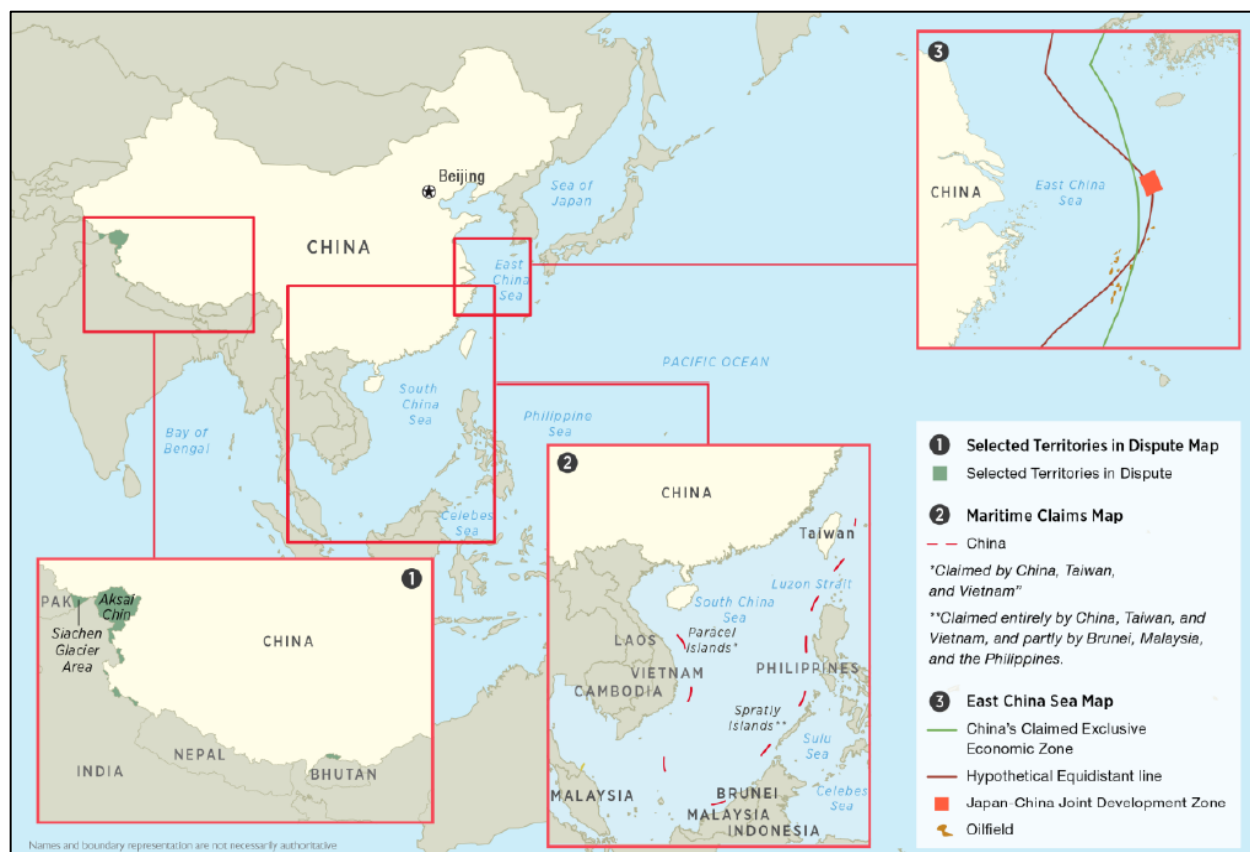
Source: Department of Defense, *Military Power of the People's Republic of China* 2008, 25,  
[http://www.lib.utexas.edu/maps/middle\\_east\\_and\\_asia/china\\_military\\_power\\_2008.pdf](http://www.lib.utexas.edu/maps/middle_east_and_asia/china_military_power_2008.pdf).

**Figure 10.3: Competing Sovereignty Claims in the South China Sea (2012)**



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2012*, [http://www.defense.gov/pubs/pdfs/2012\\_CMPR\\_Final.pdf](http://www.defense.gov/pubs/pdfs/2012_CMPR_Final.pdf).

**Figure 10.4: Competing Sovereignty Claims (2015)**



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 85.



**Figure 10.5: China's Dependence on Maritime Lines of Communication and Efforts to Reduce Dependence**



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2016, April 2016, 46.

**Figure 10.5** illustrates China's efforts to bring imports into the country without using SLOCs that go through Southeast Asian straits. Another effort that is not shown in **Figure 10.5** is China's drive to expand its domestic energy resources, particularly natural gas from shale and coal seams.<sup>461</sup>

Although China has the largest theoretically recoverable reserves of shale gas in the world, they are located in very hard-to-reach areas that would require expensive drilling and extraction techniques.<sup>462</sup> Consequently, while China may be able to access these resources in the future as technology improves, China will continue to remain dependent on Southeast Asian SLOCs in the short to medium term.

In a June 2016 Congressional Research Service report, Ronald O'Rourke notes China's likely goals and strategy for PLAN modernization:<sup>463</sup>

Observers believe China's naval modernization effort is oriented toward developing capabilities for doing the following:

- addressing the situation with Taiwan militarily, if need be;

- asserting or defending China's territorial claims in the South China Sea (SCS) and East China Sea (ECS), and more generally, achieving a greater degree of control or domination over the SCS;
- enforcing China's view—a minority view among world nations—that it has the legal right to regulate foreign military activities in its 200-mile maritime exclusive economic zone (EEZ);
- defending China's commercial sea lines of communication (SLOCs), such as those linking China to the Persian Gulf;
- displacing U.S. influence in the Western Pacific; and
- asserting China's status as a leading regional power and major world power.

The 2016 Japanese defense white paper offers another view of the motives behind China's aggressive naval posture.<sup>464</sup>

**Objectives of Maritime Activities:** The first is to intercept operations by adversaries in waters and airspace as far as possible from China in order to defend its territory, territorial waters and territorial airspace. Behind this objective is an increase in effectiveness of long-range attacks due to recent progress in science and technology.

The second is to develop military capabilities to deter and prevent Taiwan's independence. China maintains that it will not allow any foreign intervention in solving the Taiwan issue and realizing the unification of China. In trying to prevent foreign intervention into Taiwan surrounded by the sea in all directions through China's use of force, China needs to enhance its military operational capabilities at sea and airspace.

The third is to weaken the control of other countries over the islands to which China claims territorial sovereignty and to strengthen the claim through various surveillance activities and use of force at sea and in airspace surrounding the islands.

The fourth is to acquire, maintain, and protect its maritime rights and interests. China is engaged in oil and gas drilling as well as building facilities and surveying for the drilling in the East and South China Seas. It has been confirmed that in addition to the existing 4 platforms, China is building 12 new offshore platforms on the Chinese side of the Japan-China median line of the East China Sea since June 2013. In May 2016, superstructures were installed on 2 of the 12 platforms at which only a foundation had been installed. Japan has repeatedly lodged protests against such unilateral development by China and demanded the termination of such work.

The fifth is to defend its sea lanes of communications. In the background is the fact that its sea lanes of communications, including its crude oil transportation routes from the Middle East, are extremely important for the globalizing Chinese economy. The question of which parts of its sea lanes of communication the Chinese Navy deems it should defend depends on such factors as the international situation at the time. However, given the recent strengthening of the Chinese Navy and Air Force, it is believed that they will develop a capacity to defend areas past China's near seas to the "far seas."

Given these objectives and recent trends in China's activities in sea areas and airspace, it is believed that China plans to further expand the sphere of its maritime activities, and further intensify its operations in waters surrounding Japan, including the East China Sea and the Pacific Ocean, as well as the South China Sea and the airspaces over these sea areas. Therefore, more attention needs to be paid to activities such as operations of naval vessels and Navy and Air Force aircraft, various surveillance operations near Japan, developments of facilities that serve as bases for these activities, and evolution of China's interpretation regarding the nature and scope of rights in China's exclusive economic zones (EEZs) and other areas.

### **The US Official View of PLAN Developments**

The US sees the modernization of Chinese sea power, the expansion of Chinese naval power projection capability, and the PLAN's major qualitative improvements to its surface, aviation, missile, and submarine assets as rapid advancements of an increasingly competent naval force. These advancements are illustrated by the steadily improving character of recent PLAN operations

and joint exercises beyond the past periphery of PLAN operations, as well as by the highly publicized Chinese reclamation efforts in the South China Sea.

The US has produced several publications on the PLAN that describes the current structure, trends, and strategy. These include the DoD report on *Military and Security Developments Involving the People's Republic of China for 2016*, the Office of Naval Intelligence (ONI) 2015 report on *The PLA Navy: New Capabilities and Missions for the 21<sup>st</sup> Century*, and a June 2016 Congressional Research Service (CRS) report titled *China Naval Modernization: Implications for US Navy Capabilities*.

The 2016 DoD report notes that:<sup>465</sup>

Over the past 15 years, China's ambitious naval modernization program has produced a more technologically advanced and flexible force. The PLAN now possesses the largest number of vessels in Asia, with more than 300 surface ships, submarines, amphibious ships, and patrol craft. China is rapidly retiring legacy combatants in favor of larger, multi-mission ships equipped with advanced anti-ship, anti-air, and anti-submarine weapons and sensors. China continues its gradual shift from "near sea" defense to "far seas" protection as espoused in its most recent DWP, with the PLAN conducting operational tasks outside the so-called "first island chain" with multi-mission, long-range, sustainable naval platforms that have robust self-defense capabilities.

The 2015 ONI report added:<sup>466</sup>

During 2014 alone, more than 60 naval ships and craft were laid down, launched, or commissioned, with a similar number expected through the end of 2015. Major qualitative improvements are occurring within naval aviation and the submarine force, which are increasingly capable of striking targets hundreds of miles from the Chinese mainland. Although the PLA(N) faces capability gaps in some key areas, it is emerging as a well-equipped and competent force.

From the mid-1990s to the mid-2000s, China often built small numbers of a large variety of ships, changing classes rapidly as advancements were made. In the period between 1995 and 2005 alone, China constructed or purchased major surface combatants and submarines in at least 15 different classes. Using imported technology, reverse engineering, and indigenous development, the People's Republic of China (PRC) rapidly narrowed the technology and capability gap with modern navies during the 1990s and 2000s.

As the PLA(N) narrowed the technological gap, procurement became more indigenous and more efficient. The last delivery of a major naval platform from a foreign country was the SOVREMENNY II-class DDGs in 2006. China is implementing much longer production runs of its domestically produced surface combatants and conventional submarines, suggesting greater satisfaction with recent designs. The JIANGKAI-class (Type 054A) frigate series, LUYANG-class (Type 052B/C/D) destroyer series, and the upcoming new cruiser (Type 055) class are considered to be modern and capable designs that are comparable in many respects to the most modern Western warships.

Likewise, the PLA-Navy Air Force continues improving its capabilities. It is better equipped to project air power from shore and has begun the difficult journey towards carrier aviation. Two months after the carrier LIAONING was commissioned in 2012, J-15 aircraft successfully conducted their first-ever carrier-based take-off and landings. Full integration of a carrier air regiment remains several years in the future, but remarkable progress has been made already. Chinese officials acknowledge plans to build additional carriers but they have not publicly indicated whether the next carrier will incorporate catapults or which aircraft they plan to embark.

With a greater percentage of the force consisting of large, multi-mission combatants capable of blue water operations, the PLA(N) will have an increasing capability to undertake missions in far seas, and is assuming its place among the most powerful navies in Asia. Additionally, the introduction of long-range anti-ship cruise missiles (ASCM), non-PLA(N) weapons such as the DF-21D anti-ship ballistic missile (ASBM), and the requisite Command, Control, Communications, Computers, Intelligence Surveillance and Reconnaissance (C4ISR) architecture to provide targeting data will allow China to expand its combat capability further into the Philippine and South China Seas.

A 2015 CRS report highlighted the potential importance of Chinese carriers:<sup>467</sup>

China has begun operating its first aircraft carrier—the *Liaoning*, a refurbished ex Ukrainian aircraft carrier—and reportedly has begun construction of its first indigenously built aircraft carrier. Observers expect that it will be some time before China achieves proficiency in the operation of an embarked air wing on the *Liaoning*.

On September 25, 2012, China commissioned into service its first aircraft carrier—the *Liaoning*, a refurbished ex-Ukrainian aircraft carrier, previously named *Varyag*, that China purchased from Ukraine as an unfinished ship in 1998. The *Liaoning* is named for the province containing Dalian, the port city where the ship was refurbished. DOD states that in 2013, the ship's home port was shifted from Dalian to the PLA Navy's Yuchi naval base, located in the North Sea Fleet.

The *Liaoning* is conventionally powered, has an estimated full load displacement of almost 60,000 tons and might accommodate an eventual air wing of 30 or more aircraft, including fixed wing airplanes and helicopters. A September 7, 2014, press report, citing an August 28, 2014, edition of the Chinese-language *Shanghai Morning Post*, stated that the *Liaoning*'s air wing may consist of 24 J-15 fighters, 6 anti-submarine warfare helicopters, 4 airborne early warning helicopters, and 2 rescue helicopters, for a total of 36 aircraft. The *Liaoning* lacks aircraft catapults and instead launches fixed-wing airplanes off the ship's bow using an inclined "ski ramp."

By comparison, a U.S. Navy aircraft carrier is nuclear powered (giving it greater cruising endurance than a conventionally powered ship), has a full load displacement of about 100,000 tons, can accommodate an air wing of 60 or more aircraft, including fixed-wing aircraft and some helicopters, and launches its fixed-wing aircraft over both the ship's bow and its angled deck using catapults, which can give those aircraft a range/payload capability greater than that of aircraft launched with a ski ramp. The *Liaoning*, like a U.S. Navy aircraft carrier, lands fixed wing aircraft using arresting wires on its angled deck.

Some observers have referred to the *Liaoning* as China's "starter" carrier. The PLA Navy is currently learning to operate aircraft from the ship. DOD states, "The most significant development in the PLA Navy over the past year has been the first long-range deployment and continued flight operations of China's first aircraft carrier, CV-16, the LIAONING," and that the ship "continued flight integration training throughout 2013, but it is not expected to embark an operational air wing until 2015 or later."

The 2016 DoD report also focused on the Chinese sea-based nuclear deterrent:<sup>468</sup>

The PLAN places a high priority on the modernization of its submarine force and currently possesses five SSNs, four nuclear-powered ballistic missile submarines (SSBN), and 53 diesel-powered attack submarines (SS/SSP). By 2020, this force will likely grow to between 69 and 78 submarines.

In addition to the 12 KILO-class SS units acquired from Russia in the 1990s and 2000s, China has built 13 SONG-class SS (Type 039) and 13 YUAN-class SSP (Type 039A) with a total of 20 YUANS planned for production. China continues to improve its SSN force, and four additional SHANG-class SSN (Type 093) will eventually join the two already in service.

The SHANG SSN will replace the aging HAN-class SSN (Type 091). These improved SHANG SSNs feature a vertical launch system (VLS) and may be able to fire the YJ-18 advanced anti-ship cruise missile (ASCM). Over the next decade, China may construct a new Type 095 nuclear-powered, guided-missile attack submarine (SSGN), which not only would improve the PLAN's anti-surface warfare capability but might also provide it with a more clandestine land-attack option.

Finally, China continues to produce the JIN-class SSBN (Type 094) with associated CSS-N-14 (JL-2) submarine-launched ballistic missiles (SLBM) that has an estimated range of 7,200 km. This platform represents China's first credible, sea-based nuclear deterrent. China will probably conduct its first SSBN nuclear deterrence patrol sometime in 2016. Four JIN SSBNs are operational, and up to five may enter service before China begins developing and fielding its next-generation SSBN, the Type 096, over the coming decade. The Type 096 will reportedly be armed with a successor to the JL-2, the JL-3 SLBM.

Since 2008, the PLAN has continued a robust surface combatant construction program of various classes of ships, including guided-missile destroyers (DDG) and guided-missile frigates (FFG). During 2015, the final LUYANG II-class DDG (Type 052C) entered service, bringing the total number of ships of this class to six.

Additionally, a second LUYANG III-class DDG (Type 052D) entered service in 2015. It has a multipurpose VLS capable of launching ASCMs, land-attack cruise missiles (LACM), surface-to-air missiles (SAM), and antisubmarine missiles.

China has also probably begun construction of a larger Type 055 “destroyer,” a vessel better characterized as a guided-missile cruiser (CG) than a DDG. China has continued to produce the JIANGKAI II-class FFG (Type 054A), with 20 ships currently in the fleet and five in various stages of construction. These new DDGs and FFGs provide a significant upgrade to the PLAN’s air defense capability, which will be critical as it expands operations into distant seas beyond the range of shore-based air defense systems.

Augmenting the PLAN’s littoral warfare capabilities, especially in the South China Sea and East China Sea, is a new class of small combatant. Twenty-five JIANGDAO-class corvettes (FFL) (Type 056) are in service and the latest ships have been upgraded to anti-submarine warfare (ASW) variants with a towed array sonar. China may build more than 60 of this class, ultimately replacing older PLAN destroyers and frigates. China also has 60 HOUBEI-class wave-piercing catamaran guided-missile patrol boats (PTG) (Type 022) built for operations in China’s “near seas.”

#### A 2015 CRS report updated the US discussion of China’s amphibious forces:<sup>469</sup>

China has put into service a new class of amphibious ships called the *Yuzhao* or *Type 071 class*. *Jane’s Fighting Ships 2014-2015* states that the first three ships in the class were commissioned into service in 2007, 2011, and 2012.”<sup>83</sup> A fourth ship in the class may now be under construction. The Type 071 design has an estimated displacement of more than 18,500 Tons, compared with about 15,900 tons to 16,700 tons for the U.S. Navy’s Whidbey Island/Harpers Ferry (LSD-41/49) class amphibious ships, which were commissioned into service between 1985 and 1998, and about 25,900 tons for the U.S. Navy’s new San Antonio (LPD-17) class amphibious ships, the first of which was commissioned into service in 2006.

DOD states that “China might begin construction on a new Type 081-class amphibious assault ship within the next five years.”<sup>86</sup> *Jane’s Fighting Ships 2014-2015* states that “There are reports that construction of a Type 081 LHD is under consideration. The ship is believed to be of the order of 20,000 tons and may be based on the Type 0781 hull.”<sup>87</sup> An August 26, 2013, press report stated that that construction of the ship has begun and that it might displace 35,000 tons.

#### The DoD annual report for 2016 report added:<sup>470</sup>

China continues to produce the JIN-class nuclear-powered ballistic missile submarine (SSBN), with four commissioned and another under construction. The JIN will eventually carry the CSS-NX-14 (JL-2) SLBM with an estimated range of 7,200 km. Together these will give the PLAN its first credible long-range sea-based nuclear capability. JIN SSBNs based at Hainan Island in the South China Sea would then be able to conduct nuclear deterrence patrols.

#### Finally, the 2016 DoD report analyzed China’s maritime security and disputes over the course of the previous year, and reinforces the role these issue play in both China’s strategy and military development:<sup>471</sup>

While China has resolved several land and maritime border disputes in the past, several persist—particularly the ongoing territorial and maritime disputes in the East China Sea, South China Sea, and along the China-India border. For the United States, some of these disputes involve U.S. allies with whom there exist long-standing cooperation and security treaty commitments. China’s actions in the South China Sea in 2015, particularly its land reclamation on features in the Spratly Islands, enhanced the appearance of China’s ability to exercise control over disputed areas in the South China Sea, raised tensions in the South China Sea, and caused concern over China’s long-term intentions.

**South China Sea.** China depicts its South China Sea claims by using a “nine-dash line” that encompasses most of the area. China remains ambiguous about the precise coordinates, meaning, or legal basis of the nine-dash line. Brunei, Malaysia, the Philippines, Taiwan, Indonesia, and Vietnam all contest portions of China’s territorial and maritime claims in the South China Sea.

In 2015, China accelerated land reclamation and infrastructure construction at its outposts in the Spratly Islands. When complete, these outposts will include harbors, communications and surveillance systems,

logistics facilities, and three airfields. Although artificial islands do not provide China with any additional territorial or maritime rights within the South China Sea, China will be able to use its reclaimed features as persistent civil-military bases to enhance its presence in the South China Sea significantly and enhance China's ability to control the features and nearby maritime space.

In October 2015, an arbitral tribunal constituted at the request of the Philippines and pursuant to Chapter XV of the Law of the Sea Convention ruled that it has jurisdiction to decide certain disputed issues between the Philippines and China, such as whether a particular feature is an "island" entitled to a territorial sea, an exclusive economic zone, and continental shelf; a "rock," a subset of islands that are entitled only to a territorial sea; or a feature that is submerged at high tide and thus not entitled to any maritime zone of its own. The arbitral tribunal will not rule on sovereignty claims to land features. The tribunal is expected to issue a ruling on the merits of the case in 2016. China continues to reiterate that it does not accept the jurisdiction of the arbitral tribunal and will not abide by its decision.

Other disputed areas include the Luconia Shoals, Reed Bank, and the Paracel Islands. The Luconia Shoals are disputed by China and Malaysia and may contain extensive oil and natural gas reserves, as well as productive fishing grounds. Reed Bank is claimed by both China and the Philippines, and in August 2014, China sent hydrographic research vessels to survey the area. In disputed waters near the Paracel Islands, tensions between China and Vietnam spiked in 2014 when China deployed and commenced operation of a state-owned exploratory hydrocarbon rig in waters also claimed by Vietnam.

**East China Sea.** China claims sovereignty over the Japan-administered Senkaku Islands in the East China Sea; this territory is also claimed by Taiwan. Since 2012, China has used maritime law enforcement ships and aircraft to patrol near the islands in order to challenge Japan's administration. Chinese officials continue to claim the islands are part of China's territory and that China will resolutely respond to any perceived external provocation.

Last year, China balanced this concern with efforts to improve relations with Japan gradually. The two countries resumed official senior-level exchanges in 2015 following President Xi's first bilateral meeting with Japan's Prime Minister Shinzo Abe in November 2014, where both sides announced a four-point agreement to improve bilateral ties.

**Figure 10.6 DoD Estimates on PLAN Force Structure 2000-2016**

**Table 6. Numbers of PLA Navy Ships Presented in Annual DOD Reports to Congress**

(Figures include both older and less capable units—including some of questionable operational status—and newer and more capable units)

Year of DOD report	2000	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Ballistic missile submarines	1	1	1	n/a	1	1	1	1	2	2	2	2	3	3	4	4
Nuclear-powered attack submarines	5	5		n/a	6	5	5	5	6	6	5	5	5	5	5	5
Diesel attack submarines	~60	~ 50	~60	n/a	51	50	53	54	54	54	49	48	49	51	53	57
Aircraft carriers	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Destroyers	~20			n/a	21	25	25	29	27	25	26	26	23	24	21	23
Frigates	~40	~ 60	> 60	n/a	43	45	47	45	48	49	53	53	52	49	52	52
Corvettes	0	0	0	0	0	0	0	0	0	0	0	0	0	8	15	23
Missile-armed coastal patrol craft	n/a	~ 50	~ 50	n/a	51	45	41	45	70	85	86	86	85	85	86	86
Amphibious ships: LSTs and LPDs	almost 50	~ 40	> 40	n/a	20	25	25	26	27	27	27	28	29	29	29	30
Amphibious ships: LSMs				n/a	23	25	25	28	28	28	28	23	26	28	28	22

**Source:** Table prepared by CRS based on 2000-2016 editions of annual DOD report to Congress on military and security developments involving China (known for 2009 and prior editions as the report on China military power).

**Notes:** n/a means data not available in report. **LST** means tank landing ship; **LPD** means transport dock ship; **LSM** means medium landing ship. The DOD report generally covers events of the prior calendar year. Thus, the 2016 edition of the report covers events during 2015.

Source: Ronald O'Rourke, *China Naval Modernization: Implications for US Navy Capabilities – Background and Issues for Congress*, Congressional Research Service, June 17, 2016.

## **The Japanese Official View of PLAN Developments**

The 2016 Japanese white paper provided the following summary description of the PLAN:<sup>472</sup>

The naval forces consist of three fleets: North Sea Fleet; East Sea Fleet; and South Sea Fleet. The Chinese Navy has approximately 880 ships (including approximately 60 submarines), with a total displacement of approximately 1.5 million tons. The Navy is in charge of maritime national defense and protection of the sovereignty of territorial waters and maritime rights and interests.

The Chinese Navy mass produces the indigenous state-of-the-art Yuan-class submarines, as well as surface combatant ships with improved air defense and anti-ship attack capabilities. It is also suggested that the Navy is developing cruisers equipped with vertical launch systems (VLSs) capable of launching the latest YJ-18 anti-ship cruise missile. In addition, the Navy is increasing the number of large landing ships and supply ships. It commissioned a large hospital ship in October 2008.

With regard to aircraft carriers, China renovated the Varyag, an incomplete Kuznetsov-class aircraft carrier purchased from Ukraine. After trial navigations started in August 2011, the carrier was named “Liaoning” and was commissioned in September 2012. It is thought that even after the commission, China continues trainings of carrier-based aircraft pilots using domestic J-15 carrier-based fighters and takeoff and landing tests on the “Liaoning.”

In November 2013, the carrier sailed in the South China Sea for the first time and conducted sea trials in this area. In late December 2015, the spokesperson of the Ministry of National Defense of China officially admitted the building of a domestic aircraft carrier for the first time, announcing that the aircraft carrier “is being built in Dalian. It has a conventional power plant with a displacement of 50,000 tons” and “will adopt ski-jump takeoff mode.”

In view of these developments concerning the strengthening of the naval forces, China likely aims to build capabilities for conducting operations in more distant waters in addition to near sea defense. It is necessary to continue to monitor the development of the Chinese naval forces.

### ***Shifts in Force Structure and Equipment***

The result of the PLAN’s modernization and development along these doctrinal lines has been a sustained shift from a navy of large numbers of single-mission vessels, mostly patrol craft, to a navy boasting significant numbers of modern major combatants, as well as modernized patrol craft. Like China’s other services, the PLAN has modernized by changing its force structure to meet new doctrinal needs, increasing the categories of ships under its command and developing new capabilities and their necessary systems.

Lieutenant General Vincent R. Stewart highlighted some of the critical systems that China is developing:<sup>473</sup>

The PLA Navy continues to expand its operational and deployment areas. China’s first aircraft carrier, commissioned in late 2012, will not reach its full potential until it acquires a fully operational fixed-wing air regiment, but we expect the navy will make progress toward its goal this year. The South China Sea (SCS) remains a potential flashpoint. Overlapping claims among China, Vietnam, the Philippines, Malaysia, Taiwan, and Brunei—exacerbated by large-scale construction or major steps to militarize or expand law enforcement—has increased tensions among claimants.

This has prompted an increase in defense acquisition, to include submarine capabilities, in some of these countries. In 2014, China twice deployed submarines to the Indian Ocean. The submarines probably conducted area familiarization to form a baseline for increasing China’s power projection. China continues production of JIN-class nuclear-powered ballistic missile submarines and submarine-launched ballistic missiles. We expect China to conduct its first nuclear deterrence patrols this year.

Large numbers of obsolete vessels, mostly coastal combatants, have been discarded and replaced by modernized imported and indigenously manufactured ocean-going combatants. New PLAN

frigates and destroyers are multi-mission combatants capable of effectively conducting a variety of missions, in stark contrast to their single-mission predecessors.

Within the past decade, the PLAN has replaced several older patrol craft with modern variants such as the *Houbei*, which has a wave-piercing hull design and can carry eight anti-ship cruise missiles. In 2012, the PLAN began phasing in the new *Jaingdao* class corvette to add more flexibility than that of the *Houbei*. This will give China an additional asset to patrol their claimed EEZ and interests in the disputed waters of the East China and South China Seas.<sup>474</sup>

Large numbers of obsolete vessels, mostly coastal combatants, have been discarded and replaced by modernized imported and indigenously-produced designs. Furthermore, the PLAN's procurement of new diesel and nuclear-powered submarines has significantly modernized its undersea combatant arsenal. The introduction of the *Liaoning* aircraft carrier, as well as flight-testing of the J-15 (Su-33) carrier-fighter, indicate future PLAN developments toward greater power-projection capabilities.

The combination of these modernization and force development efforts has led to a steady increase in PLAN capabilities, and improvements in the PLAN's ability to react to regional contingencies in line with the Local Wars doctrine. In particular, the PLAN has recently augmented its anti-surface warfare, naval air defense, and force projection capabilities.<sup>475</sup> In contrast, one area in which the PLA still lacks significant improvement is its anti-submarine warfare capability. However, the PLAN has been shifting rotary wing assets into the anti-submarine role to mitigate this deficiency.

### *Shifts in Force Structure and Force Size*

Matching shifts have occurred in PLAN force structure, personnel strength, and force size. **Figure 10.7** shows the current structure of the PLAN's fleets. **Figure 10.8** displays significant changes in the personnel, force structure, and mix of naval assets between 1985 and 2015. The most significant change is the relative growth of major combatants in the PLAN.

**Figure 10.9** shows the growth of the PLAN in a line graph format to better illustrate force structure trends. **Figure 10.9** also displays the historical PLAN combatant holdings and compares them with the future trends. Furthermore, **Figure 10.9** illustrates the significant decrease in PLAN coastal combatants and a roughly 30% decrease in its submarine holdings.

The period 1990-2000 saw significant reductions in coastal craft while, throughout the period, the numbers of major surface combatants increased. The PLAN submarine force suffered an initial decrease in force size during the period as obsolete submarines were retired, but has since regrown.

These losses were compensated by increases in major surface combatants such as frigates and destroyers. In addition, much of the increase in major surface combatants is due to increases in modern equipment. Consequently, the force structure indicates a navy in transition towards deeper water operations by smaller numbers of multi-mission ships.

These changes also reflected the impact of a doctrinal shift from coastal combat by swarms of single-mission ships to combat within the first island chain by major combatants. It shows that the PLAN rapidly discarded obsolete coastal naval assets and procured, with foreign import if necessary, advanced major surface combatants capable of creating a hazardous environment in East Asia for adversary surface forces.



**Figure 10.7: Size and Deployments of China's Fleets (as of 2016)**



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2016*, April 2016, 29.

*Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part I*

	1985	1990	1995	2000	2005	2010	2016
<b>Personnel</b>	350,000	295,000	300,000	260,000	295,000	255,000	235,000
<b>Navy</b>	350,000	260,000	260,000	220,000	255,000	215,000	200,000
<b>Conscript</b>	?	35,000	40,000	40,000	40,000	40,000	35,000
<b>Reserve</b>	?	?	?	?	?	?	?
<b>Naval Aviation</b>	some	25,000	25,000	26,000	26,000	26,000	26,000
<b>Marines</b>	some	6,000	5,000	5,000	10,000	10,000	10,000

**Naval Vessels**

<b>Aircraft Carriers</b>		1985	1990	1995	2000	2005	2010	2016
	Liaoning	0	0	0	0	0	0	1
<b>Total</b>		0	0	0	0	0	0	1

<b>Submarines</b>		1985	1990	1995	2000	2005	2010	2016
<b>Strategic</b>	Qing (SLBM trials/SSB)	0	0	0	0	0	0	1
	Golf (SLBM trial)	1	1	1	1	1	1	0
	Xia (Type-092)	0	0	0	0	1	1	0
	Jin (Type-094)	0	0	0	0	0	2	4
<b>Tactical</b>	Han (Type-091)	2	4	5	5	5	4	3
	Shang (Type-093)	0	0	0	0	0	2	2
	Romeo (Type-S5G)	0	1	1	1	1	1	0
	Kilo (RF Type EKM 636/636N)	0	0	0	3	2	10	10
	Kilo (RF Type EKM 877)	0	0	0	2	2	2	2
	Ming (Type-035)	0	3	0	2	3	3	0
	Ming (Type-035G/B)	0	0	9	15	16	16	12
	Romeo (E3SB)	79	85	34	35	36	8	0
	Song (Type-039/039G)	0	0	0	1	3	13	12
	Yuan (Type-041)	0	0	0	0	0	2	0
	Yuan (Type-039A/B)	0	0	0	0	0	0	15
	W-Class	21	0	0	0	0	0	0
<b>Total</b>		103	93	49	65	68	65	61

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

*Figure 10.8: Force Structure of the PLA Navy 1985-2015-Part II*

<b>Guided Missile Destroyers</b>		1985	1990	1995	2000	2005	2010	2016
	Hangzhou (Sovremenny)	0	0	0	1	2	4	4
	Luhai (Type-051B)	0	0	0	1	1	1	1
	Luhu (Type-052)	0	0	1	2	2	2	2
	Luda (Type-051)	10	16	15	13	11	10	0
	Luda (Type-051DT)	0	0	0	0	2	3	0
	Luda II (Type-051G)	0	1	2	2	2	1	0
	Luda II (Type-051)	0	0	0	0	0	0	0
	Luda III (Type-051G)	0	0	0	1	1	1	0
	Luda III (Type-051DT)	0	0	0	0	0	0	0
	Luyang I (Type-052B)	0	0	0	0	0	2	2
	Luyang II (Type-052C)	0	0	0	0	0	2	6
	Luyang III (Type-052D)	0	0	0	0	0	0	2
	Luzhou (Type-051C)	0	0	0	0	0	2	2
	Anshan (Soviet Gordy)	4	2	0	0	0	0	0
<b>Total</b>		14	19	18	20	21	28	19

<b>Guided Missile Frigates</b>		1985	1990	1995	2000	2005	2010	2016
	Jianghu I (Type-053H)	11	13	13	26	26	11	2
	Jianghu II (Type-053H1)	0	9	9	1	1	9	6
	Jianghu III (Type-053H2)	0	2	5	3	3	3	1
	Jianghu IV (Type-053H1Q)	0	2	2	0	0	1	1
	Jianghu V (Type-053H1G)	0	0	0	0	0	6	6
	Jiangwei I (Type-053H2G)	0	0	3	4	4	4	0
	Jiangwei II (Type-053H3)	0	0	0	6	8	10	10
	Jiangdong	2	2	1	0	0	0	0
	Luda II (Type-051)	0	0	0	0	0	0	2
	Luda III (Type-051DT)	0	0	0	0	0	0	2
	Luda III (Type-051G)	0	0	0	0	0	0	2
	Chengdu	4	4	2	0	0	0	0
	Jiangkai I (Type-054)	0	0	0	0	0	2	2
	Jiangkai II (Type-054A)	0	0	0	0	0	6	20
<b>Total</b>		22	37	37	40	42	52	54

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 10.8: Force Structure of the PLA Navy 1985-2015-Part II**

<b>Patrol and Coastal Combatants</b>		1985	1990	1995	2000	2005	2010	2016
	Jiangdao I/II(Type-056/A)	0	0	0	0	0	0	22
	Houbei (Type-022)	0	0	0	0	0	60+	65+
	Huangfeng/Hola (Type-021)	0	125	120	38	38	0	0
	Houjian (Type-037/II)	0	0	0	0	0	7	6
	Houxin (Type-037/IG)	0	0	6	20	11	16	22
	Haijiu (Type-037/I)	0	10	4	2	2	2	2
	Hainan (Type-037)	28	90	96	96	88	93	30
	Haiqing (Type-037/IS)	0	0	0	20	19	25	18
	Haizui (Type-062/I)	0	0	0	11	8	15	0
	Shanghai III (Type 072/I)	305	290	300	100	79	35	0
	Haizui/Shanghai III (Type072/I)	0	0	0	0	0	0	34+
	<b>Total</b>	333	515	526	287	256	193	199+

<b>Mine Warfare</b>		1985	1990	1995	2000	2005	2010	2016
	Wochi	0	0	0	0	0	4	10
	Wozang	0	0	0	0	0	0	2
	Wosao	?	?	1	7	5	4	16
	Futi	0	0	0	0	0	10	0
	Wonang (Type-529)	0	0	0	0	0	0	6
	T-43	0	0	0	0	0	0	14
<b>Total</b>	Wolei	?	?	0	1	1	1	1
	<b>Total</b>	0	0	1	8	6	19	49

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 10.8: Force Structure of the PLA Navy 1985-2014-Part III**

<b>Amphibious Vessels</b>		1985	1990	1995	2000	2005	2010	2016
	Yuzhao (Type-071)	0	0	0	0	0	1	3
	Yubei	0	0	0	0	0	0	10
	Yudeng (Type-073)	?	0	0	0	1	1	1
	Yuliang (Type-079)	?	30	30	28	17	31	0
	Yuhai	0	0	0	12	12	13	10
	Yunshu (Type-073A)	0	0	0	0	0	10	10
	Yukan	0	3	3	7	7	7	0
	Yuting	0	0	0	8	9	10	6
	Yuting II	0	0	0	0	0	10	10
	Yunnan (Landing Craft, Utility)	0	0	0	0	0	130	56
	Yuchin (Landing Craft, Medium)	0	0	0	0	0	20	0
	Landing Craft, Air Cushion	0	0	0	0	0	0	5
	Utility Craft, Air Cushion	0	0	0	0	0	10	12
	<b>Total</b>	<b>0</b>	<b>33</b>	<b>33</b>	<b>55</b>	<b>46</b>	<b>243</b>	<b>123</b>

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part III**

<b>Logistics and Support</b>		1985	1990	1995	2000	2005	2010	2016
	Sea-going buoy tender	0	0	0	0	0	7	4
	Cargo	23	1	14	14	14	23	10
	Miscellaneous auxiliary	?	0	0	0	0	6	6
	Icebreaker	0	3	4	4	4	4	0
	Intelligence collection vessel	0	0	0	0	0	1	5
	Space and missile tracking	0	0	0	0	0	5	3
	Oceanographic research	0	35	33	33	33	5	4
	Survey ship	0	0	0	0	0	6	8
	Hospital ship	0	0	0	2	6	1	8
	Tanker	0	3	2	2	3	5	0
	Tanker and transport	23	25	33	33	33	50	32
	Tanker with helicopter	0	0	0	0	0	5	7
	Repair/rescue ship	0	2	2	2	2	2	6
	Submarine support	0	0	0	10	10	8	6
	Submarine rescue	0	0	2	1	1	1	6
	Tug, ocean-going	0	23	25	25	25	51	26
	Water tanker	0	0	0	0	0	18	14
	Transport	?	17	30	30	30	0	0
	Training ship	?	1	1	1	2	2	3
	Degaussing ship	0	0	0	0	0	5	6
<b>Total</b>		<b>0</b>	<b>33</b>	<b>33</b>	<b>55</b>	<b>46</b>	<b>243</b>	<b>171</b>

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

*Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part IV*

### Naval Aviation

		1985	1990	1995	2000	2005	2010	2016
<b>Bombers</b>	H-5/F-5/F-5B	100	130	130	50	50	20	0
	H-6	some	50	25	7	0	0	0
	H-6G	0	some	some	18	18	30	30
	IL-28	50	0	0	0	0	0	0
<b>Fighters</b>	J-5	some	some	some	0	0	0	0
	J-6	some	some	some	250	0	0	0
	J-7/7E Fishbed	Some	some	some	66	26	36	0
	J-8/8A/B/D/F Finback	0	0	some	52	42	24+	24
	J-8IIA	0	0	some	0	12	0	0
	J-8H Finback	0	0	0	0	0	0	0
<b>Fighters/Ground Attack</b>	JH-7/7A	0	0	0	20	20	84	120
	Q-5 Fantan	0	100	10	30	30	30	0
	Su-30Mk2	0	0	0	0	0	0	24
	J-6 (MiG-19S)	0	0	0	0	200	0	0
	J-10A/S	0	0	0	0	0	0	24
	J-11B/BS	0	0	0	0	0	0	72
<b>Total</b>		150	280	165	493	398	200	294

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

*Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part V*

Anti-Submarine Aircraft		1985	1990	1995	2000	2005	2010	2016
	PS-5 (SH-5)	0	4	5	4	4	4	3
	Be-6 Madge	8	10	15	0	0	0	0
	ISR	some	some	some	7	7	13	7
	H-5	some	some	some	0	0	0	0
	HZ-5 Beagle	0	0	0	7	7	7	same-ISR
	Y8J/Y-8JB	0	0	0	0	0	6	4
	Y-8X	0	0	0	4	4	4	3
	Y-8JB High New 2	0	0	0	0	0	0	4
	Y-8W High New 5	0	0	0	0	0	0	6
	Y-9JB	0	0	0	0	0	0	4
	Tanker	0	0	0	0	3	3	3
	HY-6	0	0	0	0	3	3	0
	H-6DU	0	0	0	0	0	0	same-tanker
	<b>Total</b>	8	14	20	22	28	40	33

Transport & Training		1985	1990	1995	2000	2005	2010	2016
	Y-8 (An-12)	?	?	0	0	4	4	4
	Y-5 (An-2)	?	?	0	50	50	50	50
	Y-7 (An-24)	?	?	0	4	4	4	4
	Y-7H (An-26)	?	?	some	6	6	6	6
	Y-8	?	?	some	6	0	0	0
	Yak-42	?	?	some	2	2	2	2
	JJ-5	?	?	0	0	0	0	0
	JJ-6 (Mig-19)	?	?	some	16	16	14	14
	JJ-7	?	?	0	4	4	4	4
	PT-6 (CJ-6)	?	?	0	53	53	38	38
	HJ-5	0	0	0	0	0	33	5
	HY-7	0	0	0	0	0	21	21
	JL-8 (K-8)	0	0	0	0	0	12	12
	JL-9	0	0	0	0	0	0	12+
	<b>Total</b>	0	0	0	141	188	170	172

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.



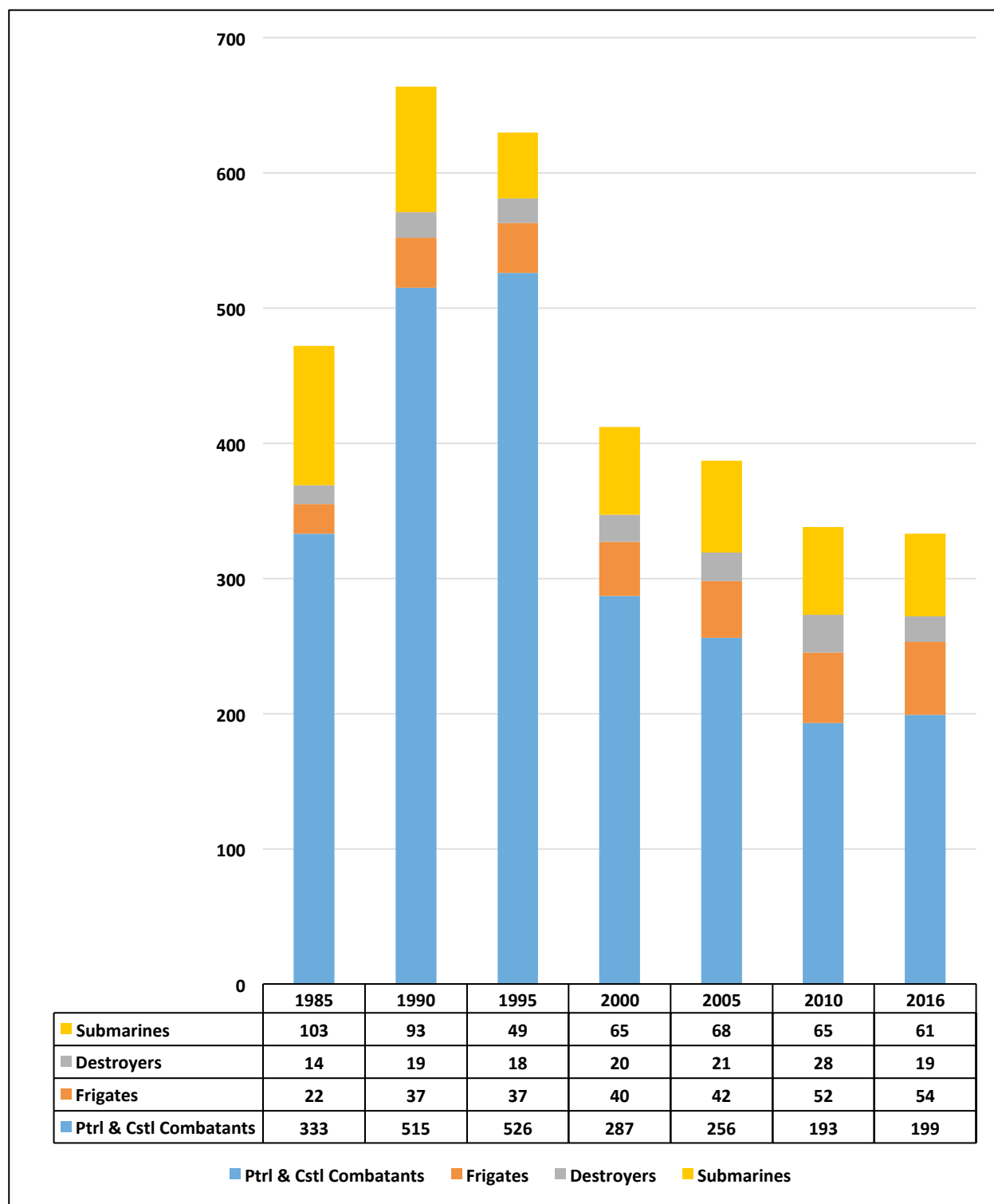
**Figure 10.8: Force Structure of the PLA Navy 1985-2016-Part VI**

<b>Helicopters</b>		1985	1990	1995	2000	2005	2010	2016
	Z-5	some	50	40	0	0	0	0
	Z-8 AEW	0	0	0	0	0	0	1+
	Z-8/Z-8A	0	0	3	12	12	20	20
	Z-8S	0	0	0	0	0	2	2
	Z-8JH	0	0	0	0	0	3	4
	Z-9	0	6	10	0	0	0	0
	Z-9C	0	0	0	12	8	25	25
	SA-321	0	12	0	9	15	15	15
	Ka-28 (Ka-27PL) Helix A	0	0	0	4	8	13	19
	Mi-8	0	0	0	10	8	8	8
	Ka-31	0	0	0	0	0	0	9
<b>Total</b>		12	68	68	47	51	86	103

<b>Missile (Tactical)</b>		1985	1990	1995	2000	2005	2010	2016
	YJ-6/C-601 (CAS-1)	?	some	some	some	some	0	0
	Y-61/C-611 (CAS-1)	?	0	0	some	some	some	some
	YJ-8K (CSS-N-4)	?	0	0	0	some	some	some
	YJ-83 (CSSC-8)	0	0	0	0	0	some	some
	YJ-81/C-801K	?	0	0	some	some	0	0
	YJ-12	0	0	0	0	0	0	some
	YJ-91	0	0	0	0	0	0	some
	Kh-31A (AS-17B Krypton)	0	0	0	0	0	0	some
	KD-88	0	0	0	0	0	0	some
<b>Total</b>		0	some	some	some	some	some	some

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 10.9: Trends in PLAN Combatant Ship Holdings**



Source: IISS, *Military Balance*, 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## ***PLAN Modernization***

The PLAN has modernized its other weapon systems in a manner similar to the PLAA, and the PLAN's modernization program has led to significant changes in the composition of the Navy's major weapons systems. Concurrent with relative increases in major combatants, especially surface combatants, the proportion of combatants that can be considered modern is also steadily increasing. Through a combination of domestic production and foreign purchases, the PLAN has created a powerful core of a modern navy by acquiring modern weapons systems.

Ronald O'Rourke notes the array of such platforms that China is modernizing in a June 2016 CRS report on China's naval modernization:<sup>476</sup>

ASBMs, anti-ship cruise missiles (ASCMs), land-attack cruise missiles (LACMs), surface-to-air missiles, mines, manned aircraft, unmanned aircraft, submarines, aircraft carriers, destroyers, frigates, corvettes, patrol craft, amphibious ships, mine countermeasures (MCM) ships, underway replenishment ships, hospital ships, and supporting C4ISR systems... China's naval modernization effort also includes improvements in maintenance and logistics, doctrine, personnel quality, education and training, and exercises.

### **China's Submarine Modernization**

The PLAN's tactical submarine force has undergone significant qualitative improvements since 1985. With the procurement of Russian *Kilo*-class SSKs and the production of the *Yuan* class SSKs, the PLAN has made significant improvements in submarine quieting. Moreover, the *Yuan*, *Song*, and *Kilo* class submarines are Anti-Ship Cruise Missile (ASCM) capable.<sup>477</sup> The PLAN has also advanced its SSN fleet with the Type-095 SSN. It is quieter than previous PLAN SSNs and with an ASCM capability, and ONI estimates that six such submarines will replace the aging HAN class SSN in the next several years.<sup>478</sup>

The PLAN also has 4 strategic ballistic missile submarines (SSBN): one *Xia* and three *Jin* class. The one first-generation *Xia* class SSBN is not considered operational, but the more modern *Jin* class SSBNs give the PLAN "the JL-2 submarine launched ballistic missile (SLBM), [which] has nearly three times the range of the XIA-class SSBN's JL-1 SLBM, which was only able to range targets in the immediate vicinity of China."<sup>479</sup>

**Figure 10.10** illustrates some key advances made in submarine modernization.

A CRS report by Ronald O'Rourke provides the following overview of Chinese submarine modernization:<sup>480</sup>

China since the mid-1990s has acquired 12 Russian-made Kilo-class non-nuclear-powered attack submarines (SSs) and put into service at least four new classes of indigenously built submarines, including the following:

- a new nuclear-powered ballistic missile submarine (SSBN) design called the Jin class or Type 094;
- a new nuclear-powered attack submarine (SSN) design called the Shang class or Type 093;
- a new SS design called the Yuan class or Type 039A; and
- another (and also fairly new) SS design called the Song class or Type 039/039G.

The Kilos and the four new classes of indigenously built submarines are regarded as much more modern and capable than China's aging older-generation submarines. At least some of the new indigenously built designs are believed to have benefitted from Russian submarine technology and design know-how.

The August 2009 ONI report included a graph) that shows a new SSN design, called the Type 095, along with the date 2015, suggesting that ONI projected in 2009 that the first Type 095 would enter service that

year. DOD states, “Over the next decade, China may construct a new Type 095 nuclear-powered, guided-missile attack submarine (SSGN), which not only would improve the PLAN’s anti-surface warfare capability but might also provide it with a more clandestine land-attack option. ONI states that:

*The SHANG-class SSN’s initial production run stopped after only two hulls that were launched in 2002 and 2003. After nearly 10 years, China is continuing production with four additional hulls of an improved variant, the first of which was launched in 2012. These six total submarines will replace the aging HAN class SSN on nearly a one-for-one basis in the next several years. Following the completion of the improved SHANG SSN, the PLA(N) will progress to the Type 095 SSN, which may provide a generational improvement in many areas such as quieting and weapon capacity.*

A November 2015 report, based on information from Chinese media reports, states that China launched three new Type 093-class submarines in May 2015.<sup>53</sup> (Launched generally means that construction of the ships has progressed to the point where the ships could be put into the water for the final phase of their construction.)

China in 2012 commissioned into a service a new type of non-nuclear-powered submarine, called the Type 032 or Qing class according to *IHS Jane’s Fighting Ships 2015-2016*, that is about one-third larger than the Yuan-class design. Observers believe the boat may be a one-of-kind test platform; *IHS Jane’s Fighting Ships 2015-2016* refers to it as an auxiliary submarine (SSA). DOD states that China is pursuing “a new joint-design and production program [with Russia] for a heavy-lift helicopter and diesel-electric submarines based on the Russian PETERSBURG/ LADA-class.” A June 29, 2015, press report showed a 2014 satellite photograph of an apparent Chinese mini-or midget-submarine submarine that “has not been seen nor heard of since.”

Andrew S. Erickson summarizes the results of the submarine modernization effort as follows:<sup>481</sup>

China’s submarine force is one of its core strengths, but it contains considerable variety. On the nuclear-powered ballistic-missile submarine (SSBN) front, three Type 094 hulls are already in service. Their armament awaits deployment of the JL-2 submarine-launched ballistic missile (SLBM), which is currently undergoing flight testing. The underground base at Yalong Bay on Hainan Island, which is emerging as a likely center of Chinese SSBN operations, offers proximity to deep water in otherwise cluttered and possibly closely monitored water space.

...The Office of Naval Intelligence’s most recent unclassified report characterizes the Type 094 as relatively noisy compared to equivalent Russian platforms. This noisiness, and the lack of an operational SLBM, leave it unable as yet to take full advantage of its South China Sea location. Follow-on variants of both hull and missile, as well as further training and operational experience, may be required before the system as a whole is capable of effective deterrence patrols. Moreover, command and control issues inherent in successful SSBN operations may give Beijing pause and slow development. Meanwhile, China’s land-based, partially mobile nuclear-missile forces are already extensive and highly capable. Their stealth is greatly enhanced by use of decoys and secure fiber-optic communications, options unavailable to submarines. While China is heading toward a nuclear dyad (Second Artillery and PLAN), it is likely to be a slow and cautious road.

For current nonnuclear operations, the key platforms are not SSBNs but rather conventional and nuclear-powered attack submarines (SSN). The relative emphasis between them is an important indicator of China’s prioritization of near-seas versus far-seas operations. China’s conventionally powered submarines, already quiet but constrained by the speed and power limitations of their type, are relevant primarily to near-seas operations. This applies even to the advanced Yuan-class, whose likely air-independent propulsion (AIP) would permit several weeks of low-speed submerged operations without snorkeling, which makes antisubmarine warfare against them more difficult. AIP also saves batteries to support several hours of high-speed engagement and escape maneuvers. SSNs, by contrast, are important for far-seas power projection because of their unparalleled power and endurance. China’s numbers and capabilities remain limited here, but this will be an important indicator to watch.

Chinese submarine acquisitions show its commitment to contesting its littorals and near-seas regions. According to 2016 DoD report, China has 53 diesel attack submarines contrasted to just five nuclear attack submarines.<sup>482</sup> The preponderance of diesel attack submarines reveals the operational focus of China’s submarine force. Diesel submarines, with their inherent speed and

range weaknesses, are primarily suited for a conflict in the PLAN's two most critical areas, the South China Sea and the Taiwan Strait. This indicates that the majority of China's submarine force is not looking to orient towards "blue water" deployments.

O'Rourke discussed China's negotiations with Russia to purchase its Kalina class submarines, which were published in a March 25, 2014 press report:<sup>483</sup>

Instead of providing the older Lada-class submarines to the People's Liberation Army Navy as requested by Beijing, Russia's president, Vladimir Putin, will likely authorize China to receive the more advanced Kalina-class submarine, reports the *Voice of Russia*, citing Vassily Kashin, a senior research fellow from the Moscow-based Center for Analysis of Strategies and Technologies.

Viktor Chirkov, the commander-in-chief of the Russian Navy, officially announced that the Kalina-class conventional submarine equipped with an advanced air-independent propulsion system will be developed and produced in the future on Mar. 20. "Russia is currently designing a fifth-generation conventional submarine, dubbed Project Kalina, which will be fitted with an air-independent propulsion (AIP) system," said Chirkov. Authorities also declared that the construction of the older Lada-class submarine will be cancelled. The Lada-class, or Project 677, is a fourth-generation diesel-electric submarine based on the older Kilo-class submarine.

China was negotiating with Russia to purchase four Lada-class submarines from the Rubin Design Bureau based in St Petersburg. China hoped those submarines could be refitted with Chinese engines and an electronic fire-control system, according to the Canada-based *Kanwa Defense Review*. As Russia remains isolated over its intervention in the Ukraine crisis, Moscow values China's position as one of its strategic partners, Kashin said. He added that the PLA Navy will benefit from the cancellation of the Lada-class as it will open a new door for China to gain more advanced technology from Russia to build its own submarine in the future.

Meanwhile, China may be able to design its own fifth-generation conventional submarine with the help of Russia under this new concept, Kashin said.<sup>484</sup>

China's submarines are armed with one or more of the following: ASCMs, wire-guided and wake-homing torpedoes, and mines. The final eight Kilos purchased from Russia are reportedly armed with the highly capable Russian-made SS-N-27 Sizzler ASCM. In addition to other weapons, Shang-class SSNs may carry LACMs. Although ASCMs are often highlighted as sources of concern, wake-homing torpedoes are also a concern because they can be very difficult for surface ships to counter.

Although China's aging Ming-class (Type 035) submarines are based on old technology and are much less capable than China's newer-design submarines, China may decide that these older boats have continued value as minelayers or as bait or decoy submarines that can be used to draw out enemy submarines (such as U.S. SSNs) that can then be attacked by other Chinese naval forces.

In related areas of activity, O'Rourke mentions that China reportedly is developing new unmanned underwater vehicles, and has modernized its substantial inventory of mines according to ONI:<sup>485</sup>

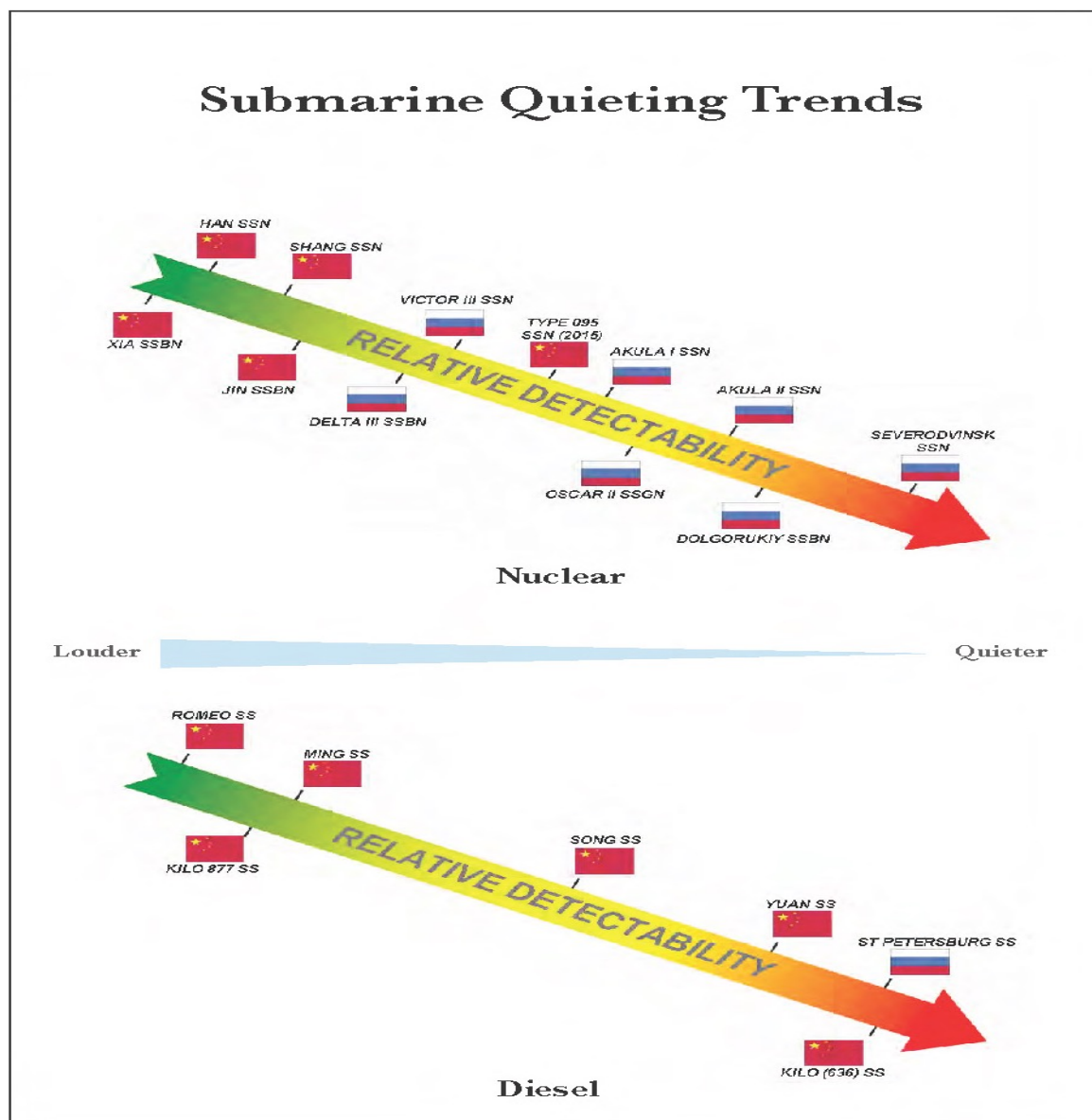
China has a robust mining capability and currently maintains a varied inventory estimated at more than [naval] 50,000 mines. China has developed a robust infrastructure for naval mine related research, development, testing, evaluation, and production. During the past few years, China has gone from an obsolete mine inventory, consisting primarily of pre-WWII vintage moored contact and basic bottom influence mines, to a vast mine inventory consisting of a large variety of mine types such as moored, bottom, drifting, rocket-propelled, and intelligent mines. The mines can be laid by submarines (primarily for covert mining of enemy ports), surface ships, aircraft, and by fishing and merchant vessels. China will continue to develop more advanced mines in the future such as extended-range propelled-warhead mines, anti-helicopter mines, and bottom influence mines more able to counter minesweeping efforts.

The official statement from the 2016 DoD report notes that the Chinese submarine forces is likely to expand quickly in the near future:<sup>486</sup>

The PLAN places a high priority on the modernization of its submarine force and currently possesses five SSNs, four nuclear-powered ballistic missile submarines (SSBN), and 53 diesel-powered attack submarines (SS/SSP). By 2020, this force will likely grow to between 69 and 78 submarines. In addition to the 12 KILO-class SS units acquired from Russia in the 1990s and 2000s, China has built 13 SONG-class SS (Type 039) and 13 YUAN-class SSP (Type 039A) with a total of 20 YUANs planned for production. China continues to improve its SSN force, and four additional SHANG-class SSN (Type 093) will eventually join the two already in service. The SHANG SSN will replace the aging HAN-class SSN (Type 091). These improved SHANG SSNs feature a vertical launch system (VLS) and may be able to fire the YJ-18 advanced anti-ship cruise missile (ASCM). Over the next decade, China may construct a new Type 095 nuclear-powered, guided-missile attack submarine (SSGN), which not only would improve the PLAN's anti-surface warfare capability but might also provide it with a more clandestine land-attack option. Finally, China continues to produce the JIN-class SSBN (Type 094) with associated CSS-N-14 (JL-2) submarine-launched ballistic missiles (SLBM) that has an estimated range of 7,200 km. This platform represents China's first credible, sea-based nuclear deterrent. China will probably conduct its first SSBN nuclear deterrence patrol sometime in 2016. Four JIN SSBNs are operational, and up to five may enter service before China begins developing and fielding its next-generation SSBN, the Type 096, over the coming decade. The Type 096 will reportedly be armed with a successor to the JL-2, the JL-3 SLBM.

DOD stated in 2012 that, "China has developed torpedo and mine systems capable of area denial in a Taiwan scenario." Estimates of China's naval mine inventory exceed 50,000 mines, with many more capable systems developed in the past 10 years. While mines are simple technology, they are effective and cheap weapon that could play a central role in an anti-access area-denial (A2/AD) scenario.

**Figure 10.10: PLAN Progress in Submarine Technology**



Source: Office of Naval Intelligence, *People's Liberation Army Navy: A Modern Navy with Chinese Characteristics*, 22, [http://www.oni.navy.mil/Intelligence\\_Community/docs/china\\_army\\_navy.pdf](http://www.oni.navy.mil/Intelligence_Community/docs/china_army_navy.pdf).

### China's Surface Vessels and "Blue Water" Modernization

PLAN modernization of its surface forces has resulted in reductions in low-capability single-mission ships and the development of multi-mission major surface combatants. Moreover, these multi-mission capabilities are extending beyond self-defense and certain classes are developing fleet-defense capabilities.

The 2015 ONI report described the PLAN's recent improvements to its defense capabilities that allow its navy to go "from a 'green water' force to one capable of operating at substantial distance from China's coast, and eventually deep into the Pacific and Indian Ocean:

In recent years, shipboard air defense is arguably the most notable area of improvement on PLA(N) surface ships. China has retired several legacy destroyers and frigates that had at most a point air defense capability, with a range of just several miles. Newer ships entering the force are equipped with medium-to-long range area air defense missiles.

The PLA(N) produced a total of six LUYANG II-class (Type 052C) destroyers with the HHQ-9 surface-to-air missile (~55 nm), and is now receiving the new LUYANG III-class (Type 052D) destroyer, which carries an extended-range variant of the HHQ-9. Additionally, at least 20 JIANGKAI II-class (Type 054A) frigates are now operational with the vertically-launched HHQ-16 (~20-40 nm), with more under construction.

These newer platforms use modern combat management systems and air-surveillance sensors, such as the Chinese SEA EAGLE and DRAGON EYE phased-array radar. While some older platforms with little or no air defense capability remain in the PLA(N) inventory, the addition of these new units allows the PLA(N) surface force to operate with increased confidence outside of shore-based air defense systems, as one or two ships are equipped to provide air defense for the entire task group.

The PLA(N) continues to emphasize ASUW as a core strength, with continued development of advanced ASCMs and OTH-T systems. Most combatants still carry variants of the YJ-83 ASCM, while the LUYANG destroyer is fitted with the YJ-62, and the newest class, the LUYANG III destroyer is fitted with the new vertically-launched YJ-18 ASCM. While the maximum effective ranges of the export variants of the YJ-83 family (C802, C802A) and YJ-62 family (C602) are advertised as 65nm, 100nm, and 650nm respectively, it is likely the domestic versions of these systems have much longer ranges.

A new cruiser to be built in China in the latter half of the decade will carry a variety of antisurface weapons, some of which will be newly developed. The PLA(N) recognizes that these extended-range weapons require OTH-T capability to realize their full potential and has invested in maritime reconnaissance systems at the national and tactical levels, as well as communication systems such as datalinks, to provide targeting information to launch platforms.

**Figure 10.11:** shows the ONI's assessment of the PLAN's surface-to-air missile ranges.

**Figure 10.12:** shows the ONI's assessment of the PLAN's surface anti-ship cruise missile ranges.

China's efforts are evolving so quickly that their full nature is not always clear. O'Rourke describes the evolution of these aspects of China's surface fleet as follows:<sup>487</sup>

China since the early 1990s has purchased four Sovremenny-class destroyers from Russia and put into service 10 new classes of indigenously built destroyers and frigates (some of which are variations of one another) that demonstrate a significant modernization of PLA Navy surface combatant technology. DOD states that China's new destroyers and frigates "provide a significant upgrade to the PLA Navy's area air defense capability, which will be critical as it expands operations into distant seas beyond the range of shore-based air defense." ONI states that,

*In recent years, shipboard air defense is arguably the most notable area of improvement on PLA(N) surface ships. China has retired several legacy destroyers and frigates that had at most a point air defense capability, with a range of just several miles. Newer ships entering the force are equipped with medium-to-long range area air defense missiles.*

China reportedly is also building a new class of corvettes (i.e., light frigates) and has put into service a new kind of missile-armed fast attack craft that uses a stealthy catamaran hull design. China also appears to be planning to build a new cruiser. ONI states, "The JIANGKAI-class (Type 054A) frigate series, LUYANG-class (Type 052B/C/D) destroyer series, and the upcoming new cruiser (Type 055) class are considered to be modern and capable designs that are comparable in many respects to the most modern Western warships."

China is also building substantial numbers of new cutters for the China Coast Guard (CCG), a paramilitary service that China often uses for asserting and defending its maritime territorial claims in the East and South China Seas. In terms of numbers of ships being built and put into service, production of corvettes for China's navy and cutters for the CCG are currently two of China's most active areas of non-commercial shipbuilding.

Photographs showing a land-based mockup of what appears to be the topside (i.e., the main deck and superstructure) of a large surface combatant have led some observers to conclude that China is planning to



build a new cruiser (or destroyer), called the Type 055, that might displace roughly 10,000 tons. China is the only country known to be planning to build a ship referred to (by some sources at least) as a cruiser. (The U.S. Navy's current 30-year shipbuilding plan includes destroyers but no cruisers.) DOD states that China will "likely begin construction of a larger Type 055 'destroyer' in 2015, a vessel better characterized as a guided-missile cruiser (CG) than a DDG." ONI states that "a new cruiser to be built in China in the latter half of the decade will carry a variety of antisurface weapons, some of which will be newly developed."

An April 6, 2015, press report states:<sup>488</sup>

China could be developing two types of the Type 055 guided-missile destroyer—an antisubmarine and an air-defense model—according to the Kanwa Defense Review, a Chinese language military magazine based in Canada.

The April edition of the magazine made the suggestion after analyzing the latest leaked satellite images of a ground model of the Type 055, which experts believe may have been designed as the successor to the PLA Navy's highly successful Type 52D destroyer.

A December 30, 2014, press report states:<sup>489</sup>

A picture has just emerged on the Chinese internet showing that construction of the first Type 055 destroyer may have started. The Type 055 guided missile destroyer is the next generation destroyer designed for the People's Liberation Army Navy (PLAN or Chinese Navy).

According to Chinese sources, the picture was taken last week at the Changxing Jiangnan shipyard (member of CSSC - China State Shipbuilding Corporation) near Shanghai. It shows a sign with the mention "Commencement Ceremony for the Construction of 055 destroyer number 1". Such ceremonies are common practice in Chinese naval shipyards and should the picture be authentic, this would indicate that construction of the first Type 055 destroyer has indeed just started with the first cut of steel ceremony.

According to Chinese media, the Chinese government awarded the contract for construction of the first ship of the class to Changxing Jiangnan shipyard in August. According to the same sources, the second Type 055 destroyer will be built at the Dalian naval shipyard (Dalian Shipbuilding Industry Company member of CSIC - China Shipbuilding Industry Corporation).

Construction of a Type 055 Shore Integration Facility (SIF) started in early 2014 at the Ship Design and Research Center (701 Institute) of CSIC at the Wuhan University of Science and Technology. A model of the PLAN's Aircraft Carrier was built at the same location in 2009. Based on pictures of the Type 055 SIF taken in September 2014, construction was almost over. This could indicate that land based testing has already started and it would then make sense timing wise to start construction of the first unit (it will likely take over one year to launch the first hull in the water)....

[The set of weapons that observers believe the ship will be equipped with] is close to the one found on board Type 052D destroyers (Kunming/Luyang III class) but with an overall better integration and what appears to be a sleeker design....

Using recent Google Earth satellite imagery, the Type 055 SIF in Wuhan measures close to 130 meters in length, with most of its bow and its helicopter deck missing. The rest is pure estimation but Type 055 may end up measuring about 190 meters in length with a close to 12,000 tons displacement.

### **Sovremenny-Class Destroyers**

China in 1996 ordered two Sovremenny-class destroyers from Russia; the ships entered service in 1999 and 2001. China in 2002 ordered two additional Sovremenny-class destroyers from Russia; the ships entered service in 2005 and 2006. Sovremenny-class destroyers are equipped with the Russian-made SS-N-22 Sunburn ASCM, a highly capable ASCM.

### **Six New Indigenously Built Destroyer Classes**

China since the early 1990s has put into service six new classes of indigenously built destroyers, including three variations of one class. The classes are called the Luhai (Type 052), Luhai (Type 051B), Louzhou (Type 051C), Luyang I (Type 052B), Luyang II (Type 052C), and Luyang III (Type 052D) designs. Compared to China's remaining older Luda (Type 051) class destroyers, which entered service between 1971 and 1991,

these six new indigenously built destroyer classes are substantially more modern in terms of their hull designs, propulsion systems, sensors, weapons, and electronics.

The Luyang II-class ships and the Luyang III-class ships appear to feature phased array radars that are outwardly somewhat similar to the SPY-1 radar used in the U.S.-made Aegis combat system. Like the older Luda-class destroyers, these six new destroyer classes are armed with ASCMs.

As shown in Table 2, China between 1994 and 2007 commissioned only one or two ships in its first four new indigenously built destroyers classes, suggesting that these classes were intended as stepping stones in a plan to modernize the PLA Navy's destroyer technology incrementally before committing to larger-scale series production of Luyang II- and Luyang III-class destroyers. As shown in Table 2, after commissioning no new destroyers in 2008-2012—a hiatus that may have been caused in part by the relocation of a shipyard<sup>89</sup>—commissionings of new Luyang II- and Luyang III-class destroyers have resumed. DOD states that “during 2014, the final two LUYANG II-class DDG (Type 052C) entered service, bringing the total number of ships of this class to six. Additionally, the first LUYANG III-class DDG (Type 052D) entered service in 2014.”<sup>90</sup> A July 21, 2015, press report states:

*People's Liberation Army Navy (PLAN) watchers report that the second of the Type 052D 'Luyang III' class destroyers, Yangsha (pennant number 173), was commissioned in mid-July and joined China's South Sea Fleet....*

*Earlier in July, the seventh Type 052D emerged from the building shed at the Jiangnan Changxingdao shipyard in Shanghai and after launch joined the sixth of class currently fitting out. Photographs showing visible progress on the eighth and ninth hulls have also appeared.*

A July 27, 2015, press report states that “all in all, the PLAN plans to build a fleet of 12 Type 052D [Luyang III-class] destroyers—nicknamed “Chinese Aegis” [ships]—before shifting production to the newer Type 055D multi-role cruiser.

China is developing aircraft carriers like the *Liaoning* and has future plans for new Types. A CRS report noted that:<sup>490</sup>

On September 25, 2012, China commissioned into service its first aircraft carrier—the *Liaoning*, a refurbished ex-Ukrainian aircraft carrier, previously named *Varyag*, that China purchased from Ukraine as an unfinished ship in 1998.

The *Liaoning* is conventionally powered, has an estimated full load displacement of almost 60,000 tons, and might accommodate an eventual air wing of 30 or more aircraft, including fixed-wing airplanes and helicopters. A September 7, 2014, press report, citing an August 28, 2014, edition of the Chinese-language *Shanghai Morning Post*, stated that the *Liaoning's* air wing may consist of 24 J-15 fighters, 6 anti-submarine warfare helicopters, 4 airborne early warning helicopters, and 2 rescue helicopters, for a total of 36 aircraft. The *Liaoning* lacks aircraft catapults and instead launches fixed-wing airplanes off the ship's bow using an inclined “ski ramp.”

By comparison, a U.S. Navy aircraft carrier is nuclear powered (giving it greater cruising endurance than a conventionally powered ship), has a full load displacement of about 100,000 tons, can accommodate an air wing of 60 or more aircraft, including fixed-wing aircraft and some helicopters, and launches its fixed-wing aircraft over both the ship's bow and its angled deck using catapults, which can give those aircraft a range/payload capability greater than that of aircraft launched with a ski ramp. The *Liaoning*, like a U.S. Navy aircraft carrier, lands fixed wing aircraft using arresting wires on its angled deck. Some observers have referred to the *Liaoning* as China's “starter” carrier. DOD states that:

*Even when fully operational, the Liaoning will not enable long-range power projection similar to U.S. NIMITZ-class carriers. The LIAONING's smaller size limits the number of aircraft it can embark, while the ski-jump configuration limits restrict fuel and ordnance load. The LIAONING is therefore best suited to fleet air defense missions, extending air cover over a fleet operating far from land-based coverage.*

ONI states that:<sup>491</sup>

*LIAONING is quite different from the U.S. Navy's NIMITZ-class carriers. First, since LIAONING is smaller, it will carry far fewer aircraft in comparison to a U.S.-style carrier air wing. Additionally, the LIAONING's*

*ski-jump configuration significantly restricts aircraft fuel and ordnance loads. Consequently, the aircraft it launches have more a limited flight radius and combat power. Finally, China does not yet possess specialized supporting aircraft such as the E-2C Hawkeye. Unlike a U.S. carrier, LIAONING is not well equipped to conduct long-range power projection. It is better suited to fleet air defense missions, where it could extend a protective envelope over a fleet operating in blue water. Although it possesses a full suite of weapons and combat systems, LIAONING will likely offer its greatest value as a long-term training investment.*

A July 8, 2015, press report states:<sup>492</sup>

China's first aircraft carrier battle group is expected to be formed next year to make up for the shortcoming of the limited combat radius of the country's existing fleets, according to China's official news agency Xinhua.... Beijing is considering different approaches for forming its aircraft carrier battle groups, including the one used by the United States Navy, the report said

The PLA Navy is currently learning to operate aircraft from the ship. DOD states, "The [ship's] air wing is not expected to embark the carrier until 2015 or later." ONI states that "full integration of a carrier air regiment remains several years in the future, but remarkable progress has been made already," and that "it will take several years before Chinese carrier-based air regiments are operational."

DOD states that "China also continues to pursue an indigenous aircraft carrier program and could build multiple aircraft carriers over the next 15 years." ONI states that "Chinese officials acknowledge plans to build additional carriers but they have not publicly indicated whether the next carrier will incorporate catapults or which aircraft they plan to embark."

On July 25, 2014, Admiral Jonathan Greenert, the U.S. Navy's Chief of Naval Operations (CNO), stated that China "will build another carrier [in addition to the Liaoning], probably relatively soon," that Chinese officials said it will "look just like" the Liaoning, with a ski ramp, that it will be similar in size to the Liaoning, with a displacement of 65,000 tons or 70,000 tons, and that China is "moving on a pace that is extraordinary."

A July 18, 2015, press report states:<sup>493</sup>

*China's first domestically produced aircraft carrier will be built by Dalian Shipyard, Chinese media reported, adding that there are several reasons for it to become the building base for aircraft carriers...*

*Jiangnan Shipyard will likely build China's second domestically-built aircraft carrier...*

*China will require six years to build an aircraft carrier of its own and the next four aircraft carriers will boost the country blue-water naval capacity.*

*Although China's blue-water navy capacity is still limited, reports said the water displacement of the second domestically-built carrier will be 59,000 tons, equal to the Liaoning, which is already in service and can carry 22 fixed-wing fighters.*

A March 9, 2015, press report states:<sup>494</sup>

Several senior Chinese officials have confirmed that China is building its second aircraft carrier and will likely adopt an improved launch system for aircraft on the ship, a Chinese language daily in Hong Kong reported Monday.

The Hong Kong Commercial Daily... cited Liu Xiaojiang... a former political commissar of the People's Liberation Army (PLA) Navy, as saying that the government's industrial and manufacturing agencies are now in charge of the ship's construction.

Liu said that compared with the first carrier, the Liaoning ... which was commissioned in September 2012, several improvements are being made to the second ship but concrete details are only known within those agencies responsible for the project....

The reports also cited Ma Weiming... an expert in electrical and electronics engineering, as saying that the new carrier's system to launch aircraft was proceeding smoothly.

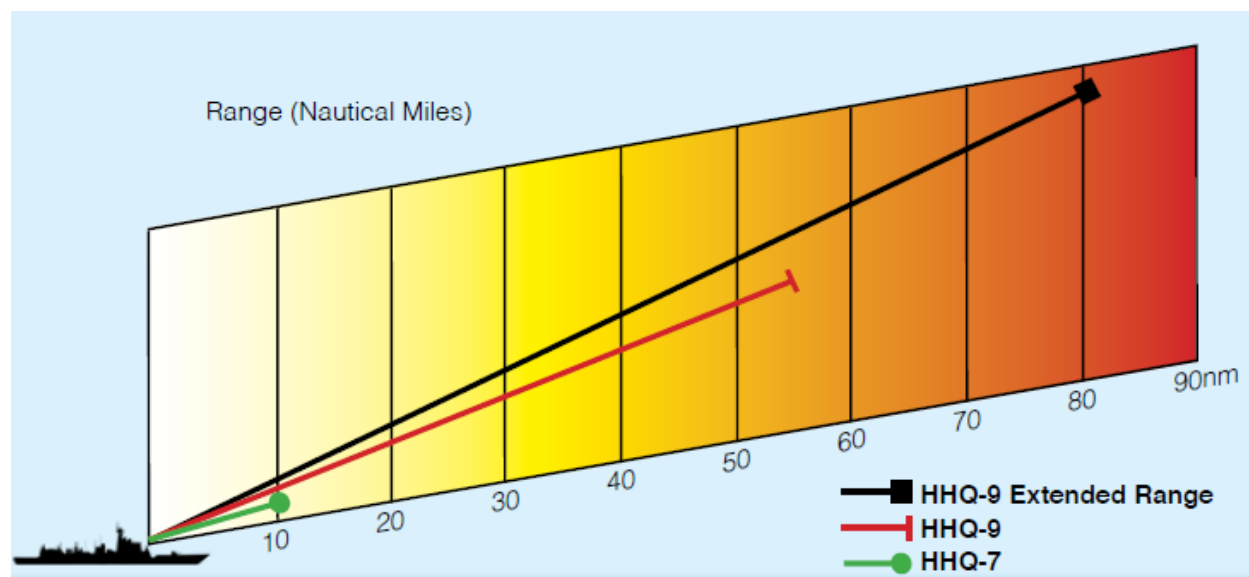
He stressed that the system was no longer inferior to and might even be more advanced than that used by the United States, whose catapult takeoff service technology is currently the best in the world.

China's CCTV reported last week that the catapult being tested in China to help planes take off quickly is more efficient than the "ski-jump" ramp used to launch aircraft on China's first carrier.

DoD reporting states that, "China also continues to pursue an indigenous aircraft carrier program and could build multiple aircraft carriers over the next 15 years."<sup>495</sup>

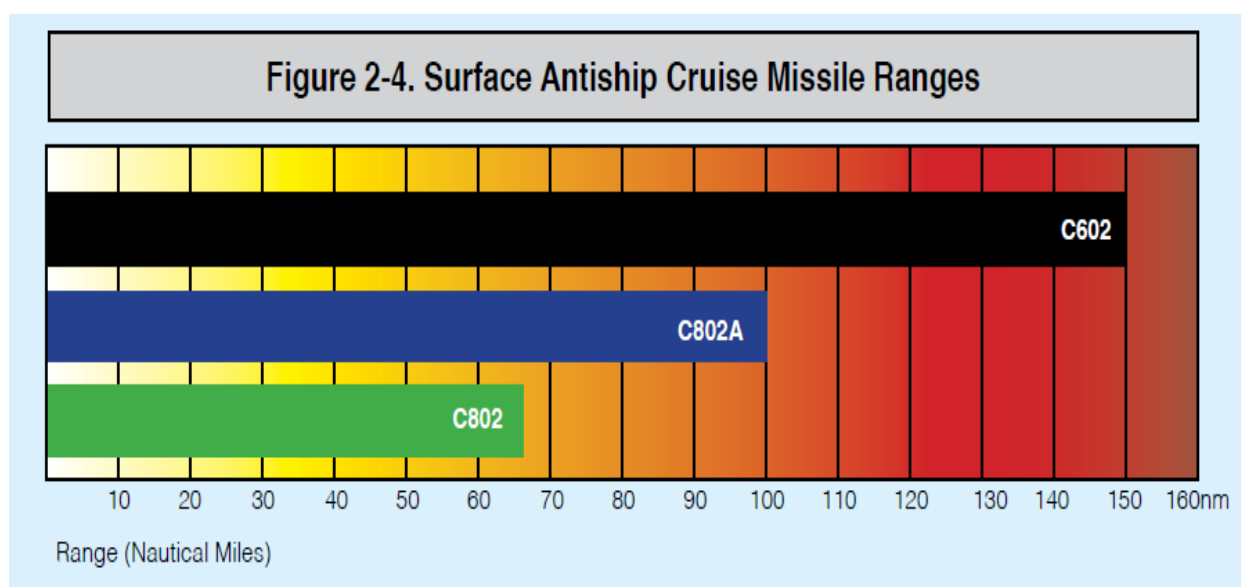
The US DoD also has reported that Chinese carrier-based jets – the Shenyang J-15 – were conducting take-off and landing training on the *Liaoning* in late 2012.<sup>496</sup> In 2015, the US DoD reported that China was focused on integrating the J-15 but described it as an "experimental capacity" and indicated that China will build additional and more capable aircraft carriers.<sup>497</sup>

**Figure 10.11: PLAN Surface-to-Air Missile Ranges**



Source: ONI, *PLA Navy: New Capabilities and Missions for the 21<sup>st</sup> Century*, April 2015.

**Figure 10.12: PLAN Anti-Ship Cruise Missile Ranges**



Source: ONI, *PLA Navy: New Capabilities and Missions for the 21<sup>st</sup> Century*, April 2015.

### Major Combatant Holdings

**Figures 10.13 and 10.14** track the overall composition and development of the PLAN's forces. They illustrate the sustained procurement of modern vessels and their growth, absolutely and relatively, in the PLAN arsenal. Moreover, as **Figure 10.13** indicates, the PLAN's modern major combatant inventory is larger than most of the region's navies'.<sup>498</sup>

It is important to note the parameters for "modern" combatants:

- Submarines: quiet and capable of firing ASCMs
- Major Surface Combatants: multi-mission capable, containing strong capabilities in at least two warfare areas

Analyst Andrew S. Erickson provides useful background on China's commissioning of its first aircraft carrier on September 25, 2012:<sup>499</sup>

According to China's Ministry of National Defense, Liaoning will facilitate PLAN integrated combat force modernization, help address sovereignty issues, and advance new historic missions by "developing far seas cooperation" and capabilities to deal with nontraditional security threats. Particularly important is its future significance for "enhancing protection operations capabilities" (*zengqiang fangwei zuozhan nengli*) by using air power to cover vessels operating out of area.

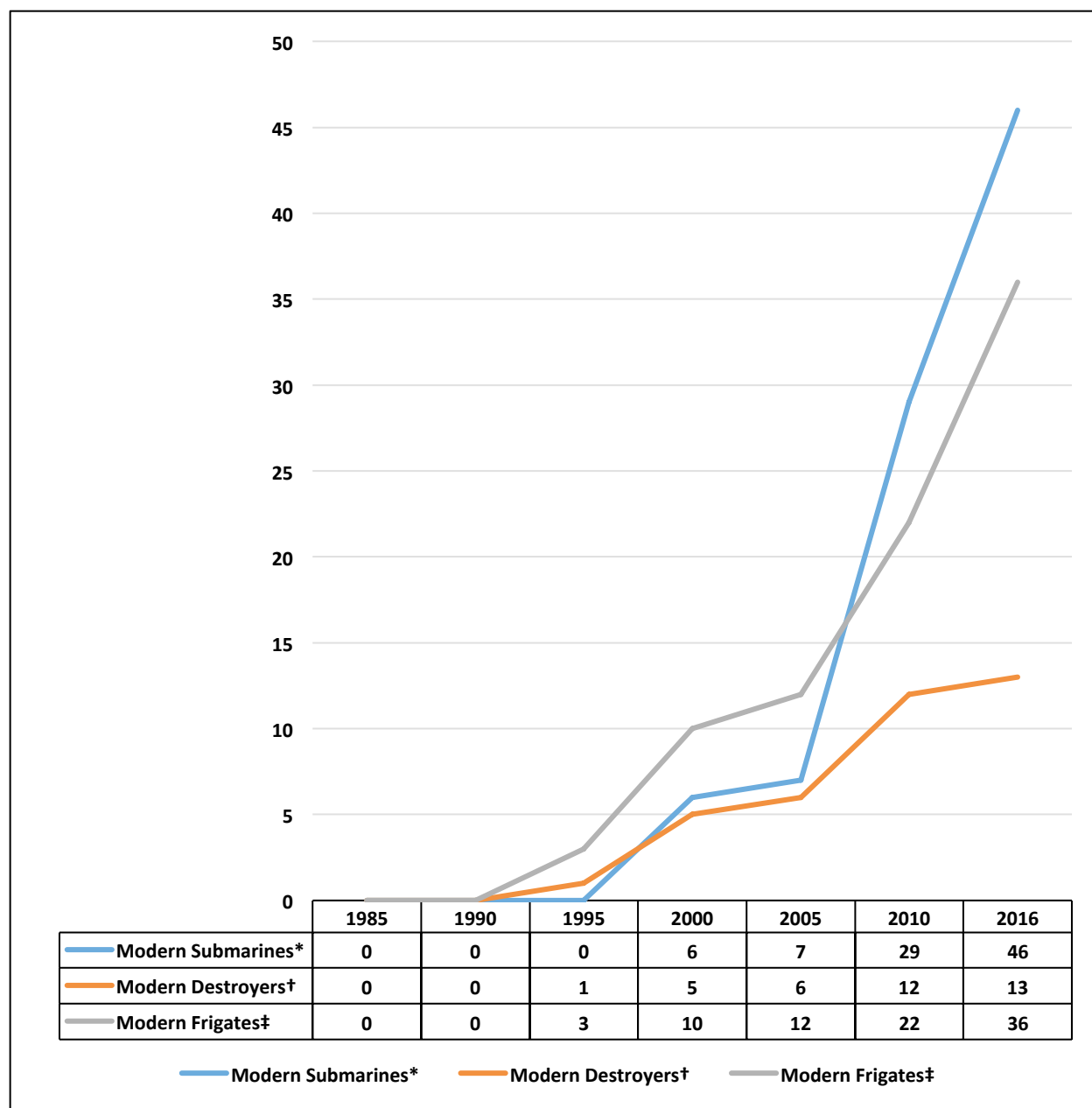
While *Liaoning* will initially serve as a training and test platform, and cannot threaten capable forces such as the U.S. Navy or the Japan Maritime Self-Defense Force, PLAN-affiliated experts advocate using its formidable symbolism and potential for future air power to deter smaller neighbors such as Vietnam from pursuing competing claims in the South China Sea. [C]arriers will constitute part of... lower-intensity tertiary layer of Chinese naval and air power development... China will probably develop multiple aircraft carriers so that one can always remain at sea while the others are undergoing refitting or being used for training.

*Liaoning* is a short takeoff but arrested recovery (STOBAR) carrier, which combines an un-catapulted, rolling takeoff assisted by a ski jump with a traditional arrested recovery system that permits the landing of fighter aircraft in short deck space. The STOBAR design entails several major limitations.... To increase its deck aviation capabilities substantially, China must develop a catapult-assisted takeoff but arrested recovery (CATOBAR) carrier; the question is how soon it will actually do so. It is uncertain whether China has started "indigenous construction," and how that might be defined. Chinese shipyards may already be working on

components. More broadly, will China seek to construct its own version of *Liaoning* first? Alternatively, might China wait to master more complex processes, and then construct a CATOBAR carrier? The nature of China's second indigenously constructed aircraft carrier will tell much about its deck aviation trajectory.

The US DoD reported that Chinese carrier-based jets – evidently the Shenyang J-15 – were conducting takeoff and landing training on the *Liaoning* in late 2012.<sup>500</sup> Furthermore, the deputy chief designer of the *Liaoning* said in an interview that China was planning for more aircraft carriers: “China’s perception of interest demands has a bearing on the number of aircraft carriers. How many aircraft carriers China should have depends on its needs. What I can tell you is that the ‘Liaoning Ship’ is just a beginning.”<sup>501</sup>

Since then, the DoD reported that the *Liaoning* continued flight integration training and would not achieve a final operational capability until 2015 or later when the carrier is expected to embark. Even then, it will not have the full long-range capability similar to the US Nimitz class carriers.<sup>502</sup>

**Figure 10.13: PLAN Major Combatant Holdings**

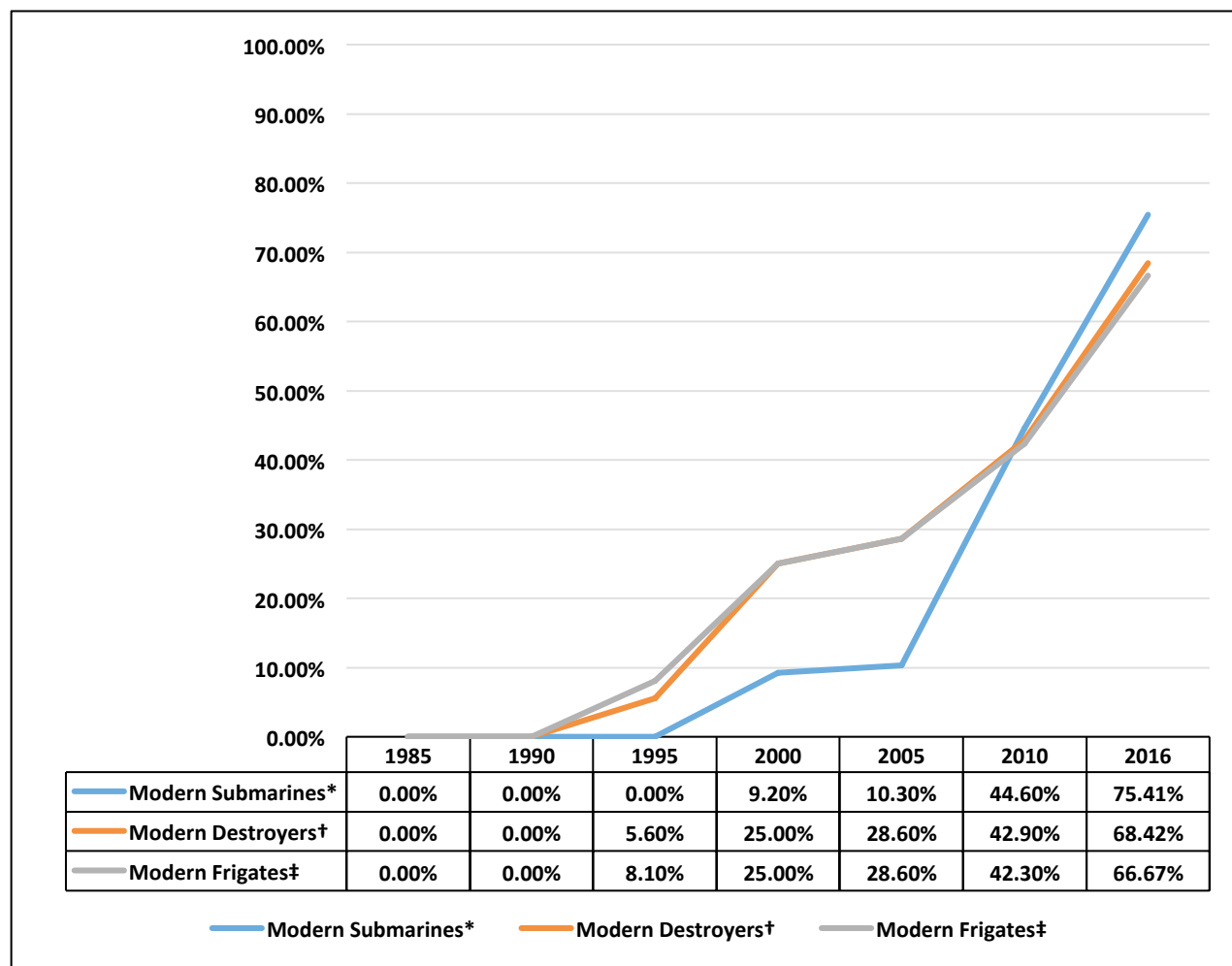
\*The following systems are considered modern: *Qing* class, *Kilo* class, *Song* class (Type 039/039G), *Yuan* class (Type 039A/039B), *Shang* class (Type 093), *Jin* class (Type 094)

†The following systems are considered modern: *Sovremenny* class, *Luyang* class (Type 052B), *Luyang II* class (Type 052C), *Luyang III* class (Type-052D), *Luhai* class (Type 051B), *Luhu* class (Type 052)

‡The following systems are considered modern: *Jiangkai* class (Type 054), *Jiangkai II* class (Type 054A), *Jiangwei* class (Type 053H2G), *Jiangwei II* class (Type 053H3), *Luda III* class (Type 051DT), *Luda III* class (Type 051G)

Source: IISS, *Military Balance* 1985-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 10.14: Relative PLAN Major Combatant Holdings**

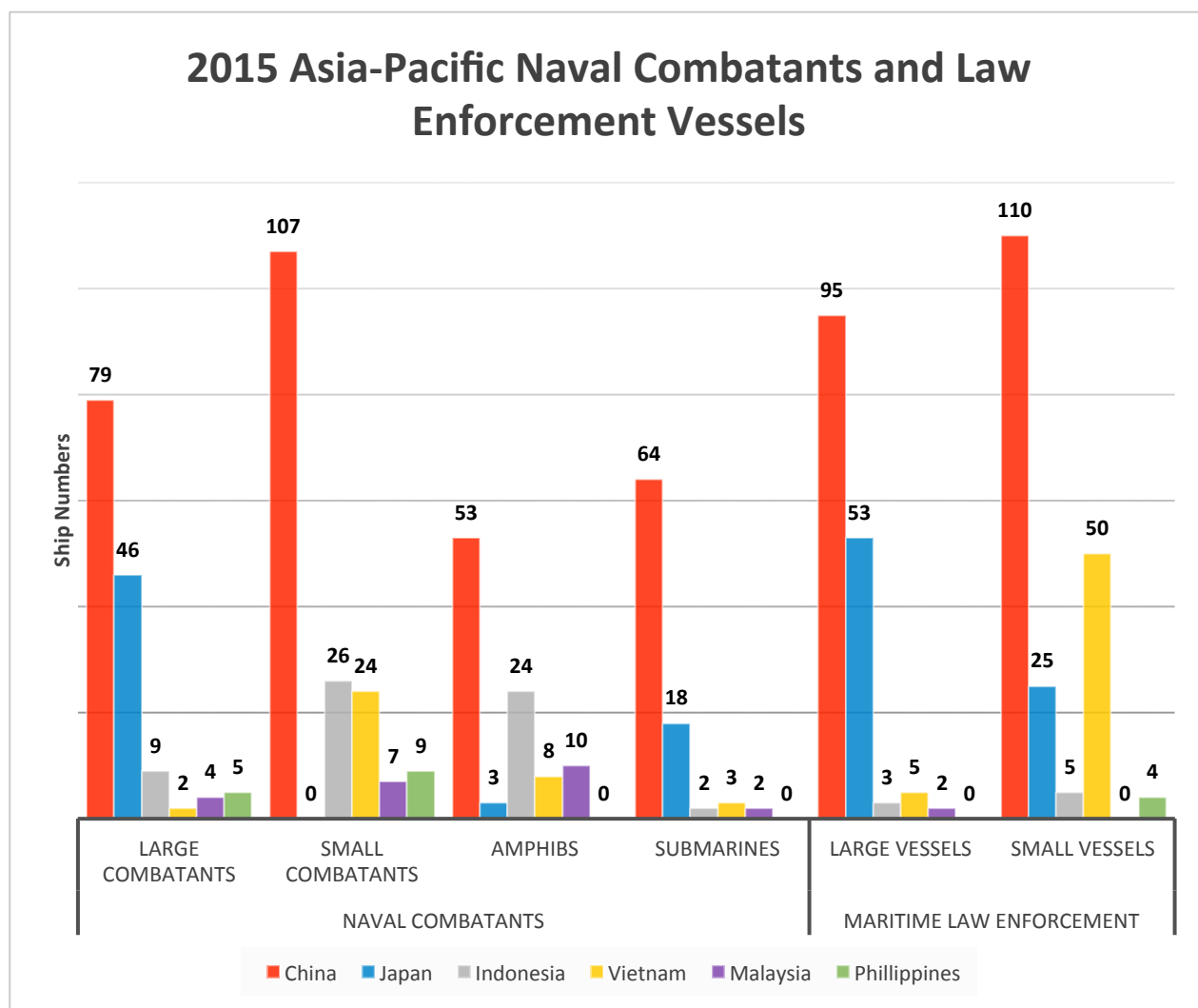


Source: IISS, *Military Balance* 1985-2015.

**Figure 10.15** shows the available naval and maritime law enforcement forces for selected countries in the Asia-Pacific Region. The two categories are further broken down into ship type.



*Figure 10.15: Asia-Pacific Naval Combatants*



Source: Department of Defense, *Asia-Pacific Maritime Security Strategy* 2015.

### *Shifts in Personnel*

Personnel quality is a key area where the quality of the mission, long-range, sustainable naval platforms that have robust self-defense capabilities. For the PLAN this quality is not yet clear. **Figure 10.16** shows the historical trends in PLAN personnel. As is the case with China's other services, the requirements of fighting Local Wars under Conditions of Informatization, and of using modern naval systems, generate the need for higher quality human capital. As a result, the PLAN has significantly reduced its total personnel since 1985 and has focused on quality rather than quantity. It has initiated a campaign to develop a professional naval force. In addition, it has augmented investments in its human capital with military exercises and long-distance deployments.

The PLAN has not ignored the need to make matching improvement in the quality of its personnel. In addition to reducing personnel, it has recruited better educated officers and other

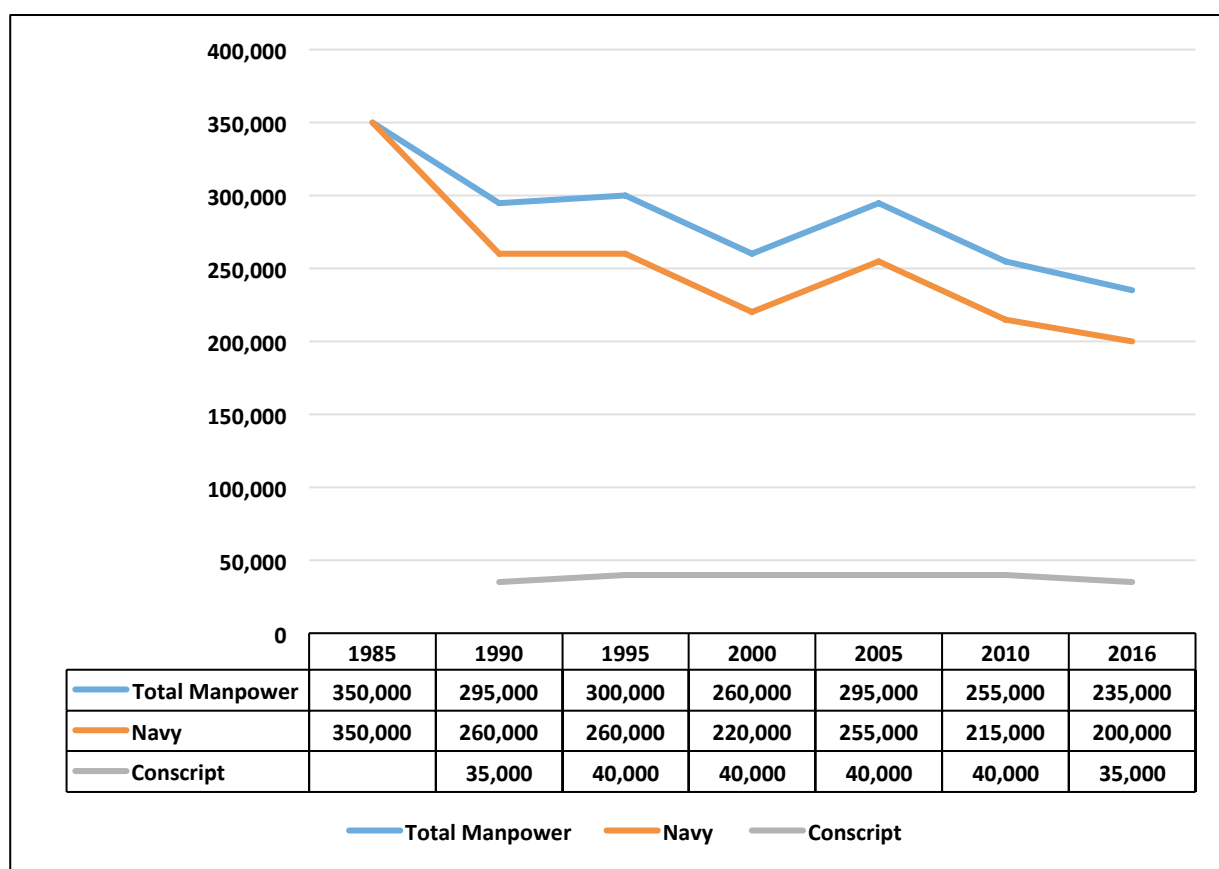
ranks, improved formal education and training, conducted exercises and deployments that are developing the skills necessary to perform offshore defense and producing experiences vital for a service that has little combat experience.

The PLAN's efforts to develop a professional force rest on three pillars: professional NCOs, academically qualified officers, and improved advancement and educational opportunities for currently serving enlisted personnel. Since 1999, the PLAN has reduced the conscription obligation from four to two years, while doubling the maximum years of service for NCOs from 15 to 30. Furthermore, now NCOs are taking over many of the shipboard jobs previously performed by officers or conscripts.<sup>503</sup>

The number of officers is shrinking as the PLAN aims to attract fewer but more qualified personnel. In order to realize these efforts, the PLAN has expanded reserve officer academic scholarships, increased technical training in the fleet, and targeted higher degree holders for officer positions.<sup>504</sup> Regarding opportunities for currently serving personnel, the PLAN has developed on-the-job, short-term, and on-line training programs.<sup>505</sup>

The PLAN has also utilized military exercises and deployments to measure and improve the leadership and combat skills of its personnel. Over the last decade, military exercises have become more realistic and integrated opposition forces. At least once a year, each fleet undertakes a major fleet-level exercise, and there are occasional multi-fleet exercises.<sup>506</sup>

**Figure 10.16: PLAN Personnel Trends**



Source: IISS, *Military Balance*, 1985-2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## *The PLAN and Power Projection*

The shifts in PLAN's force structure, the changing composition of its combatant inventory, and the efforts to develop personnel proficient with their equipment and expert at their jobs indicate that the PLAN is modernizing and developing a force suited for the Local Wars and offshore defense concepts. The PLAN's modern combatants provide each of the three PLAN fleets a core of concentrated combat power, ideally suited to rapidly achieving military objectives within the first island chain and capable of producing significant combat power in a limited, local war.

### **The Chinese View**

These shifts in the strategy and capability of the Chinese Navy, coupled with equally important shifts in Chinese air and missile power, have broader implications throughout the Pacific and are beginning to affect naval operations in the Indian Ocean. China has already deployed some units in anti-piracy missions off the coast of Somalia and has asked to join in US joint naval exercises in the Gulf.

The PLAN has recently been conducting long-range naval patrols, the longest of which occurs in the Gulf of Aden. Within the Asia-Pacific, there has been a concerted effort to get PLAN forces to patrol farther from China's coastline. As the Office of Naval Intelligence states:<sup>507</sup>

The PLA(N) has conducted surface deployments to the Sea of Japan, South China Sea, Philippine Sea, Eastern Pacific, and, for the first time in China's modern naval history, deployed task groups made up of two combatants and a naval auxiliary to the Gulf of Aden.

Given the PLAN's lack of recent combat experience, these efforts are critical to Chinese efforts to develop the combat and leadership skills necessary to fight Local Wars in the manner of Offshore Defense. They also indicate a growing PLAN proficiency in its doctrinal combat capabilities. The geographic expansion of PLAN naval exercises is shown in **Figure 10.17**.

As has been noted previously, China has been increasing the use of paramilitary and policing forces in interventions relating to nine-dash line sovereignty cases, as well as increasing its ability to expand on the concept of Local Wars at a distance and challenge the US for control of the second island chain and the Asian-Pacific maritime region overall.

The 2013 Chinese defense white paper highlighted the expanding "blue water" range of Chinese naval forces, improved readiness and training, and joint warfare capabilities – all of which increase Chinese capabilities to project power and execute area denial activities. If all of the various sections in the white paper that deal with the PLAN are assembled together, they provide a considerable amount of detail on both current PLAN capabilities and the trends in these forces:<sup>508</sup>

The PLA Navy (PLAN) is China's mainstay for operations at sea, and is responsible for safeguarding its maritime security and maintaining its sovereignty over its territorial seas along with its maritime rights and interests. The PLAN is composed of the submarine, surface vessel, naval aviation, marine corps and coastal defense arms. In line with the requirements of its offshore defense strategy, the PLAN endeavors to accelerate the modernization of its forces for comprehensive offshore operations, develop advanced submarines, destroyers and frigates, and improve integrated electronic and information systems. Furthermore, it develops blue-water capabilities of conducting mobile operations, carrying out international cooperation, and countering non-traditional security threats, and enhances its capabilities of strategic deterrence and counterattack.

Currently, the PLAN has a total strength of 235,000 officers and men, and commands three fleets, namely, the Beihai Fleet, the Donghai Fleet and the Nanhai Fleet. Each fleet has fleet aviation headquarters, support bases, flotillas and maritime garrison commands, as well as aviation divisions and marine brigades. In

September 2012, China's first aircraft carrier Liaoning was commissioned into the PLAN. China's development of an aircraft carrier has a profound impact on building a strong PLAN and safeguarding maritime security.

...The PLAN strengthens maritime control and management, systematically establishes patrol mechanisms, effectively enhances situational awareness in surrounding sea areas, tightly guards against various types of harassment, infiltration and sabotage activities, and copes promptly with maritime and air incidents and emergencies. It advances maritime security cooperation, and maintains maritime peace and stability, as well as free and safe navigation. Within the framework of the Military Maritime Consultative Agreement (MMCA), the Chinese and US navies regularly exchange maritime information to avoid accidents at sea. According to the Agreement on Joint Patrols by the Navies of China and Vietnam in the Beibu Gulf, the two navies have organized joint patrols twice a year since 2006.

...Intensifying blue water training...The PLAN is improving the training mode of task force formation in blue water. It organizes the training of different formations of combined task forces composed of new types of destroyers, frigates, ocean-going replenishment ships and shipborne helicopters. It is increasing its research and training on tasks in complex battlefield environments, highlighting the training of remote early warning, comprehensive control, open sea interception, long-range raid, anti-submarine warfare and vessel protection at distant sea.

The PLAN organizes relevant coastal forces to carry out live force-on-force training for air defense, anti-submarine, anti-mine, anti-terrorism, anti-piracy, coastal defense, and island and reef sabotage raids.

Since 2007, the PLAN has conducted training in the distant sea waters of the Western Pacific involving over 90 ships in nearly 20 batches. During the training, the PLAN took effective measures to respond to foreign close-in reconnaissance and illegal interference activities by military ships and aircraft. From April to September 2012, the training vessel Zhenghe completed global-voyage training, paying port calls to 14 countries and regions.

To fulfill China's international obligations, the Chinese navy carries out regular escort missions in the Gulf of Aden and waters off Somalia. It conducts exchanges and cooperation with other escort forces to jointly safeguard the security of the international SLOCs. As of December 2012, Chinese navy task groups have provided protection for four WFP ships and 2,455 foreign ships, accounting for 49% of the total of escorted ships. They helped four foreign ships, recovered four ships released from captivity and saved 20 foreign ships from pursuit by pirates.

Chinese navy escort task forces have maintained smooth communication with other navies in the areas of joint escort, information sharing, coordination and liaison. They have conducted joint escorts with their Russian counterparts, carried out joint anti-piracy drills with naval ships of the ROK, Pakistan and the US, and coordinated with the European Union to protect WFP ships.

It has exchanged boarding visits of commanders with task forces from the EU, NATO, the Combined Maritime Forces (CMF), the ROK, Japan and Singapore. It has exchanged officers for onboard observations with the navy of the Netherlands. China takes an active part in the conferences of the Contact Group on Piracy off the Coast of Somalia (CGPCS) and "Shared Awareness and Deconfliction" (SHADE) meetings on international merchant shipping protection.

Since January 2012, independent deployers such as China, India and Japan have strengthened their convoy coordination. They have adjusted their escort schedules on a quarterly basis, optimized available assets, and thereby enhanced escort efficiency. China, as the reference country for the first round of convoy coordination, submitted its escort timetable for the first quarter of 2012 in good time. India and Japan's escort task forces adjusted their convoy arrangements accordingly, thereby formulating a well-scheduled escort timetable. The ROK joined these efforts in the fourth quarter of 2012.

...The routine combat readiness work of the PLAN serves to safeguard national territorial sovereignty and maritime rights and interests. It carries out diversified patrols and provides whole-area surveillance in a cost-effective way. The PLAN organizes and performs regular combat readiness patrols, and maintains a military presence in relevant sea areas. All fleets maintain the necessary number of ships patrolling in areas under their respective command, beef up naval aviation reconnaissance patrols, and organize mobile forces to conduct patrols and surveillance in relevant sea areas, as required.

Joint maritime exercises and training are being expanded. In recent years, the Chinese navy has taken part in the “Peace-07,” “Peace-09” and “Peace-11” multinational maritime exercises hosted by Pakistan on the Arabian Sea. The PLA and Russian navies held the “Maritime Cooperation-2012” military drill in the Yellow Sea off China’s east coast focusing on joint defense of maritime traffic arteries.

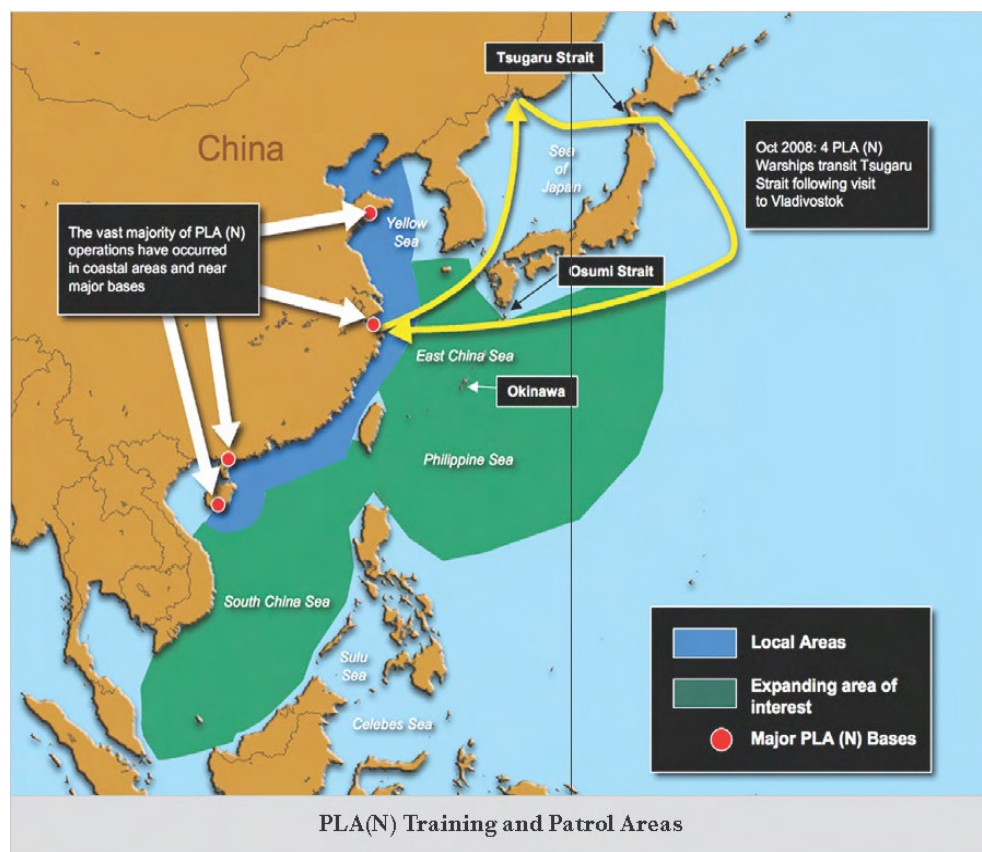
Chinese and Thai marine corps held the “Blue Strike-2010” and “Blue Strike-2012” joint training exercises. During mutual port calls and other activities, the Chinese navy also carried out bilateral or multilateral maritime exercises and training in such tasks as communications, formation movement, maritime replenishment, cross-deck helicopter landing, firing at surface, underwater and air targets, joint escort, boarding and inspection, joint search and rescue and diving with its counterparts of India, France, the UK, Australia, Thailand, the US, Russia, Japan, New Zealand and Vietnam.

...In combination with its routine combat readiness activities, the PLAN provides security support for China’s maritime law enforcement, fisheries, and oil and gas exploitation. It has established mechanisms to coordinate and cooperate with law-enforcement organs of marine surveillance and fishery administration, as well as a joint military-police-civilian defense mechanism. Further, the PLAN has worked in coordination with relevant local departments to conduct maritime survey and scientific investigation; build systems of maritime meteorological observation, satellite navigation, radio navigation and navigation aids; release timely weather and sea traffic information; and ensure the safe flow of traffic in sea areas of responsibility.

Together with the marine surveillance and fishery administration departments, the PLAN has conducted joint maritime exercises and drills for protecting rights and enforcing laws, and enhanced its capabilities to coordinate command and respond to emergencies in joint military-civilian operations to safeguard maritime rights. The “Donghai Collaboration-2012” joint exercise was held in the East China Sea in October 2012, involving 11 ships and eight planes.

As an important armed maritime law-enforcement body, the border public security force exercises jurisdiction over both violations of laws, rules and regulations relating to public security administration and suspected crimes committed in China’s internal waters, territorial seas, contiguous zones, exclusive economic zones and continental shelf. In recent years, the border public security force has endeavored to guarantee the security of sea areas, strengthened patrols, surveillance and management along the sea boundary in the Beibu Gulf and around the Xisha sea areas, and effectively maintained maritime public order and stability.

**Figure 10.17: Geographic Expansion in PLAN Military Exercises Locations**



Source: Office of Naval Intelligence, *People's Liberation Army Navy: A Modern Navy with Chinese Characteristics*, 38.

## The US View

The 2012 DoD report on Chinese military power summarized such developments in China's naval forces as follows:<sup>509</sup>

Since the 1990s, the PLA Navy has transformed from a large fleet of single mission platforms to a leaner force equipped with more modern, multi-mission platforms. In contrast to the fleet of just a decade ago, many PLA Navy combatants are equipped with advanced area air-defense systems, modern ASCMs, and torpedoes. These capabilities not only increase the lethality of PLA Navy platforms, particularly in the area of anti-surface warfare, but also enable them to operate beyond the range of land-based air cover. The PLA Navy possesses some 79 principal surface combatants (destroyers and frigates), 50 submarines, 51 amphibious and medium landing ships, and 86 missile-equipped patrol craft.

The PLA Navy has now completed construction of a major naval base at Yalong, on the southernmost tip of Hainan Island. The base is large enough to accommodate a mix of nuclear-powered attack and ballistic-missile submarines and advanced surface combatants, including aircraft carriers. Submarine tunnel facilities at the base could also enable deployments from this facility with reduced risk of detection.

China's aircraft carrier research and development program includes renovation of the KUZNETSOV-class aircraft carrier Hull 2 (formerly the Varyag), which began sea trials in 2011. It will likely serve initially as a training and evaluation platform. Once China deploys aircraft capable of operating from a carrier, it should offer a limited capability for carrier-based air operations.

Some components of China's first indigenously-produced carrier may already be under construction; that carrier could achieve operational capability after 2015. China likely will build multiple aircraft carriers and associated support ships over the next decade. China currently has a land-based training program for carrier pilots; however, it will still take several additional years for China to achieve a minimal level of combat capability for its aircraft carriers.

The PLA Navy is improving its long-range surveillance capability with sky-wave and surface wave over-the-horizon (OTH) radars. In combination with early-warning aircraft, unmanned aerial vehicles (UAVs), and other surveillance and reconnaissance equipment, the radars allow China to carry out surveillance and reconnaissance over the western Pacific. These radars can be used in conjunction with reconnaissance satellites to locate targets at great distances from China, thereby supporting long-range precision strikes, including employment of ASBMs.

China has developed torpedo and mine systems capable of area denial in a Taiwan scenario. Estimates of China's naval mine inventory exceed 50,000 mines, with many more capable systems developed in the past 10 years.

China is producing a new class of nuclear-powered ballistic missile submarine (SSBN). The JIN-class SSBN (Type-094) will eventually carry the JL-2 submarine-launched ballistic missile with an estimated range of some 7,400km. The JIN-class SSBN and the JL-2 will give the PLA Navy its first credible sea-based nuclear capability. The JL-2 program has faced repeated delays, but may reach initial operating capability within the next two years.

China has expanded its force of nuclear-powered attack submarines (SSN). Two second generation SHANG-class (Type-093) SSNs are already in service and as many as five third generation SSNs will be added in the coming years. When complete, the new class of SSNs will incorporate better quieting technology, improving China's capability to conduct a range of missions from surveillance to the interdiction of surface vessels with torpedoes and ASCMs.

The current mainstay of modern diesel powered attack submarines (SS) in the PLA Navy submarine force are the 13 SONG-class (Type-039) units. Each can carry the YJ-82 ASCM. The follow-on to the SONG is the YUAN-class (a Type-039 variant), as many as four of which are already in service. The YUAN-class probably includes an air-independent power system. The SONG, YUAN, SHANG and the still-to-be-deployed new SSN-class all will eventually be capable of launching a new long-range ASCM.

China has deployed approximately 60 of its HOUBEI-class (Type-022) wave-piercing catamaran-hull guided missile patrol craft. Each boat can carry up to eight YJ-83 ASCMs. These boats have increased the PLA Navy's littoral warfare capabilities. The PLA Navy has acquired modern, domestically-produced surface combatants.

These include at least two LUYANG II-class (Type-052C) guided missile destroyers (DDG) fitted with the indigenous HHQ-9 long-range SAM, with additional hulls under construction; two LUZHOU-class (Type-051C) DDGs equipped with the Russian SA-N-20 long-range SAM; and at least nine JIANGKAI II-class (Type-054A) guided-missile frigates, fitted with the medium range HHQ-16 vertically launched SAM. These ships improve the PLA Navy's area air defense capability significantly, which will be critical as the PLA Navy expands its operations into areas beyond the range of shore-based air defense.

### **Maritime Paramilitary Forces**

During the 2012 Scarborough Reef and Senkaku Island tensions, the China Maritime Surveillance (CMS) and Fisheries Law Enforcement Command (FLEC) ships were responsible for directly managing the disputes on a daily basis, while the PLA Navy maintained a more distant presence away from the immediate vicinity of the contested waters. China prefers to use its civilian maritime agencies in these disputes, and use the PLA Navy further ashore from disputed areas or as an escalatory measure. The five civilian agency entities, commonly referred to as the "Five Dragons" are:

- *Anti-Smuggling Bureau (ASB)*: Subordinate to the General Administration of Customs and Ministry of Public Security. Armed entity responsible for criminal investigations and smuggling cases along China's inland border posts and rivers. (p.40)
- *China Coast Guard (CCG)*: Subordinate to the Ministry of Public Security. Active duty maritime

police force responsible for combating maritime crime. (p.40)

- *China Maritime Surveillance (CMS)*: Subordinate to the State Oceanic Administration and Ministry of Land and Resources. Responsible for asserting China's marine rights and sovereignty claims in disputed maritime regions. (p.40)
- *Fisheries Law Enforcement Command (FLEC)*: Subordinate to the Ministry of Agriculture. Enforces PRC fisheries laws and handles fishery disputes with foreign entities across China's exclusive economic zone (EEZ).
- *Maritime Safety Administration (MSA)*: Subordinate to the Ministry of Transport. Responsible for safety of life at sea (SOLAS), maritime pollution control, and cleanup, port inspection, and maritime investigation.

In the next decade, an expanded and modernized force of civilian maritime ships will afford China the capability to more robustly patrol its territorial claims in the ECS and SCS. China is continuing with the second half of a modernization and construction program for its maritime law enforcement agencies. The first half of this program, from 2004-2008, resulted in the addition of almost 20 ocean-going patrol ships for the CMS (9), Bureau of Fisheries (BOF) (3), Maritime Safety Administration (MSA) (3), and China Coast Guard (2).

The second half of this program, from 2011-2015, includes at least 30 new ships for the CMS (23), BOF (6), and MSA (1). Several agencies have also acquired ships that were decommissioned from the PLA Navy. Some old patrol ships will be decommissioned during this period. In addition, MLE agencies will likely build more than 100 new patrol craft and smaller units, both to increase capability and to replace old units. Overall, CMS total force level is expected to increase 50 percent by 2020 and BOF by 25 percent. MSA, China Coast Guard, and Maritime Customs force levels will probably remain constant, but with larger and more capable units replacing older, smaller units. Some of these ships will have the capability to embark helicopters, a capability that only a few MLE ships currently have. The enlargement and modernization of China's MLE forces will improve China's ability to enforce its maritime sovereignty. (p.40)

## The Japanese View

The 2016 Japanese defense white paper provides another useful perspective on these developments:<sup>510</sup>

In recent years, China is believed to be aiming to build up capabilities to conduct operations in more distant waters and airspace. Accordingly, China has rapidly expanded its maritime activities based on its sea and air powers both in qualitative and quantitative ways. In the sea areas and airspace surrounding Japan, Chinese naval vessels and navy and air force aircraft have been observed conducting training exercises, such as carrier-based helicopter flights and fleet formation and maneuver exercises, as well as information gathering activities. A large number of Chinese government ships and aircraft that belong to maritime law enforcement agencies have been observed engaging in monitoring activities for the protection of its maritime rights and interests. Extremely regrettable are such activities by China, which include: intermittent incursions into Japan's territorial waters by Chinese government vessels; intrusion into Japan's airspace; and dangerous acts that could cause unintended consequences, including a Chinese vessel's direction of a fire-control radar at an MSDF destroyer, the flight of Chinese military fighter jets abnormally close to an SDF aircraft, and activities that could infringe upon the freedom of overflight over the high seas, such as the establishment of the "East China Sea Air Defense Identification Zone (ADIZ)." China is urged to act on the basis of the principle of the "rule of law."

**Situation of Activities in Japan's Surrounding Sea Areas:** Regarding the activities of naval forces, the number of Chinese naval surface vessels advancing to the Pacific Ocean has increased in recent years, and such advancements continue to be conducted with high frequency. Since 2008, Chinese naval fleets have transited the sea area between the main island of Okinawa and Miyako Island several times every year. Furthermore, every year since 2012, naval fleets have passed through the Osumi Strait and the sea area between Yonaguni Island and Nakanokami Island near Iriomote Island. In March 2015, naval fleets navigated the sea area between Amamioshima Island and Yokoatejima Island westward. Naval fleets transited the Tsugaru Strait in October 2008 and February 2016 and the Soya Strait in July 2013, December



2014, and August 2015. In this regard, naval fleets are beginning to routinely pass through waters north of Japan. As such, the Chinese naval fleets' advancements and homing routes to and from the Pacific Ocean continue to become diverse by incorporating the areas north of Japan, and it is understood that China seeks to improve its deployment capabilities to the open ocean. In October 2013, China conducted Maneuver 5, the first joint exercise by its three naval fleets in the western Pacific Ocean. In December 2014, a similar joint exercise involving the three fleets was reportedly conducted.

In addition, Chinese naval vessels appear to conduct operations in the East China Sea continuously. Stating its own position regarding the Senkaku Islands, China alleges that patrols by Chinese naval vessels in the sea areas under its jurisdiction are completely justifiable and lawful. In January 2013, a Chinese naval vessel directed fire-control radar at an MSDF destroyer and is suspected to have directed fire-control radar at a helicopter based on an MSDF destroyer. Moreover, in June 2016, a Jiangkai I-class frigate of the Chinese Navy entered Japan's contiguous zone near the Senkaku Islands. This was the first time a Chinese Navy combatant vessel entered Japan's contiguous zone. In recent years, Chinese Navy intelligence gathering vessels (AGIs) have also been found conducting multiple activities. A Chinese Navy Dongdiao-class AGI repeatedly navigated back and forth outside of the contiguous zone south of the Senkaku Islands in November 2015 and in waters outside of the contiguous zone southeast of the Boso Peninsula in December 2015 and February 2016. In June 2016, the same type of AGI sailed in Japan's territorial waters near Kuchinoerabu Island and Yakushima Island and then sailed within Japan's contiguous zone north of Kitadaito Island. Subsequently, the vessel repeatedly conducted east-west passages outside the contiguous zone south of the Senkaku Islands. This was the first navigation in Japanese territorial waters by a Chinese Navy vessel in approximately 12 years. It is of serious concern that recently China has unilaterally escalated activities in waters near Japan, such as activities that are seen as actions based on their own assertions related to the Senkaku Islands and further expansion of its naval vessels' reach to include the Senkaku Islands.

With regard to activities of Chinese government vessels, in December 2008, China Maritime Surveillance vessels hovered and drifted inside Japan's territorial waters near the Senkaku Islands – operations which are not permitted under international law. In September 2010, Japan Coast Guard patrol vessels and a Chinese fishing trawler collided in Japan's territorial sea surrounding the Senkaku Islands. Subsequently, in August 2011 as well as in March and July 2012, "China Maritime Surveillance" vessels and "China Fisheries Law Enforcement Command" vessels intruded into Japan's aforementioned territorial waters. As these examples demonstrate, "China Maritime Surveillance" and "China Fisheries Law Enforcement Command" vessels have gradually intensified their activities in Japan's territorial waters. Such activities increased considerably and Chinese government vessels began to intrude into the aforementioned territorial waters intermittently after September 2012, when the Japanese government acquired property rights to and ownership of three of the Senkaku Islands (Uotsuri Island, Kitakojima Island, and Minamikojima Island). In April and September 2013, eight Chinese government vessels intruded into the aforementioned territorial waters simultaneously. The way in which government vessels have carried out operations intended to intrude into territorial waters since October 2013<sup>74</sup> suggested such operations had been routinized. In this light, an operations manual or other codes may have been developed.

Since December 26, 2015, Chinese government vessels carrying weapons that appear to be cannons have begun to repeatedly intrude into Japan's territorial waters. Additionally, government vessels deployed to seas near the Senkaku Islands are increasingly larger in size, with at least one of the government vessels intruding into Japan's territorial waters being a 3,000 t or larger-class vessel since August 2014. In February 2015, three 3,000 t or larger-class government vessels entered Japan's territorial waters simultaneously for the first time. China is also building the world's largest 10,000 t-class patrol vessel, and two vessels have reportedly already carried out sea trials. In this way, China is seen to be steadily strengthening an operational posture intended to use Chinese government vessels to intrude into Japan's territorial waters.

In October 2012, vessels of the East Sea Fleet of the Chinese Navy, along with "China Maritime Surveillance" and "China Fisheries Law Enforcement Command" vessels, conducted a joint exercise with a focus on maintaining and defending China's territorial sovereignty and maritime interests. Furthermore, the Navy is believed to be supporting maritime law enforcement agencies both in terms of operation and equipment. For example, the Navy is thought to have handed over retired Navy vessels to the China Coast Guard that was formally launched in July 2013. In 2014, the Navy and the China Coast Guard conducted a coordinated drill. Also, the Navy and the Maritime Safety Administration conducted the joint drill Poseidon 2014.

## **The Impact on China's Neighbors**

This sustained modernization effort is part of an effort to shift the PLAN from a force dedicated to fighting Local Wars in the near seas to one more capable of blue water operations. As a result, the changes in PLAN force structure and composition have significant strategic implications, as do the related changes in the PLAAF and China's missile forces. They also are related to the changes in U.S. forces, the U.S. effort to "rebalance" in Asia, and shifts in the forces of China's neighbors.

The PLAN's extensive modernization efforts are mirrored by modernization of regional navies. Michael Raska highlights the changing threat environment posed by the increasing deployment of conventionally powered submarines in Asia-Pacific navies.<sup>511</sup>

Over the past decade, the operational utility of submarines in East Asia has widened: from anti-submarine warfare to force protection such as close submarine escort missions, intelligence surveillance, and reconnaissance (ISR), support of Special Forces, and other complementary deterrence and defensive tasks supporting territorial defense.

At the same time, the introduction of submarine-launched anti-ship and land-attack cruise missiles, anti-submarine sensors and weapons, as well as air independent propulsion systems have increased their stealth capacity to remain undetected shortened their target-identification-and-attack cycle, and ultimately, improved their flexibility, mobility, endurance, reach, and lethality.

For smaller, defensively-oriented navies in East and Southeast Asia, these attributes enable "sea-denial" capabilities aimed at preventing an opponent from using the sea, rather than providing a degree of sea control to use the sea for own power projection. Submarines will therefore become an increasingly valuable strategic asset in the region, particularly with installed AIP systems. The key difference, however, will be in the experience, training, and skill set of its operators.

### ***Possible Shortcomings in the PLAN***

Like the trends in China's other forces, the trends in the PLAN indicate that it is already a rival to Russia as the world's second most effective military power, and that it will eventually emerge as a peer to the United States – at least in its part of the Pacific. It faces qualitative competition from Japan, but not quantitative competition. Other modern regional navies like those of Australia and South Korea make them important potential allies, but are far too small to directly challenge the PLAN.

At the same time, the changes in the PLAN do need to be viewed with the proper perspective. China is a major emerging power, but this does not mean it is preparing for any form of deliberate war, or that modernization always bring matching capability. As is the case with the modernization of China's other military forces, the PLAN has made substantial progress in a short amount of time, but it still cannot match the United States or the most modern forces of Europe and Russia.

The PLAN still has a substantial number of old ships that are not well suited for a modern conflict. The inclusion of these older ships in analyses that compare the tonnages of given navies often inflate the size and implied capability of the PLAN.

Ronald O'Rourke notes in a June 2016 CRS report:<sup>512</sup>

...observers believe China's navy currently has limitations or weaknesses in certain areas, including joint operations with other parts of China's military, antisubmarine warfare (ASW), a dependence on foreign suppliers for some ship components, and long-range targeting.

Furthermore, the PLAN's training and readiness are as uncertain as those of other branches of the PLA since China has never fought a modern war. Coordinating and using modern naval forces is a major challenge in itself, and joint warfare that links naval forces with air and missile power vastly expands these challenges to any force that has not had to use them in combat. Formal doctrine and training can both help and hinder, since any error in either will not be corrected until actual fighting takes place.

Little unclassified data are available on training and exercise quality, readiness, and joint warfare capability. The public reporting that does exist mirror images the almost universal tendency of all military forces to claim total and constant success – claims that mean virtually all such public reporting has zero credibility and often disguises a triumph of doctrine and rigidity over military realism.

At the same time, emerging powers often are forced to innovate and look beyond the experience of past wars. Existing power often tend to assume that the lessons of the last war still apply. The fact that China's ambitions are regional, rather than global, and the potential risks involved in any direct military confrontation with China also help China in deterring outside military action, particularly if it acts slowly enough to avoid a direct challenge or can achieve some degree of preemptive success against a local opponent.

### ***China's Other Maritime Forces***

As has been noted earlier, the development of the PLAN cannot be separated from China's use of its other maritime forces. The 2015 DoD report on Chinese military forces discussed China's maritime law enforcement agencies and its maritime security approach as follows:<sup>513</sup>

China identifies sovereignty as a core interest and emphasizes a willingness to assert and defend its claims in the East China Sea and South China Sea. China prefers to use its government-controlled, civilian maritime law-enforcement agencies in these disputes, and uses the PLA Navy in an overwatch capacity in case of escalation. China has demonstrated this model at Scarborough Reef, Second Thomas Shoal, Senkaku Islands, and CNOOC-981's drilling operations south of the Paracel Islands. China, however, uses a whole-of-government approach and also applies pressure on rival claimants using economic and political levers. China almost certainly wants to assert its maritime dominance without triggering a regional backlash.

In 2013, China consolidated four of its maritime law enforcement agencies into the China Coast Guard (CCG). Operationally subordinate to the Ministry of Public Security, the CCG is responsible for a wide range of missions, including enforcing China's sovereignty claims, anti-smuggling, protecting fisheries resources, and general law enforcement. The CCG is increasing its total force level at a rapid pace, adding new, larger patrol ships and craft as well as helicopters and UAVs. The enlargement and modernization of China's CCG forces will improve China's ability to enforce its maritime claims.

In the next decade, a new force of civilian law enforcement ships will afford China the capability to patrol more robustly its claims in the East China Sea and the South China Sea. China is continuing with the second half of a modernization and construction program for the CCG. The first half of this program, from 2004-2008, resulted in the addition of almost 20 ocean-going patrol ships. The second half of this program, from 2011-2015, includes at least 30 new ships for the CCG.

Several less capable patrol ships will be decommissioned during this period. In addition, the CCG will likely build more than 100 new patrol craft and smaller units, both to increase capability and to replace old units. Overall, The CCG's total force level is expected to increase by 25 percent. Some of these ships will have the capability to embark helicopters, a capability that only a few CCG ships currently have. The enlargement and modernization of China's CCG forces will improve China's ability to enforce its maritime and sovereignty claims.

The 2016 Japanese defense white paper provides another useful perspective on these developments.<sup>514</sup>

China has also been intensifying its activities in the South China Sea, including waters around the Spratly Islands and the Paracel Islands, over which territorial disputes exist with neighbors, including some ASEAN member states. In March 2009 and December 2013, a Chinese naval vessel and other vessels approached and intercepted a U.S. Navy vessel navigating in the South China Sea. In August 2014, a PLA fighter is alleged to have flown abnormally close to and intercepted a U.S. Forces aircraft.

It is also reported that Chinese naval vessels fired warning shots at fishing boats of neighboring countries. Furthermore, in recent years, there has been growing friction between China and its neighboring countries over the South China Sea, as illustrated by protests by Vietnam and the Philippines against China's development activities on the features in these waters, including land reclamation and various infrastructure development on the features.

Since 2014, China has pressed ahead with rapid and large-scale land reclamation works on seven features in the Spratly Islands. China has built military facilities such as batteries and has developed various infrastructures that could be utilized for military purposes, such as runways, hangars, harbors, and radar facilities.

In Fiery Cross Reef, a large harbor capable of receiving surface combatants is being built. In January 2016, China declared completion of a 3,000 m-long runway which fighters and bombers can take off from and land on. Despite protests from neighboring countries, China went ahead with aircraft test flights there. In April 2016, a Navy patrol aircraft on patrol over the South China Sea landed at Fiery Cross Reef to evacuate urgent patients.

Likewise, in Subi and Mischief Reefs, China is thought to have conducted large-scale reclamations and be building large runways. Building of facilities, such as harbors, helipads, and radars, has also proceeded on the four other features. In the Paracel Islands, China has similarly carried out land reclamations and promoted their use for military purposes. In Woody Island, China has extended the runway since 2013. In October 2015, China deployed J-11 and other fighters, and in February 2016, the deployment of equipment likely to be surface-to-air missiles was confirmed.

In recent years, Chinese vessels have allegedly been conducting what are likely to be survey activities in the Scarborough Shoal, where a standoff took place between Chinese and Philippine government ships in April 2012. The possibility of new land reclamations in the shoal in the future has been suggested as well. It has been pointed out that if China conducts land reclamations and installs radar facilities and other equipment in the Scarborough Shoal, it could possibly increase its ability to track the situation in the coastal areas of the Philippines and adjacent waters.

Attention must continue to be paid to the status of Chinese activities in these waters. Such activities by China constitute acts that unilaterally change the status quo and further advance its efforts to create a fait accompli. Japan is deeply concerned about these activities, and the concern is shared with the international community, including the United States.

In response to the growing international concerns over the development on the features, China asserts that a number of ASEAN member states including the Philippines and Vietnam are illegitimately occupying features of the Spratly Islands and carrying out large-scale construction work to build fixed facilities such as airstrips. However, China's development work on the features is of a scale incomparable to the activities carried out by other countries and is being conducted at a rapid pace.

In any case, the issues over the South China Sea are of concern to the entire international community due to their direct implications for peace and security of the Asia-Pacific region. Countries concerned including China are urged to refrain from unilateral actions that heighten tension and act on the basis of the principle of the "rule of law."

### ***Chinese Maritime Militia***

In recent years, the PLA has increased its reliance on a large fleet of civilian and fishing boats that are not technically associated with the military. However, it has become clear that they receive

monetary, training, tactical, and technological support from the Chinese military. China relies on this maritime militia to harry and harass neighboring countries near its maritime claims in a fashion that allows for plausible deniability. The maritime militia was involved in high profile events like the 2009 incident with the USS Impeccable, the 2012 unlawful seizure of Scarborough Shoal, and a 2014 conflict over an oil rig in disputed waters with Vietnamese boats.

In his September 2016 testimony before the House Armed Services Committee, PLA scholar Andrew S. Erickson noted:<sup>515</sup>

China's Maritime Militia is its Third Sea Force of "blue hulls," after its Navy of "gray hulls" and its Coast Guard of "white hulls." Increasingly, these forces operate in concert, with blue hulls operating forward and white and gray hulls backstopping them. The Chinese operational concept entails a "first line of Militia, a second line of Administrative Law Enforcement, supported by a third line of the Military." Collectively, these are "gray zone" operations: conducted to alter the status quo, and employing coercion as necessary, but without resorting to war. Chinese sources term such efforts "War without Gun Smoke."<sup>8</sup> Beijing works constantly in peacetime (and possibly in crises short of major combat operations with the United States) to "win without fighting [killing]," and thereby to further its unresolved land feature and maritime sovereignty claims. This is part of Beijing's broader South China Sea strategy: consolidate disputed claims where it can, delay resolution of issues it cannot yet settle in its favor, and coerce (deter and/or compel) potential opponents while limiting escalation.

China's irregular sea force is one of the most important—yet most underconsidered—factors affecting U.S. security interests in the South China Sea. Many in Washington understand that China has the world's second-largest blue water Navy, some that China has the world's largest blue water Coast Guard. But almost no one knows that China—drawing on the world's largest fishing fleet—has deployed the world's largest Maritime Militia; and virtually the only one charged with advancing disputed maritime claims. These Chinese "Little Blue Men" are roughly equivalent at sea to Putin's "Little Green Men" on land.

There is an important reason for this lack of light on China's Third Sea Force: despite a deluge of Chinese-language evidence of its development and activities, to the best of my knowledge no U.S. government report or Washington-based executive branch official has publicly mentioned China's Maritime Militia, at all! As a result, I submit to you, U.S. policy is under-informed, U.S. regional allies and partners are confused, and Beijing is emboldened. In recent years, it has used its Maritime Militia against military and civilian ships and crews of its immediate neighbors and the United States—with no direct public response from any of them.

Thousands of personnel and vessels are registered in China's Maritime Militia. What should concern Washington and its regional allies and partners is an *elite subset*, primarily from four locations: Danzhou, Tanmen, and Sanya on Hainan Island; as well as Sansha, the new municipality in the Paracel Islands charged with administering all Chinese claims in the South China Sea. *These* are the forces entrusted with, and trained for, participation in international sea incidents.

Erickson and Conor M. Kennedy further add in a June 2016 *Foreign Affairs* article:

The maritime militia units are managed by local PLA military commands and are funded by local and provincial governments. To encourage locals to join up, municipalities often promise to pay militia personnel a pension equal to several thousand dollars per year if they are disabled in the line of duty—a sum comparable to other Chinese government pensions and an attractive draw in a rural fishing village. Hainan, the Chinese island province that claims administration over most of the South China Sea, is home to many of the most advanced units, some of which Chinese officials, including Chinese President Xi Jinping, have visited.

Maritime militia units are designed to look like civilian groups in most contexts, and they have considerable leeway to decide when to use the military uniforms in which their members usually train. A January 2014 article in China's official military newspaper, *PLA Daily*, neatly captures the intended effect: "Putting on camouflage, they qualify as soldiers; taking off the camouflage, they become law-abiding fishermen." Of course, these are no ordinary fishermen. Members of the militia report to the People's Liberation Army and other government elements, and their missions are mandated and sponsored by the Chinese state. What is more, according to authoritative Chinese government and military-affiliated publications, some of China's

most advanced maritime militia units—the same ones that would likely be entrusted with missions requiring contact with U.S. and other foreign forces—are trained by PLA Navy officers.

Indeed, in a number of international encounters over the past few decades, members of the maritime militia have closely coordinated their actions with China's navy and coast guard. Perhaps the most infamous episode came in 2009, when a crewmember on a fishing trawler—piloted by a militia member and registered to a militia organization—attempted to use a grappling hook to snag the sonar array of a U.S. surveillance ship, the USNS *Impeccable*, after the trawler, two Chinese coast guard vessels, and another apparently civilian boat forced the *Impeccable* to a halt by cutting across its bow—all as a PLA Navy warship watched nearby.

The measure of deniability afforded by its civilian camouflage is not the maritime militia's only advantage. The militia units also provide China with an asymmetrical advantage and help it take the initiative in encounters with foreign forces: as foreign ships grapple with how to respond, the militia units can interfere with their operations while reporting their location and activities to other Chinese forces. And then there is the propaganda value: in the event of an encounter between the militia and foreign ships, Chinese outlets might flood the Internet with a selectively edited footage of apparently civilian fishermen being unjustly victimized. Of course, members of the maritime militia are not mere civilians, and their direct connections to China's military chain of command, from which they receive mobilization and operational orders, should disqualify them from being treated as such.

Despite the increasingly bellicose behavior of China's maritime militia the U.S. government steadfastly has refused to mention their existence or role. Indeed, they have never once been mentioned in the annual Department of Defense report to Congress. The motivation in the U.S. not publically addressing the maritime militia is not clear.

### ***The US Reaction to Chinese Naval Modernization***

Much of the military aspect of U.S. rebalancing towards Asia has been focused on the Navy. Ronald O'Rourke notes that various force posture shifts that the U.S. has undertaken or will undertake as part of the Asia rebalance.<sup>516</sup>

- The final report on the 2006 Quadrennial Defense Review (QDR) directed the Navy “to adjust its force posture and basing to provide at least six operationally available and sustainable carriers and 60% of its submarines in the Pacific to support engagement, presence and deterrence.”
- More generally, the Navy intends to increase the share of its ships that are homeported in the Pacific from the current figure of about 55% to 60% by 2020.
- The Navy states that, budgets permitting, the Navy will seek to increase the number of Navy ships that will be stationed in or forward-deployed to the Pacific on a day-to-day basis from 51 in 2014 to 58 in 2015 and 67 by 2020.
- In terms of qualitative improvements, the Navy has stated that it will assign its newest and most capable ships and aircraft, and its most capable personnel, to the Pacific.
- The Navy will increase the number of attack submarines homeported at Guam to four, from a previous total of three.
- The Navy has announced an intention to station up to four Littoral Combat Ships (LCSs) at Singapore by 2017, and an additional seven LCSs in Japan by 2022.
- In April 2014, the United States and the Philippines signed an agreement that will provide U.S. forces with increased access to Philippine bases.
- In September 2015, the U.S. Pacific Fleet Commander raised the idea of having the U.S. Third Fleet (the fleet for the Eastern Pacific—the part of the Pacific closer to the United States) operate some of its forces in the area of the U.S. Seventh Fleet (the fleet for the Western Pacific), which could increase the number of U.S. Navy ships operating in the Western Pacific. In April, May, and June 2016, the Navy announced that it had begun doing this.

## U.S Naval Modernization

As is noted elsewhere in this analysis, however, “rebalancing to Asia” shifted to “global rebalancing” in the FY2016 budget submission, and the modernization efforts of the U.S. Navy have often fallen short of U.S. goals due to changing threat assessments, problems in cost control and development, and budget constraints.

In a June 2016 CRS report Ronald O’Rourke noted specific problems the U.S. faces in responding to PLAN modernization:<sup>517</sup>

- whether the U.S. Navy in coming years will be large enough and capable enough to adequately counter improved Chinese maritime A2/AD forces while also adequately performing other missions around the world;
- whether the Navy’s plans for developing and procuring long-range carrier-based aircraft and long-range ship- and aircraft-launched weapons are appropriate;
- whether the Navy can effectively counter Chinese ASBMs and submarines; and
- whether the Navy, in response to China’s maritime A2/AD capabilities, should shift over time to a more distributed fleet architecture.

The process has somewhat stabilized in recent years, however, and there is more clarity and stability regarding the capabilities the U.S. is seeking in its future navy. The recent trends in U.S. Navy procurement and force structure development make it clear that overcoming sophisticated A2/AD coastal defense systems is a main priority.

This is best exemplified by the U.S. Navy’s altered procurement plan for destroyers. Originally the U.S. Navy planned to stop Arleigh Burke-class destroyer (DDG-51) procurement in FY2005 and replace them with the newer and more expensive Zumwalt-class destroyer (DDG-1000).<sup>518</sup> However in 2008, citing a changed threat assessment, the Navy decided to cease procuring DDG-1000s—cancelling 29 of 32 originally planned—and instead relaunched DDG-51 acquisition.<sup>519</sup>

While there were some concerns about the affordability of the Zumwalt class program, the main reason for the switch had to do with mission capability. Addressing the cancellation of the Zumwalt class Chief of Naval Operations Admiral Gary Roughead stated, “I started looking at the DDG-1000. It has a lot of technology, but it cannot perform broader, integrated air and missile defense... I look at the world and I see proliferation of missiles, I see proliferation of submarines. And that is what we have to deal with.”<sup>520</sup>

The DDG-1000 was developed to be a ship that operated primarily in contested littoral waters. However, Adm. Roughead’s comments reflect that the Navy’s primary concern are long-range precision weapons that allow for the implementation of a successful A2/AD coastal defense.

The Navy chose to return to Burke-class destroyers (DDG-51) largely because they possessed capabilities to undertake missions such as anti-aircraft warfare (AAW), anti-submarine warfare (ASW), and ballistic missile defense (BMD) that are necessary to address an updated threat assessment focused on A2/AD.<sup>521</sup>

While the DDG-51 was first procured in 1985, the ship possesses these modern capabilities largely due to the advanced Aegis Combat System, which is deployed on 64 DDG-51 destroyers and an additional 22 Ticonderoga-class cruisers (CG-47). The US Navy Fact File describes the Aegis Combat System as follows:<sup>522</sup>

The AEGIS Weapon System (AWS) is a centralized, automated, command-and-control (C2) and weapons control system that was designed as a total weapon system, from detection to kill. The heart of the system is the AN/SPY-1, an advanced, automatic detect and track, multi-function phased-array radar. This high-powered radar is able to perform search, track, and missile guidance functions simultaneously, with a track capacity of more than 100 targets. The computer-based command and decision element is the core of the AEGIS combat system. This interface makes the AEGIS combat system capable of simultaneous operations against multi-mission threats: anti-air, anti-surface and anti-submarine warfare.

The DDG-51 fleet has also stayed cutting edge through regular upgrades and technological modernization. Following the announcement to relaunch DDG-51 procurement in 2008, the Navy quickly unveiled a 16.6-billion-dollar program (in constant FY10 dollars) to modernize all DDG-51s procured before 2005.<sup>523</sup> In his February 2010 testimony for the House and Senate Armed Services Committees Admiral Roughed discussed DDG-51 modernization and stated:<sup>524</sup>

We restarted production of our DDG 51 Arleigh Burke Class destroyers (Flight IIA series). These ships will be the first constructed with IAMD, providing much-needed Ballistic Missile Defense (BMD) capacity to the Fleet, and they will incorporate the hull, mechanical, and electrical alterations associated with our mature DDG modernization program. We will spiral DDG 51 production to incorporate future integrated air and missile defense capabilities...

**Figure 10.18** depicts that DDG-51 destroyers are set to be most produced ships in the proposed Navy's FY 2017 five-year shipbuilding plan.

The other major procurement project that indicates the Navy's focus on defeating A2/AD defenses is the Virginia class attack submarine (SSN-774). As **Figure 10.18** also shows, the SSN-774 is second only to the DDG-51 in planned development over the next five years.

Defense analysts have often suggested an increase in development and procurement of attack submarines in an effort to solve the A2/AD puzzle. Considering the fundamental problem posed by A2/AD is long-range precision weaponry, countering with submarines is logical due to the difficulty they provide for targeting. As previously addressed, China continues to lag behind in anti-submarine warfare and submarine detection. This furthers the attractiveness of attack submarines as an acquisition focus.

The Virginia class submarines built after 2019 are expected to be particularly effective due to the addition of the Virginia Payload Module (VPM). The VPM is an additional part of the center of the submarine that allows it to hold and launch an additional 28 Tomahawk cruise missiles. A May 2016 CRS report states the VPM, "would increase the total number of torpedo-sized weapons (such as Tomahawks) carried by the Virginia class design from about 37 to about 65—an increase of about 76%."<sup>525</sup> The increase in deliverable payload that the VPM provides could be substantially helpful in striking important A2/AD infrastructure like C4ISR centers, air defense locations, and long-range missile platforms.

As part of nuclear triad's complete modernization, the Navy will modernize the submarine-based strategic deterrent leg by replacing the Ohio-class ballistic missile submarines with the new Columbia-class starting in the 2020s. **Figure 10.19** shows that replacement program projects to be expensive and take up a large portion of the Navy's acquisition budget.

The Navy also plans to continue its acquisition of aircraft and **Figure 10.20** shows that they plan to procure six of the new Gerald R. Ford-class aircraft carriers between now and 2046. Aircraft carriers figure to be a contentious program going forward due to China's anti-ship ballistic missiles (ASBMs) that are often referred to as "carrier killers".<sup>526</sup> U.S. Navy leadership continues to insist that aircraft carriers will be able to function in an A2/AD scenario.<sup>527</sup> However,



considering the steep cost of carriers it is likely that debate over their future efficacy will only increase.

The Navy is also attempting to develop an array of technology to counter A2/AD strategy as part of the Department of Defense's Third Offset strategy. Ronald O'Rourke notes in a June 2016 CRS report:<sup>528</sup>

The Navy is currently developing three potential new weapons that could improve the ability of its surface ships to defend themselves against enemy missiles—solid state lasers (SSLs), the electromagnetic railgun (EMRG), and the hypervelocity projectile (HVP).

Any one of these new weapon technologies, if successfully developed and deployed, might be regarded as a “game changer” for defending Navy surface ships against enemy missiles. If two or three of them are successfully developed and deployed, the result might be considered not just a game changer, but a revolution. Rarely has the Navy had so many potential new types of surface-ship missile-defense weapons simultaneously available for development and potential deployment.

Although the Navy in recent years has made considerable progress in developing SSLs, EMRG, and HVP, a number of significant development challenges remain. Overcoming these challenges will likely require years of additional development work, and ultimate success in overcoming them is not guaranteed.

**Figure 10.18** depicts the Navy's short-term plan for shipbuilding.

**Figure 10.19** outlines what Navy budget plans for acquisition from 2015 to 2030.

**Figure 10.20** shows the thirty-year proposal for ship building.

***Figure 10.18 FY2017 US Navy Procurement Request***

**Table 2. Navy FY2017-FY2021 Five-Year Shipbuilding Plan**  
(Battle force ships—i.e., ships that count against 308-ship goal)

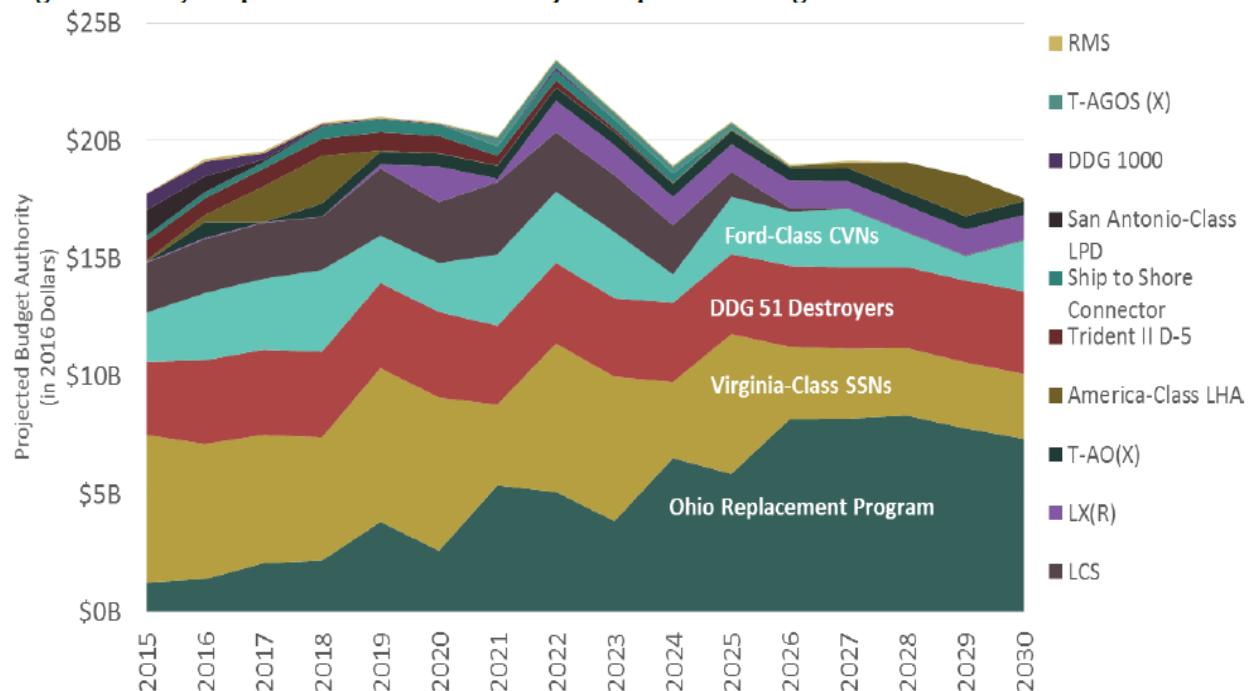
Ship type	FY17	FY18	FY19	FY20	FY21	Total
Ohio replacement (SSBNX) ballistic missile submarine					1	1
Ford (CVN-78) class aircraft carrier		1				1
Virginia (SSN-774) class attack submarine	2	2	2	2	1	9
Arleigh Burke (DDG-51) class destroyer	2	2	2	2	2	10
Littoral Combat Ship (LCS)/Frigate	2	1	1	1	2	7
LHA(R) amphibious assault ship	1					1
LX(R) amphibious ship				1		1
Fleet towing, salvage, and rescue ship (TATS)		1	1	1	1	4
TAO-205 (previously TAO[X]) oiler		1	1	1	1	4
<b>TOTAL</b>	<b>7</b>	<b>8</b>	<b>7</b>	<b>8</b>	<b>8</b>	<b>38</b>

**Source:** Table prepared by CRS based on FY2017 Navy budget submission.

Source: Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, Congressional Research Service, September 21, 2016, p. 8.

**Figure 10.19: Naval Budget for Acquisition Programs FY2015-FY2030**

**Figure 8: Navy Ship and Nuclear Forces Major Acquisition Programs<sup>6</sup>**



Source: Todd Harrison, *Defense Modernization Plans through the 2020s: Addressing the Bow Wave*, CSIS International Security Program, January 2016.

*Figure 10.20: FY 2017 Navy 30-Year Shipbuilding Plan*

**Table 3. Navy FY2017-FY2046 30-Year Shipbuilding Plan**

<b>FY</b>	<b>CVN</b>	<b>LSC</b>	<b>SSC</b>	<b>SSN</b>	<b>SSBN</b>	<b>AWS</b>	<b>CLF</b>	<b>Supt</b>	<b>Total</b>
17		2	2	2		1			7
18	1	2	1	2			1	1	8
19		2	1	2			1	1	7
20		2	1	2		1	1	1	8
21		2	2	1	1		1	1	8
22		2	2	2		1	1	2	10
23	1	2	2	2		1	1	2	11
24		2	2	1	1	2	1	2	11
25		2	1	2		1	1	2	9
26		2		1	1	1	1	1	7
27		2		1	1	1	1	1	7
28	1	2		1	1	2	1		8
29		2	1	1	1	1	1	1	8
30		2		1	1	1	1	2	8
31		2	1	1	1	1	1	2	9
32		2	1	1	1	1	1	2	9
33	1	2	1	1	1		1	2	9
34		2	2	1	1			1	7
35		2	2	1	1				6
36		2	2	2		1			7
37		2	3	2					7
38	1	3	4	2					10
39		3	4	2					9
40		3	4	1		2			10
41		2	4	2					8
42		3	4	1		1			9
43	1	2	2	2			1		8
44		3	3	1		2			9
45		2	3	2		1	2		10
46		3	3	1		1	2		10
<b>Total</b>	<b>6</b>	<b>66</b>	<b>58</b>	<b>44</b>	<b>12</b>	<b>23</b>	<b>21</b>	<b>24</b>	<b>254</b>

**Source:** Table prepared by CRS based on Navy's FY2017-FY2046 30-year shipbuilding plan.

**Key:** **FY** = Fiscal Year; **CVN** = aircraft carriers; **LSC** = surface combatants (i.e., cruisers and destroyers); **SSC** = small surface combatants (i.e., Littoral Combat Ships [LCSs]); **SSN** = attack submarines; **SSGN** = cruise missile submarines; **SSBN** = ballistic missile submarines; **AWS** = amphibious warfare ships; **CLF** = combat logistics force (i.e., resupply) ships; **Supt** = support ships.

Source: Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, Congressional Research Service, September 21, 2016, p. 10.

## U.S. Naval Modernization Concerns

As with all branches of the military the Navy has been subjected to uncertainty regarding future planning as a result of the budget caps introduced by the Budget Control Act of 2011. In 2015 the Navy announced that it hoped to maintain at least 308 ships in the fleet at all times.<sup>529</sup> However, **Figure 10.21** shows that if the Navy's thirty-year projected ship-building plan is followed that there will be many years which they do not reach that level. The problem is also short term as the FY17 five-year ship building requested only 38 new ships compared to the 48 requested in FY16.<sup>530</sup>

The Navy's 2015 annual report to Congress noted:<sup>531</sup>

The BCA is essentially a ten-percent reduction to DOD's TOA. With the CVN [aircraft carrier] and OR [Ohio replacement] SSBN programs protected from this cut, as described above, there would be a compounding effect on the remainder of the Navy's programs. The shortage of funding could potentially reverse the Navy's progress towards recapitalizing a 308 ship battle force and could damage an already fragile shipbuilding industry. There are many ways to balance between force structure, readiness, capability, and manpower, but none that Navy has calculated that enable us to confidently execute the current defense strategy within BCA level funding.

If the BCA is not rescinded, it may impact Navy's ability to procure those ships we intend to procure between now and FY2020. Although Navy would look elsewhere to absorb sequestration shortfalls because of the irreversibility of force structure cuts, a result might be that a number of the ships reflected in the current FYDP may be delayed to the future. The unintended consequence of these potential delays would be the increased costs of restoring these ships on top of an already stretched shipbuilding account that is trying to deal with the post FY2021 OR SSBN costs.

As previously articulated, barring changes to the Fleet's operational requirements, the annual impact of sequestration level funding may require Navy to balance resources to fund readiness accounts to keep what we have operating, manned, and trained. The net result of these actions could potentially create a smaller Navy that is limited in its ability to project power around the world and simply unable to execute the nation's defense strategy. A decline would not be immediate due to the ongoing shipbuilding projects already procured but would impact the future fleet size. Disruptions in naval ship design and construction plans are significant because of the long-lead time, specialized skills, and integration needed to build military ships. The extent of these impacts would be directly related to the length of time we are under a BCA and the TOA reductions that are apportioned to the Navy.

Figure 10.21: Potential Shortcomings in U.S 30-year Procurement Plan

Table 4. Projected Force Levels Resulting from FY2017-FY2046 30-Year Shipbuilding Plan

	CVN	LSC	SSC	SSN	SSGN	SSBN	AWS	CLF	Supt	Total
<b>308 ship plan</b>	<b>11</b>	<b>88</b>	<b>52</b>	<b>48</b>	<b>0</b>	<b>12</b>	<b>34</b>	<b>29</b>	<b>34</b>	<b>308</b>
<b>FY17</b>	11	90	25	52	4	14	32	29	30	<b>287</b>
<b>FY18</b>	11	91	29	53	4	14	32	29	32	<b>295</b>
<b>FY19</b>	11	94	32	52	4	14	33	29	31	<b>300</b>
<b>FY20</b>	11	95	33	52	4	14	33	29	35	<b>306</b>
<b>FY21</b>	11	97	34	51	4	14	33	30	34	<b>308</b>
<b>FY22</b>	12	98	35	48	4	14	34	30	35	<b>310</b>
<b>FY23</b>	12	99	31	49	4	14	34	30	36	<b>309</b>
<b>FY24</b>	12	100	31	48	4	14	35	30	37	<b>311</b>
<b>FY25</b>	11	100	32	47	4	14	36	30	39	<b>313</b>
<b>FY26</b>	11	99	35	45	2	14	36	30	37	<b>309</b>
<b>FY27</b>	11	99	37	44	1	13	36	30	38	<b>309</b>
<b>FY28</b>	11	100	39	42		13	37	30	38	<b>310</b>
<b>FY29</b>	11	98	40	41		12	37	30	38	<b>307</b>
<b>FY30</b>	11	95	40	42		11	37	30	38	<b>304</b>
<b>FY31</b>	11	91	40	43		11	37	30	36	<b>299</b>
<b>FY32</b>	11	89	40	43		10	37	30	37	<b>297</b>
<b>FY33</b>	11	88	40	44		10	38	30	37	<b>298</b>
<b>FY34</b>	11	86	40	45		10	37	30	37	<b>296</b>
<b>FY35</b>	11	86	40	46		10	35	30	38	<b>296</b>
<b>FY36</b>	11	86	41	47		10	35	29	38	<b>297</b>
<b>FY37</b>	11	87	41	48		10	35	29	37	<b>298</b>
<b>FY38</b>	11	88	42	47		10	34	29	35	<b>296</b>
<b>FY39</b>	11	89	44	47		10	34	29	33	<b>297</b>
<b>FY40</b>	10	88	45	47		10	33	29	32	<b>294</b>
<b>FY41</b>	10	87	43	47		11	34	29	32	<b>293</b>
<b>FY42</b>	10	84	43	49		12	33	29	32	<b>292</b>
<b>FY43</b>	10	83	43	49		12	32	29	32	<b>290</b>
<b>FY44</b>	10	82	43	50		12	32	29	32	<b>290</b>
<b>FY45</b>	10	82	45	50		12	33	29	32	<b>293</b>
<b>FY46</b>	10	80	45	51		12	33	29	32	<b>292</b>

**Source:** Table prepared by CRS based on Navy's FY2017-FY2046 30-year shipbuilding plan.

**Note:** Figures for support ships include five JHSV's transferred from the Army to the Navy and operated by the Navy primarily for the performance of Army missions.

**Key:** FY = Fiscal Year; CVN = aircraft carriers; LSC = surface combatants (i.e., cruisers and destroyers); SSC = small surface combatants (i.e., frigates, Littoral Combat Ships [LCSs], and mine warfare ships); SSN = attack submarines; SSGN = cruise missile submarines; SSBN = ballistic missile submarines; AWS = amphibious warfare ships; CLF = combat logistics force (i.e., resupply) ships; Supt = support ships.

Source: Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, Congressional Research Service, September 21, 2016, p. 11.

## Joint Concept for Access and Maneuver in the Global Commons (JAM-GC) (previously AirSea Battle)

As noted in earlier discussions of the modernization of the PLAA, the increases in Chinese long-range naval capacity have affected US power projection planning – although no clear decisions have yet been taken as to how US forces will change as a result. They have led the DoD to put a new emphasis on the role of the AirSea battle in the Pacific and Asia.<sup>532</sup>

Recognizing that antiaccess/area-denial capabilities present a growing challenge to how joint forces operate, the Secretary of Defense directed the Department of the Navy and the Department of the Air Force to develop the Air-Sea Battle Concept.

The intent of Air-Sea Battle is to improve integration of air, land, naval, space, and cyberspace forces to provide combatant commanders the capabilities needed to deter and, if necessary, defeat an adversary employing sophisticated antiaccess/area-denial capabilities.

It focuses on ensuring that joint forces will possess the ability to project force as required to preserve and defend U.S. interests well into the future.

The Air-Sea Battle Concept is both an evolution of traditional U.S. power projection and a key supporting component of U.S. national security strategy for the 21st Century. However, it is important to note that Air-Sea Battle is a limited operational concept that focuses on the development of integrated air and naval forces in the context of antiaccess/area-denial threats. The concept identifies the actions needed to defeat those threats and the materiel and nonmateriel investments required to execute those actions.

There are three key components of Air-Sea Battle designed to enhance cooperation within the Department of the Air Force and the Department of the Navy.

The first component is an *institutional* commitment to developing an enduring organizational model that ensures formal collaboration to address the antiaccess/area-denial challenge over time.

The second component is *conceptual* alignment to ensure that capabilities are integrated properly between Services.

The final component is doctrinal, organizational, training, materiel, leadership and education, personnel, and facilities *initiatives* developed jointly to ensure they are complementary where appropriate, redundant when mandated by capacity requirements, fully interoperable, and fielded with integrated acquisition strategies that seek efficiencies where they can be achieved.

However, as AirSea Battle has gained publicity in strategic and government circles, much of the discussion on the concept has been garbled. This was not helped by the Pentagon's decision to rename AirSea Battle to Joint Concept for Access and Maneuver in the Global Commons (JAM-GC) in January 2015.<sup>533</sup>

In October 2016 Chief of Naval Operations Adm. John Richardson noted in a speech at CSIS that the Navy would no longer be using A2/AD as a stand-alone acronym. He cited concerns that A2/AD “can mean all things to all people or anything to anyone” and that by decreasing reliance on term the Navy could “ensure clarity in our thinking and precision.”<sup>534</sup> The fever pitch around discussion of AirSea Battle/JAM-GC has led to a similar lack of clarity.

Consequently, it is important to note that the conceptual foundation of AirSea Battle/JAM-GC is based largely stems largely from three texts:

1. *A New Air Sea Battle Concept: Integrated Strike Forces* published by Admiral James Stavridis when he was Commander at the National War College in May 1992.<sup>535</sup> This is the first known use of the phrase “Air Sea Battle” in an unclassified publication.
2. *AirSea Battle: A Point-of-Departure Operational Concept* published by the Center for Strategic and Budgetary Assessments (CSBA) in May 2010 authored by Jan van Tol, Mark Gunzinger, Andrew F.

Krepinevich, and Jim Thomas.<sup>536</sup> The CSBA report is of particular importance due to CSBA's long-term connection to the Department of Defense's Office of Net Assessment which functions as the Pentagon's think tank and focuses on future conflict. Though heavily secretive, it is believed that ONA shifted its focus largely towards China following the end of the Cold War. Both Krepinevich and van Tol are alumni of ONA and in some years as much as 40% of CSBA's research funding came from ONA.<sup>537</sup> Consequently, it was widely assumed that the CSBA report reflected at least some of the thinking coming out of the Pentagon.

3. *Air-Sea Battle: Service Collaboration to Address Anti-Access & Area Denial Challenges* published by the Pentagon's Air-Sea Battle Office in May 2013.<sup>538</sup> This offered an unclassified summary of the DoD's larger classified Air-Sea Battle Master Implementation Plan (FY13).

While the secretive and classified nature of true AirSea Battle/JAM-GC planning makes it impossible to know how much the Pentagon continues to rely these original texts, they nonetheless offer the clearest conceptual framework for understanding AirSea Battle/JAM-GC. These publications are particularly valuable resources as AirSea Battle/JAM-GC is increasingly used as a nebulous buzzword.

The 2010 CSBA outlined the concept of AirSea Battle:<sup>539</sup>

The US military today faces an emerging major operational challenge, particularly in the Western Pacific Theater of Operations (WPTO). The Chinese People's Liberation Army's (PLA) ongoing efforts to field robust anti-access/area-denial (A2/AD) capabilities are threatening to make US power projection increasingly risky and, in some cases and contexts, prohibitively costly. If this occurs, the United States will find itself effectively locked out of a region that has been declared a vital security interest by every administration in the last sixty years.

It will also leave longstanding US allies and partners vulnerable to aggression or, more likely, subtle forms of coercion. Consequently, the United States confronts a strategic choice: either accept this ongoing negative shift in the military balance, or explore options for offsetting it. This paper does just that. It offers a point-of-departure concept designed to maintain a stable military balance in the WPTO, one that offsets the PLA's rapidly improving A2/AD capabilities. We have titled this concept "AirSea Battle," in recognition that this theater of operations is dominated by naval and air forces, and the domains of space and cyberspace.

**What Should an AirSea Battle Concept Do?** An AirSea Battle concept first and foremost must address high-end military operations in the WPTO. To be sure, some of the specific initiatives deriving from a viable concept likely would be applicable elsewhere against other A2/AD capable adversaries, just as the Army and Air Force employed AirLand Battle principles designed to deter the Soviet Union in Central Europe very successfully in both Gulf Wars. However, just as the Soviet Union represented the most severe challenge to the US Army and Air Force during the Cold War, today the PLA represents by far the most serious A2/AD challenge to the Air Force and Navy.

As a doctrine for the operational level of war, AirSea Battle should not be seen as a "war-winning" concept in itself. Nor should it be viewed through the lens of a particular scenario, for example, the defense of Taiwan. Instead, it should be considered as helping to set the conditions at the operational level to sustain a stable, favorable conventional military balance throughout the Western Pacific region. This means maintaining an ability to deter China from acts of aggression or coercion in that region and, if necessary, to respond effectively in the event deterrence fails.

AirSea Battle must support overall US strategy for preserving stability in the WPTO. It must address the critical emerging challenges and opportunities that the PLA's projected A2/AD capabilities will present, and to which currently envisioned US forces do not appear to offer a suitable response. It must account for the WPTO's geophysical features, particularly its vast distances compared to Europe or the Persian Gulf region and the scarcity of US forward bases, which comprise a small number of very large and effectively undefended sites located on a handful of isolated islands, all within range of the PLA's rapidly growing missile forces and other strike systems.

AirSea Battle must account for geostrategic factors, such as US treaty and legal obligations to defend formal allies and friends in the region, as well. Even more importantly, AirSea Battle is not a US-only concept.

Allies such as Japan and Australia, and possibly others, must play important enabling roles in sustaining a stable military balance.

**Operational Problems Posed by A2/AD Systems:** In crafting an AirSea Battle concept, it is necessary to identify specific operational level problems a robust A2/AD system would present over the planning horizon, which for DoD is typically the next ten to twenty years. This paper assumes that China will continue enhancing its A2/AD capabilities. Chinese military writings suggest that in the event of conflict, the PLA would conduct large-scale preemptive attacks designed to inflict severe damage on US forces based or operating in the WPTO; keep other US air and naval forces well out of range or unable to penetrate into the homeland; disrupt US command and control (C2) networks; and heavily constrain US operational logistics by destroying major supply nodes and the relatively few US logistics ships.

The overall Chinese strategy appears designed to inflict substantial losses on US forces in a very short period of time, thereby lengthening US operational timelines and highlighting the United States' inability to defend its allies. Once this is accomplished, China would assume the strategic defense and confront the United States with the prospect of either paying a very high (and perhaps prohibitive) cost for reversing its gains, or accepting Beijing's fait accompli.

US ground, air and naval forces have long been accustomed to operating from sanctuary. Their main operating bases, ports and facilities have been largely invulnerable to serious conventional attack since World War II. Navy surface and carrier aviation forces are accustomed to operating from sanctuary at sea, enabled by the near-absence of hostile long-range detection and targeting capabilities and capable enemy navies. And US communications, ISR, and precision-guided munitions (PGM) are heavily dependent on high-bandwidth connectivity for command and control, target detection, precision strike, and post-strike battle damage assessment operations.

This connectivity is highly reliant on long-haul space-based assets that have hitherto also been accorded sanctuary status, save for the occasional modest localized jamming. The same can be said with respect to cyberspace which, despite numerous and consistent probes by China and other states, and by non-state entities and individuals, has never been seriously compromised. The growing Chinese A2/AD capabilities, to include its cyber weapons, threaten to violate these long-standing sanctuaries. As this occurs, the consequences for US forces would include:

- Loss of forward sanctuaries in physical domains and virtual domains (including space, cyberspace, and the electromagnetic spectrum);
- Denial of access to areas of operations; and consequently
- Loss of strategic and operational initiative.

While the favorable, stable military balance that has existed in the Western Pacific for the last two decades is deteriorating, neither the Defense Department's planning nor its defense program have been sufficiently modified to account for this fact. Thus DoD continues emphasizing investments that assume it will enjoy sanctuary status as described above, such as short-range rather than long-range strike systems; vulnerable communications satellites; and elaborate—but fragile—battle networks.

This is done at the expense of investing in (among other badly needed capabilities) penetrating, long-endurance ISR and strike capabilities, aerial tankers, forward base hardening, the combat logistics force (CLF) and directed-energy weapons for missile defense.

**The Substance of an AirSea Battle Concept:** Our candidate AirSea Battle operational concept describes a WPTO military campaign against the challenge described above, to include its principal components, required missions and tasks, how these would be accomplished, and by what forces. Its successful execution would depend on myriad factors, to include the active and substantial participation of key allies and partners, and the Defense Department's ability to make significant changes in its program of record. The AirSea Battle campaign has two stages. The initial stage, commencing with the outbreak of hostilities, comprises four distinct lines of operation:

- Withstanding the initial attack and limiting damage to US and allied forces and bases;
- Executing a blinding campaign against PLA battle networks;



- Executing a suppression campaign against PLA long-range ISR and strike systems;
- Seizing and sustaining the initiative in the air, sea, space and cyber domains.

These lines of operation and their key sub-components have differing execution timelines. While some would unfold in parallel, the initiation of others would depend on progress being made in other aspects of the campaign. Many forces and capabilities would be in high demand across multiple lines of operation, forcing tough decisions regarding their employment.

The follow-on second stage would comprise various operations designed to support US strategy by creating options to resolve a prolonged conventional conflict on favorable terms. These would include:

- Executing a protracted campaign that includes sustaining and exploiting the initiative in various domains;
- Conducting “distant blockade” operations;
- Sustaining operational logistics; and
- Ramping up industrial production (especially precision-guided munitions)

There would not necessarily be a clean break between stages. Some follow-on operations would simply be continuations of those already ongoing. Nor would there be a clear temporal distinction between stages, in that certain second-stage operations may be conducted while first-stage operations are under way.

**Candidate AirSea Battle Initiatives:** Neither the Defense Department’s Program of Record forces and modernization profile, nor current Air Force and Navy concepts of operations accord sufficient weight to the capabilities needed to execute an AirSea Battle campaign successfully along the lines of the one described in this report. This report recommends multiple initiatives the Air Force and the Navy should undertake, mostly on a dual-Service basis, to field the necessary forces and capabilities for AirSea Battle. These include initiatives on:

- Mitigating the missile threat to Guam and other selected bases, and to maritime forces;
- Correcting the PLA-US imbalance in long-range strike for high-value and/or time-sensitive targets, to include developing and fielding greater penetrating and stand-off long-range ISR and precision strike capabilities and capacities;
- Enhancing capabilities for undersea operations, to include submarines, submersible robotic systems, and mines;
- Offsetting the vulnerabilities of space-based C2, communications, and ISR capabilities and capacities, to include fielding high-capacity airborne C3 relay networks to back up space-based systems;
- Emphasizing future standardization and interoperability of data links, data structures, and C2 and ISR infrastructures;
- Increasing emphasis on and investment in cross-Service electronic warfare capabilities and capacities;
- Enhancing cyber warfare offensive and defensive capabilities; and
- Developing and fielding directed-energy weapons.

**The Core of AirSea Battle:** AirSea Battle rests fundamentally on the tight integration of Air Force and Navy operations in the WPTO—each Service plays a key enabling role for the other in accomplishing critical missions. Some important instances of mutual support include:

- Air Force counter-space operations to blind PLA space-based ocean surveillance systems, thereby preventing the PLA from targeting high-value Navy surface units, including carriers, thereby enabling Navy operational freedom of maneuver in the maritime domain (Navy platforms could aid counter-space operations in support of the Air Force space control missions if required);

- Navy AEGIS ships supplementing other missile-defense assets in defense of Air Force forward bases and Japan;
- Navy submarine-based and carrier-based (if operating long-range air platforms) ISR and strike support against PLA IADS systems to degrade them and thereby enable Air Force strikes;
- Air Force long-range penetrating strike operations to destroy PLA ground based long-range maritime surveillance systems and long-range ballistic missile launchers (both anti-ship and land-attack) to expand the Navy's freedom of maneuver and reduce strikes on US and allied bases and facilities;
- Navy carrier-based fighters' progressive rollback of PLA manned and unmanned airborne ISR platforms and fighters to enable the forward operation of Air Force tankers and other support aircraft; and
- Air Force support of the ASW campaign through offensive mining by stealthy bombers and persistent non-stealthy bomber strike support of Navy ships conducting distant blockade operations.

The significantly shortened unclassified report from the Pentagon's AirSea Battle office released in 2013 offers a partial look at DoD strategy:<sup>540</sup>

ASB is a limited objective concept that describes what is necessary for the joint force to sufficiently shape A2/AD environments to enable concurrent or follow-on power projection operations. The ASB Concept seeks to ensure freedom of action in the global commons and is intended to assure allies and deter potential adversaries. ASB is a supporting concept to the Joint Operational Access Concept (JOAC), and provides a detailed view of specific technological and operational aspects of the overall A2/AD challenge in the global commons.

The Concept is not an operational plan or strategy for a specific region or adversary. Instead, it is an analysis of the threat and a set of classified concepts of operations (CONOPS) describing how to counter and shape A2/AD environments, both symmetrically and asymmetrically, and develop an integrated force with the necessary characteristics and capabilities to succeed in those environments. ASB is about building conceptual alignment, programmatic collaboration and institutional commitment in an integrated way, across the military Services in order to develop forces and capabilities that can jointly address A2/AD challenges.

The purpose of ASB is not to simply conduct operations more jointly. It is to increase operational advantage across all domains, enhance Service capabilities and mitigate vulnerabilities. In addition to other joint and service concepts, ASB will help ensure the U.S.'s ability to gain and maintain freedom of action in the global commons, and to the conduct of concurrent or follow-on operations against a sophisticated adversary.

**Central Idea.** The ASB Concept's solution to the A2/AD challenge in the global commons is to develop networked, integrated forces capable of attack-in-depth to disrupt, destroy and defeat adversary forces (NIA/D3). ASB's vision of networked, integrated, and attack-in-depth (NIA) operations requires the application of cross-domain operations across all the interdependent warfighting domains (air, maritime, land, space, and cyberspace, to disrupt, destroy, and defeat (D3) A2/AD capabilities and provide maximum operational advantage to friendly joint and coalition forces.

Cross-domain operations are conducted by integrating capabilities from multiple interdependent warfighting domains to support, shape, or achieve objectives in other domains. Cross-domain operations are those that can exploit asymmetric advantages in specific domains to create positive and potentially cascading effects in other domains. For cross-domain operations to be fully effective, commanders, whether defending or attacking, must have ready access to capabilities, no matter what domain they reside in or which commander owns them, to support or achieve operational objectives and create the effects required for advantage over an adversary.

This interoperability may require multi-pathing, or the ability to use multiple, alternative paths from among all domain capabilities to achieve a desired end. While cross-domain operations are more complex than single domain or single Service options, their multi-pathing possibilities can provide distinct operational advantages over single domain or single Service solutions to operational problems.

The ability to integrate capabilities, equipment, platforms, and units across multiple domains and to communicate, interact, and operate together presents a joint force commander with more numerous and powerful options, which in turn, offer greater probability of operational success. For example, cyber or undersea operations can be used to defeat air defense systems, air forces can be used to eliminate submarine or mine maritime threats, or space assets can be used to disrupt adversary command and control. Put simply, traditional understandings of Service missions, functional responsibilities, or employment of capabilities from particular domains should not be barriers that hamper imaginative joint operations in an A2/AD environment. Each of the elements of ASB's construct offer joint force commanders increased flexibility and capability.

**Networked.** In the ASB Concept, networked actions are tightly coordinated in real time by mission-organized forces to conduct integrated operations across all domains without being locked into Service-specific procedures, tactics, or weapons systems. A networked force is people and equipment linked in time and purpose with interoperable procedures; command control (C2) structures; and appropriate authorities capable of translating information into actions. These joint forces are able to attack the adversary A2/AD system-of-systems in depth and across all domains to create and exploit vulnerabilities.

Networked capabilities are both the physical means by which forces communicate and exchange information and the relationships, protocols, and procedures used by warfighters to complete their assigned missions. To be effective, networked forces need interoperable procedures, (C2) structures, and equipment. Authorities must also be provided at the appropriate C2 level in order for joint and coalition forces to gain and maintain decision advantage.

In the ASB Concept, networked does not only mean having assured communications and access to data; it also means having a force trained to conduct operations using mission-type orders and being able to operate even in the absence of continuous connectivity. The joint force can achieve that ability in part by establishing habitual relationships across Service, component, and domain lines so that forces can be effectively trained to operate together in a contested and degraded environment.

**Integrated.** Integration is the arrangement of military forces and their actions to create a force that operates networked across domains as a whole. An integrated joint force is better able to combine capabilities across multiple domains to conduct specific missions. The basic concept of integration has further evolved into seeking the development of pre-integrated joint forces. In order to maintain an advantage over potential adversaries, air, naval, and land forces must fully integrate their operations. Integration, traditionally viewed as strictly the combatant commander's job, needs to begin across Service lines as part of force development.

Forces should be integrated prior to entering a theater. Effective integration requires enhanced joint and combined training against A2/AD capabilities, including training and exercise for cross-domain operations before deployment. In some cases, pre-integration will also require Services' collaboration in materiel programming to ensure interoperability to avoid overly redundant or incompatible systems.

**Attack-in-depth to Disrupt, Destroy and Defeat.** The attack-in-depth methodology is based on adversary effects chains, or an adversary's process of finding, fixing, tracking, targeting, engaging and assessing an attack on U.S. forces. Attack-in-depth is offensive and defensive fires, maneuver, and command and control with the objective of disrupting, destroying, or defeating an adversary's A2/AD capabilities, conducted across domains in time, space, purpose, and resources. Attack-in-depth seeks to apply both kinetic and non-kinetic means to address adversary critical vulnerabilities without requiring systematic destruction of the enemy's defenses (e.g., a rollback of an adversary's integrated air defense system).

D3 represents the 3 lines of effort of the ASB Concept:

- **Disrupt** Adversary Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR or C4I);
- **Destroy** adversary A2/AD platforms and weapons systems; and,
- **Defeat** adversary employed weapons and formations.

**Disrupting** these effects chains includes impacting an adversary's C4ISR or C4I capabilities, ideally precluding attack on friendly forces. **Destroying** or neutralizing adversary weapons platforms enhances

friendly survivability and provides freedom of action. **Defeating** employed weapons post-launch defends friendly forces from an adversary's attacks and allows sustained operations.

Due to the nature of A2/AD threats and potentially short indications and warning timelines posed by adversaries, joint forces must be capable of effective offensive operations as soon as conflict begins, while simultaneously defending or re-positioning deployed forces, protecting land and sea bases, and bringing forces forward from garrison with acceptable levels of risk. The ability to attack and defend through the entire depth of the desired battlespace, in all the interdependent warfighting domains, is critical to establishing joint freedom of action.

These concepts are not officially targeted against China or the Pacific. They are equally important in US contingency planning for dealing with Iran and power projection missions throughout the world. At the same time, in the CSBA report on AirSea Battle the PLA is referenced roughly 400 times.<sup>541</sup> This fact has not been lost on the Chinese. Still, the development of AirSea Battle and related defense concepts will be critical to US security partnerships throughout Asia and the Pacific. In cases that do involve land forces, they mean that the US must pay far more attention to securing its lines of access and resupply, and that air and missile power are likely to play a far greater role compared to US land power.

### ***The U.S.-China Strategic Dilemma***

These latter issues have broader strategic implications. The U.S. has already effectively accepted the emergence of China as a peer power in the Eastern Pacific. It is almost impossible to see what either nation could gain from any form of air-land conflict with the possible exception of mutual involvement in a future major war between North and South Korea – which would be a grand strategic disaster for all of the nations involved, almost regardless of its outcome.

The basic problem with A2/AD, ASB, and JAM-GC is that there is currently no credible way that any form of land conflict in Asia can benefit either nation, and that even a serious air-sea clash is likely to both disrupt the trade patterns and economies of each state, and lock them into an extraordinarily costly and enduring arms race and competition for local allies and influence.

The practical problem for both China and the United States is that even a limited form of air-sea conflict or clash can at best be a struggle to see who loses the least in the short run and who can reposition the best in the mid-term. There is no credible “zero two-person sum gain” case, and the only “win-win” contingency is to avoid any major conflict and keep any regional arms race to affordable limits. Still, military planners must plan to fight. The grand strategist, however, must do everything possible to avoid this, or at least any scenario that locks both powers into a more serious arms race or military competition.

## CHAPTER 11: PLA AIR FORCE (PLAAF)

The PLAAF is still an air force in transition. It continues to change its force structure, as well as procure modern aircraft. This has increased the PLAAF's ability to conduct both defensive and offensive missions, and the PLAAF's value to other elements PLA in the context of the Local Wars doctrine.

Since 2000, the PLAAF has become a more diversified force structure. It has fully embraced a shift from a singular focus on air defense and interceptor fighter aircraft of the Cold War era to a multi-mission force, capable of carrying out AD, strike transport, ISR, and most recently, electronic warfare missions.

Indeed, in the 2014 edition of the DoD's report on China states, "The PLAAF is pursuing modernization on a scale unprecedented in its history and is rapidly closing the gap with Western air forces across a broad spectrum of capabilities."<sup>542</sup>

### *PLAAF Strategy and Developments*

The PLAAF has fundamentally changed its force structure, composition, and personnel policies since 1985. Originally meant as a large air defense force, the PLAAF's force structure was made up primarily of obsolete interceptor aircraft. Its objective was largely to destroy aircraft attacking China and to maintain a small, air-based nuclear deterrent.

The promulgation of the Local Wars concept altered this situation. The CMC had concluded that air power, especially when utilizing precision-guided munitions, would be decisive in future conflicts. Thus, the PLAAF was expected to obtain a long-range precision strike capability.<sup>543</sup> However, the PLAAF had a large inventory of second- and third-generation interceptor aircraft which lacked Beyond-Visual-Range (BVR) capability, advanced radar, and specialized electronic warfare (EW) support aircraft. This meant that the PLAAF had to change fundamentally in order to successfully fight and win Local Wars.

In particular, it had to be restructured to focus on strike, rather than interceptor, aircraft. Furthermore, it had to procure more advanced aircraft that were capable of carrying out these missions despite adversary defenses. Most importantly, the PLAAF had to develop the human capital needed to utilize advanced systems and operate according to the Local Wars doctrine.

In response to this challenge, the PLAAF released its own service strategy in 2004: "Integrated Air and Space Operations, Being Prepared for Simultaneous Offensive and Defensive Operations."<sup>544</sup> This was a response to the Local Wars doctrine, and stated that the PLAAF was to become a force capable of defending China's air space and of strike operations against China's adversaries. Moreover, the PLAAF was expected to augment the operational reach of the PLA and function as a "strategic service" capable of obtaining China's political objectives in concert with the rest of the PLA or separately.<sup>545</sup>

As is the case with the PLAN, the PLAAF has also emphasized "realistic" combat training that simulates force on force engagements in accordance with the latest *Outline of Military Training and Evaluation*. Such training forces the PLAAF's personnel to compete with an opposing force over objectives in a complex electro-magnetic environment. As part of this process, the PLAAF emphasizes the following four "guiding thoughts": "adapt to the revolution in military affairs, prepare for battles to combat Taiwan's independence, integrate advanced equipment into the PLAAF, and counter an excessive focus on safety during training."<sup>546</sup>

Besides realistic training, the PLAAF has sought to develop a grass-roots movement towards self-education and academic achievement within the ranks. In addition to formal military education institutions, which offer high school through doctoral degrees, there exist online, correspondence, and short-term courses in which 60% of enlisted soldiers and officers have reportedly taken part.<sup>547</sup> These educational efforts are aided by information-technology communications. Also, there are significant numbers of PLAAF officers that enroll in graduate programs at civilian universities.<sup>548</sup>

As is also the case with the PLAN, the PLAAF has been an active participant in joint military exercises. For example, in 2010, the PLAAF conducted bilateral exercises with Turkey that involved PLAAF fighters flying to Turkey and refueling in flight. Furthermore, PLAAF fighters used bases in the PRC to fly during PEACE MISSION 2014, a Shanghai Cooperation Organization military exercise.<sup>549</sup> These exercises indicate that the PLAAF is not only practicing necessary combat skills, but also practicing long-distance flight.

The augmentation of the PLAAF's operational reach and serve as a "strategic service" has become more evident with its modernization efforts and training exercises in the past 15 years. China's 2015 defense white paper briefly highlights some of the key operational aspects that will allow its air force to project power as it desires:<sup>550</sup>

In line with the strategic requirement of building air-space capabilities and conducting offensive and defensive operations, the PLA Air Force (PLAAF) will endeavor to shift its focus from territorial air defense to both defense and offense, and build an air-space defense force structure that can meet the requirements of informationized operations. The PLAAF will boost its capabilities for strategic early warning, air strike, air and missile defense, information countermeasures, airborne operations, strategic projection and comprehensive support.

### **Power Projection**

The PLAAF's efforts to alter its force structure, equipment composition, and Personnel policies have resulted in a force more suited to fighting Local Wars. The shift from an air-defense to a multi-mission air force enables the PLAAF to support the wider PLA in multiple ways, whether through fire support, air defense, or transport.

Moreover, the planes flown by the PLAAF are steadily becoming more capable, a trend that ensures that the PLAAF is gaining combat power faster than a pure force structure analysis would indicate. The synergy between force restructuring, aircraft modernization, and personnel policies ensures that the PLAAF will consistently become more capable of fighting and winning Local Wars as its modernization program continues.

This progress has made Chinese forces far more competitive with US air and missile power. As was touched upon earlier, this helped the US to focus on the air-sea battle and the use of land and sea-based air and missile power in projecting power in Asia. It is important to note, however, that only one third of the PLAAF's aircraft are modern, that modern fighter-interceptors only account for around 20% of the fighter arsenal, and that numerous categories such as C2, ELINT, and AEW&C aircraft are just beginning to enter the PLAAF. Despite the PLAAF's improvements, it still requires much more development before it becomes equivalent to the US or Russian air forces.

At the same time, China has put more efforts into ship and land-based missiles. These now include efforts to create a long-range ability to strike carrier-sized targets and the growing mix of SRBMs, MRBMs, and IRBMs, discussed in the next chapter.

## The Official US View of PLAAF Developments

The US sees the expansion and modernization efforts of Chinese air and missile forces as a far more serious challenge than that of Chinese ground forces. Like the modernization of Chinese seapower and the expansion of naval power projection, the US Department of Defense sees the PLAAF rapidly closing the gap with western air forces' capabilities.

The 2016 DoD report on *Military and Security Developments Involving the People's Republic of China* described the current structure and trends in the PLAAF as follows:<sup>551</sup>

The PLAAF is the largest air force in Asia and the third largest in the world, with more than 2,800 total aircraft (not including UAVs) and 2,100 combat aircraft (including fighters, bombers, fighter-attack and attack aircraft). The PLAAF is rapidly closing the gap with western air forces across a broad spectrum of capabilities from aircraft and command-and-control (C2) to jammers, electronic warfare (EW), and datalinks. The PLAAF continues to field additional fourth-generation aircraft (now about 600). Although it still operates a large number of older second- and third-generation fighters, it will probably become a majority fourth-generation force within the next several years.

The PLAAF and PLAN may become more prominent within the PLA if China proceeds with the personnel reductions announced in September 2015. Last year, the personnel levels of the PLAAF and PLAN were just 398,000 and 235,000 respectively, accounting for 27.5 percent of the PLA overall. The PLA's planned personnel reductions may increase the relative size of the PLAAF and PLAN; Chinese analysts speculate the absolute size of the two services may even increase.

China has developed the J-10B follow-on to its first indigenously designed fourth-generation fighter and it is expected to enter service in the near-term. The PLA is also likely to acquire the Su-35 Flanker aircraft from Russia along with its advanced radar system. If China does procure the Su-35, the aircraft could enter service by 2018. In November 2015, talks to purchase 24 Su-35 fighters reportedly concluded successfully.

The 2016 DoD report describes China's pursuit of fifth-generation fighter capabilities and its effort to employ stealth capabilities, which will be discussed in more detail later in this chapter. It describes China's bomber, surface to air missile, and transport capabilities as follows:<sup>552</sup>

China has been pursuing fifth-generation fighter capabilities since at least 2009 and is the only country other than the United States to have two concurrent stealth fighter programs. China seeks to develop these advanced aircraft to improve its regional power projection capabilities and to strengthen its ability to strike regional airbases and facilities.

The PLAAF has observed foreign military employment of stealth aircraft and views this technology as a core capability in its transformation from a predominantly territorial air force to one capable of conducting both offensive and defensive operations. PLAAF leaders believe stealth aircraft provide an offensive operational advantage that denies an adversary the time to mobilize and to conduct defensive operations. In 2015, China began flight testing its fifth and sixth J-20 stealth fighter prototypes.

Within two years of the J-20's first flight in January 2011, China tested a second next-generation fighter prototype. The prototype, referred to as the FC-31 (and unofficially as the J-31), is similar in size to a U.S. F-35 fighter and appears to incorporate design characteristics similar to the J-20. The FC-31 conducted its first flight on October 31, 2012, and debuted at China's 10th China International Aviation & Aerospace Exhibition in Zhuhai in November 2014. The Aviation Industry Corporation of China (AVIC) is actively marketing the FC-31 as an export fifth-generation multirole fighter to compete with the F-35 for foreign sales. AVIC is reportedly in negotiations with the PLAAF to sell the FC-31 for domestic use. In addition to manned fighter aircraft, the PLAAF also views stealth technology as integral to unmanned aircraft, specifically those with an air-to-ground role, as this technology would improve that system's ability to penetrate heavily protected targets.

China is also producing bomber-class aircraft. China continues to upgrade its H-6 bomber fleet (originally adapted from the late-1950s Soviet Tu-16 design) to increase operational effectiveness and lethality by

integrating new standoff weapons. The PLAAF operates three different H-6 bomber variants. The H-6H and the more capable H-6M have been in service since the last decade.

The PLAAF also employs the new, fully redesigned H-6K variant with new turbofan engines for extended range and the capability to carry six LACMs. Converting the H-6 into a cruise missile carrier gives the PLA a long-range standoff offensive air capability with precision-guided munitions capable of striking Guam. In 2015, China flew H-6Ks into the western Pacific Ocean in a demonstration of the airframe's long-range capability. PLA Navy Aviation utilizes a nearly identical version of the earlier H-6, known as the H-6G equipped with systems and four weapons pylons for ASCMs to support maritime missions. All of China's H-6 variants maintain their traditional bomb bay for gravity bombs, precision guided bombs, and naval mines.

China also uses a modified version of the H-6, known as the H-6U to conduct aerial refueling operations for some of its indigenous fighter aircraft, increasing their operational ranges. China is also receiving receive IL-78s from Ukraine, which are outfitted as air-refueling tankers. China-Ukraine negotiations for additional tankers will likely continue. Although China can refuel fighter aircraft, to date no H-6 variants are capable of being refueled while airborne.

China is improving its airfields in the South China Sea with the availability of Woody Island Airfield in the Paracel Islands and construction of up to three new airfields in the Spratly Islands. All of these airfields could have runways long enough to support any aircraft in China's inventory. During late-October 2015 the PLAN deployed four of its most capable air superiority fighters, the J-11B, to Woody Island.

The PLAAF possesses one of the largest forces of advanced long-range SAM systems in the world, consisting of a combination of Russian-sourced SA-20 (S-300PMU1/2) battalions and domestically produced CSA-9 (HQ-9) battalions. In an effort to improve its strategic air defense systems even further, China plans to import Russia's S-400/Triumpf SAM system, as a follow-on to the SA-20, and may simultaneously develop its indigenous CSA-X-19 (HQ-19) to provide the basis for a ballistic missile defense capability.

China's aviation industry continues to test its Y-20 large transport aircraft for introduction into the PLA's operational inventory to supplement and eventually replace China's small fleet of strategic airlift assets, which currently consist of a limited number of Russian-made IL-76 aircraft.

The Y-20 made its maiden flight during January 2013 and is reported to use the same Russian engines as the IL-76. The large transports are intended to support airborne C2, logistics, paradrop, aerial refueling, and strategic reconnaissance operations, as well as HA/DR missions.

The 2016 report also describes China's Integrated Air and Missile Defense (IADS) forces.<sup>553</sup>

Within 300 nm (556 km) of its coast, China has a credible IADS that relies on robust early warning, fighter aircraft, and a variety of SAM systems as well as point defense primarily designed to counter adversary long-range airborne strike platforms. China continues to develop and to market a wide array of IADSs designed to counter U.S. technology, tailoring the threats to attempts to deny "high-tech" operations across a wide range of capabilities.

In addition to improving China's ability to counter traditional IADS targets such as fixed-wing aircraft, UAVs, helicopters, and cruise missiles, China's airshow displays claim that new Chinese radar developments can detect stealth aircraft. China's trade materials also emphasize the systems' ability to counter long-range targets, such as long-range airborne strike and combat support aircraft. Long-range air surveillance radars and airborne early-warning aircraft, such as China's indigenous KJ-2000 and KJ-500, are said to extend China's detection range well beyond its borders.

China has increasing numbers of advanced long-range SAMs, including its indigenous CSA-9 (HQ-9), Russian SA-10 (S-300PMU), and SA-20 (S-300PMU1/PMU2), all of which have the advertised capability to protect against both aircraft and low-flying cruise missiles. In fall 2014, China signed a contract for delivery of Russia's extremely long-range SA-X-21b (S-400) SAM system (400 km), and is also expected to continue research and development to extend the range of the domestic CSA-9 SAM to beyond 200 km.

The DoD 2015 report provided the map shown in **Figure 11.1**, which shows the locations of major PLAAF and PLAN Air Forces headquarters throughout China's Military Regions, and **Figure 11.2** which shows the size of the PLAAF's combat capable aircraft.



**Figure 11.1: Deployment of China's Air Forces**



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2016*

**Figure 11.2: The Size of the PLAAF in 2015**

<b>Aircraft</b>	<b>Total</b>
<b>Fighters</b>	1,700
<b>Bombers/Attack</b>	400
<b>Transport</b>	475
<b>Special Mission Aircraft</b>	115

Note: In 2015, the PLA Air Force and Navy had approximately 2,100 operational combat aircraft. These consisted of air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 1,450 older fighters, bombers, and trainers were employed for training and research and development. The PLA also possess approximately 475 transports and more than 100 surveillance and reconnaissance aircraft with intelligence, surface search, and airborne early warning capabilities. We expect the PLA Air Force would supplement its military transports with civilian aircraft in a combat scenario. The majority of PLA Air Force and PLA Navy aircraft are based in the eastern half of the country, and approximately 330 aircraft could conduct combat operations against Taiwan without refueling. However, this number could be significantly increased through any combination of aircraft forward deployment, decreased ordnance loads, or altered mission profiles. Taiwan Air Force figures do not indicate a significant change; they reflect a change in the categorization of some aircraft.

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2016*, April 2016, p.109.

## **Japanese Official Views of PLAAF Developments**

The 2014 Japanese defense white paper provided the following summary description of the PLAAF:<sup>554</sup>

The Chinese Air Force and Navy have approximately 2,580 combat aircraft in total. The number of fourth generation modern fighters is rising steadily. China imported from Russia and produced under license the Su-27 fighters, and imported from Russia the Su-30 fighters equipped with anti-surface and anti-ship attack capabilities.

China is also mass-producing the J-11B fighter, which is pointed out to be an imitation of the Su-27 fighter, as well as the domestic J-10 fighter. Additionally, China is developing the J-20 and J-31, which are pointed out to become next-generation fighters. It is also making continuous efforts to improve capabilities which are essential for operations of modern air forces by introducing the H-6 tanker and KJ-2000 Airborne Early Warning and Control system. Furthermore, it is reported that China is developing a new Y-20 large cargo aircraft in order to improve its transportation capability.

In addition to domestically developing, producing and deploying a variety of aircraft and introducing them from Russia, China seems to be domestically developing a variety of unmanned aircraft, including those capable of long-hour flights at high altitude for reconnaissance and other purposes and those capable of carrying missiles and other weapons for attack purposes. China also appears to be producing and deploying some of these unmanned aircraft.

Judging from the modernization of air forces, it is believed that China is not only improving its air defense capabilities for its national territory, but also aiming to build up capabilities for air superiority and anti-surface and anti-ship attacks in areas which are further distant from China, and improving long range transportation capabilities. Further attention needs to be paid to these activities conducted by the Chinese air forces.

## **The South Korean Official Views of PLAAF Developments**

The 2014 South Korean defense white paper provided a similar, but brief description of the PLAAF:<sup>555</sup>

The Air Force develops advanced weapons, including new fighters, ground-to-air missiles, and radar, in accordance with its strategy of “combined attack and defense.” It has continued to develop stealth fighters since it successfully completed the test flight of the J-20 stealth fighter in January 2011 and the first test flight of the lightweight J-31 stealth fighter in October 2012. Also, air force modernization has been pursued continuously, including the ongoing research and development of the Y-20 large military transport aircraft and the integration of the new H-6K long-range strategic bomber into the force.

## ***Shift in Force Structure***

The shifts in force structure have had a major impact and have significant implications for the PLAAF’s ability to conduct the missions required by the Local Wars concept: precision strike, air defense, ISR, EW, and strategic airlift.

Lieutenant General Vincent R. Stewart, the director of the U.S. DIA, characterized the PLAAF’s modernization as follows:<sup>556</sup>

The PLA Air Force (PLAAF) is approaching modernization on a scale unprecedented in its history. China now has two stealth fighter programs - the third and fourth J-20 prototypes, which conducted their first flights in March and July 2014. Further PLAAF developments are anticipated.

The PLAAF has altered its force structure in response to the necessities of the Local Wars concept and its own service strategy by both increasing aircraft types and dramatically reducing the proportion of aircraft allocated to the interception role. Currently, the PLAAF has large inventories of fighter, ground attack, and transport aircraft, as well as the beginnings of advanced

ISR, command and control (C2), Airborne Early Warning and Control (AEW&C), EW, and Electronic Intelligence (ELINT) aircraft.

The PLAAF has also changed its force composition. It is currently in the midst of replacing obsolete, single-purpose aircraft with multi-role modern aircraft. At this time, the PLAAF is roughly 1/3 modern. This development is a significant improvement from the 1990s when the PLAAF was dependent on a handful of Russian fourth generation fighters to provide modern aircraft capabilities.

As the data in **Figure 11.3** show, the PLAAF has altered its force structure by increasing the categories of aircraft in its inventory. **Figure 11.3** shows a significant drop in fighter aircraft numbers over the period, an absolute and relative increase in ground attack aircraft, the steady decline of bomber numbers, and the development of different aircraft categories.

**Figure 11.3: Force Structure of the PLA Air Force, 1985-2016 – Part I**

Fixed Wing Bombers							
	1985	1990	1995	2000	2005	2010	2016
H-5/F-5/F-5B	500	275+	350	200	40	20	0
H-6A/E/H/G/K/M	120	120	120	120	120	112	120
Possibly with YJ-63 missiles	0	0	0	0	20	some	some
Total	620	395	470	320	180	132	120

Fighters							
	1985	1990	1995	2000	2005	2010	2016
J-5	400	400	400	0	0	0	0
J-6B/D/E	3000	3000	3000	1500	0	0	0
J-7	200	300	500	0	0	48	216
J-7II/B	0	0	0	400	400	192	0
J-7IIH/J-7H	0	0	0	?	50	48	0
J-7IIM	0	0	0	?	24	0	0
J-7III	0	0	0	100	0	0	0
J-7C	0	0	0	0	50	48	0
J-7D	0	0	0	0	50	24	0
J-7E	0	0	0	200	150	144	192
J-7G	0	0	0	0	0	48	120
J-8	30	200	100	100	20	24	0
J-8IIA	0	0	0	0	40	60	0
J-8IIB/J-8B	0	0	0	150	50	108	24
J-8IID	0	0	0	0	24	36	0
J-8IIE	0	0	0	0	50	12	0
J-8F	0	0	0	0	0	24	24
J-8H	0	0	0	0	0	48	96
Su-27K	0	0	0	0	0	0	43
Su-27UBK	0	0	0	0	0	0	32
J-11	0	0	0	0	0	116	95
Total	3,630	3,900	4,024	2,515	986	1,100	842

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.3: Force Structure of the PLA Air Force, 1985-2016 – Part II**

Fighter, Ground Attack							
	1985	1990	1995	2000	2005	2010	2016
J-4	some	0	0	0	0	0	0
J-6	0	0	0	0	300	0	0
J-6A	0	0	0	0	50	0	0
J-6B/DE	0	0	0	1500	0	0	0
JH-7/JH-7A	0	0	0	0	0	72	120
Q-5	some	500	500	0	0	0	0
Q-5C/D/E	0	0	0	300	300	120	120
MiG-19	0	0	0	0	0	0	0
J-10	0	0	0	0	0	120+	78
J-10A/S	0	0	0	0	0	0	192
J-10B	0	0	0	0	0	0	53
J-11B/BS	0	0	0	0	0	18+	110
Su-30MKK	0	0	0	40	76	73	73
HZ-5	some	40	40	40	40	0	0
JZ-5	0	150	150	0	0	0	0
JZ-6 (MiG-19R)	some	100	100	100	100	72	0
JZ-7 (MiG-21)	0	0	0	some	some	0	0
Total	some	790	790	1,980+	886+	406+	746

Tankers							
	1985	1990	1995	2000	2005	2010	2016
HY-6	0	0	0	6	10	0	0
H-6U	0	0	0	0	0	10	10
I1-78 Midas	0	0	0	0	0	0	1
Total	0	0	0	6	10	10	11

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.3: Force Structure of the PLA Air Force, 1985-2016 – Part III**

Transport							
	1985	1990	1995	2000	2005	2010	2016
BAE Trident 1E/2E	18	18	18	0	0	0	0
AN-12	Some	25	25	68	49	0	0
B-737-200 (VIP)	0	0	0	6	8	15	9
CL 601 Challenger	0	0	0	2	5	5	0
CRJ-200	0	0	0	0	0	0	5
CRJ-700	0	0	0	0	0	0	5
I1-14	some	30	30	0	0	0	0
I1-18	some	10	2	2	2	2	0
I1-76 MD/TD Candid	some	50	50	0	0	0	16+
Li-2	some	50	50	0	0	0	0
Tu-154/Tu-154M	0	0	0	15	15	17	4
Y-11	0	Some	15	15	15	20	20
Y-12	0	some	2	8	8	8	8
Y-5 Colt	300	300	300	300	300	170	170
Y-7/Y-7A (AN-26)	10	20	25	45	93	41	41
Y-8	0	0	0	0	0	some	40
Y-9	0	0	0	0	0	0	3+
EW	0	0	0	0	0	10	13
Y-8CB	0	0	0	0	0	0	4
Y-8G	0	0	0	0	0	0	7
Y-8XZ	0	0	0	0	0	0	2
Y-8D	0	0	0	0	0	10	0
Total	328+	503+	517+	461	540	298+	347+

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.





	1985	1990	1995	2000	2005	2010	2016
S70C-2	0	24	20	0	0	0	0
Z-5	some	300	250	100	0	0	0
Z-6	some	some	100	0	0	0	0
Z-8/SA321	some	0	15	0	0	Some	18+
AS-332 Super Puma	0	6	6	6	6	6	6+
Mi-8	0	30	30	30	50	50	0
Mi-17	0	0	28	0	0	0	0
Mi-171	0	0	0	0	0	some	4+
H225 (VIP)	0	0	0	0	0	0	3
Bell 212	0	4	4	4	4	4	0
Total	some	360+	453	140	60	60+	31+
UAVs							
	1985	1990	1995	2000	2005	2010	2016
CH-1 <i>Chang Hong</i>	0	0	0	some	some	some	some
<i>Chang Kong 1</i>	0	0	0	0	0	some	1
Gongji-1	0	0	0	0	0	0	4+
BQM-32	0	0	0	0	0	some	some
Harpy	0	0	0	0	0	some	some
Total	0	0	0	some	some	some	5+

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part VI**

Surface-Based Air Defense Missiles							
	1985	1990	1995	2000	2005	2010	2016
SAMs	0	0	0	100+	100+	600+	600+
Towed	0	some	some	500+	500+	300+	300+
HQ-2 (SA-2)/HQ-2A/2B(A)	0	some	some	500+	500+	300+	300+
HQ-61	0	some	Some	0	0	0	0
SP	0	0	0	240+	228+	300+	300+
HQ-7	0	0	0	100+	60+	60+	60+
HQ-9	0	0	0	0	24	32	32+
HD-6D	0	0	0	0	0	24	24
HQ-12 (KS-1A)	0	0	0	0	0	24	24
S-300PMU (SA-10B)	0	0	some	120	0	32	32
S-300 PMU1 (SA-20)	0	0	0	0	some	64	64
S-300PMU2 (SA-20)	0	0	0	0	some	64	64
HQ-15 FT-2000	0	0	0	20+	0	0	0
Total	0	some	some	1,580+	1,412+	1,800+	1,800+

AA Guns							
	1985	1990	1995	2000	2005	2010	2016
35mm	0	some	some	0	0	0	0
57mm	some	some	some	0	0	0	0
100mm/85mm	some	some	some	some	some	some	16,000
Total	some	some	some	some	some	some	16,000

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part VII**

Air-to-Air and Air-to-Ground Combat Missiles							
	1985	1990	1995	2000	2005	2010	2016
ASMs/LACM	0	some	some	some	some	some	some
HY-2	0	0	0	some	0	0	0
HY-\$	0	0	0	some	0	0	0
C-601	0	some	some	0	0	0	0
C-801	0	some	some	0	0	0	0
Kh-29 (AS-14 Kedge)	0	0	0	0	some	some	some
Kh-31 A/P (AS-17 Krypton)	0	0	0	0	some	some	some
Kh-59 (AS-18 Kazoo)	0	0	0	0	some	some	some
YJ-61	0	0	0	some	0	0	0
YJ (KD)-63	0	0	0	0	some	some	some
YJ-81K	0	0	0	some	0	0	0
KD/YJ-88	0	0	0	0	0	some	0
Y-91 (X-31 II)	0	0	0	0	0	some	some
CJ-10	0	0	0	0	0	0	some
AAM/ARH	0	0	0	6000+	4500+	some	some
R-77/AA-12 Adder	some	some	some	100	100	some	some
R-27/P-27 (AA-10 Alamo)	0	0	0	250+	1200	some	some
R-73/P-37 (AA-11 Archer)	0	0	0	250+	3200	some	some
PL-2/2B	some	some	some	some	some	some	some
PL-5B/C	0	0	0	some	some	Some	some
PL-7	0	some	some	?	?	0	0
PL-8	0	some	some	some	some	some	some
PL-9	0	0	some	some	0	0	0
PL-11	0	0	0	0	0	0	some
PL-12	0	0	0	0	some	some	some
Total	some	some	some	some	some	some	some

Source: IISS *Military Balance*, 1985-2016, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## *The Pace of Modernization*

The PLAAF has made major progress in many areas. **Figures 11.4 through 11.7** summarize several of key trends as follows:

- **Figure 11.4** provides a visualization of the force trends presented in **Figure 11.3**.
- **Figure 11.5** aggregates these numbers to show both a historical comparison of overall combat aircraft numbers and also the relative size of the PLAAF dedicated to each mission category.
- **Figure 11.6** illustrates change over time for each individual aircraft category, and charts the changes in the relative portion of each category in the PLAAF.
- **Figure 11.7**: provides historical relative trends by percentage of the total PLAAF

There are a number of key indicators in these Figures. The first is the magnitude and speed of the decline in fighter-interceptor aircraft, both absolutely and relatively. Between 1995 and 2015, over 3,000 fighter-interceptors were removed from the PLAAF's inventory: fighter-interceptor aircraft dropped from ~80% of the PLAAF to ~50%. Fighter-ground attack aircraft faced a different trend; overall numbers did not markedly increase but their relative share of the PLAAF's inventory increased by more than 2.5 times. Training and transport aircraft both increased in absolute numbers significantly, but their impact is best shown by their relative share of the PLAAF's aircraft holding.

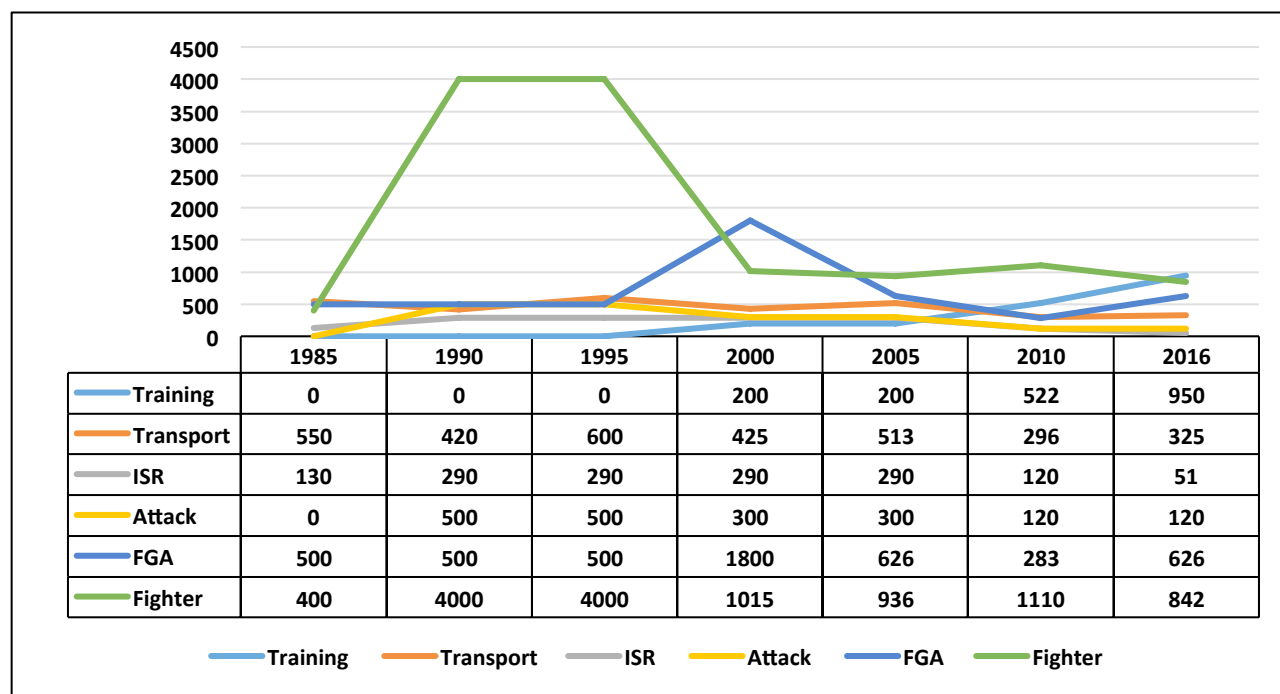
As the figures below show, the dominance of the fighter-interceptor in the PLAAF has eroded and other categories of aircraft are making up larger and larger portions of the PLAAF. This trend indicates a significant change in doctrine and military objectives: more specifically, the changing force structure indicates greater doctrinal emphasis on ground attack, transport, and training missions. All of these are in line with the Local Wars concept.

Changes in the other categories also have significance. The decline and then steady plateau of PLAAF bombers, combined with small numbers of tanker aircraft, indicate that the PLAAF is limiting the majority of its strike missions to targets within the first island chain. The H-6K variant has the capability to carry six LACMs which will give the PLA a stand-off offensive air capability to use against distant targets.<sup>557</sup>

However, even if one considers the number of cruise missiles they carry, the number of bombers is so limited relative to fighter-ground attack aircraft that it appears that the PLAAF has either decided to concentrate its scarce resources within the first island chain, has not identified many targets worth striking outside of the first island chain, or potentially has abdicated medium-range strike to the Second Artillery Force.

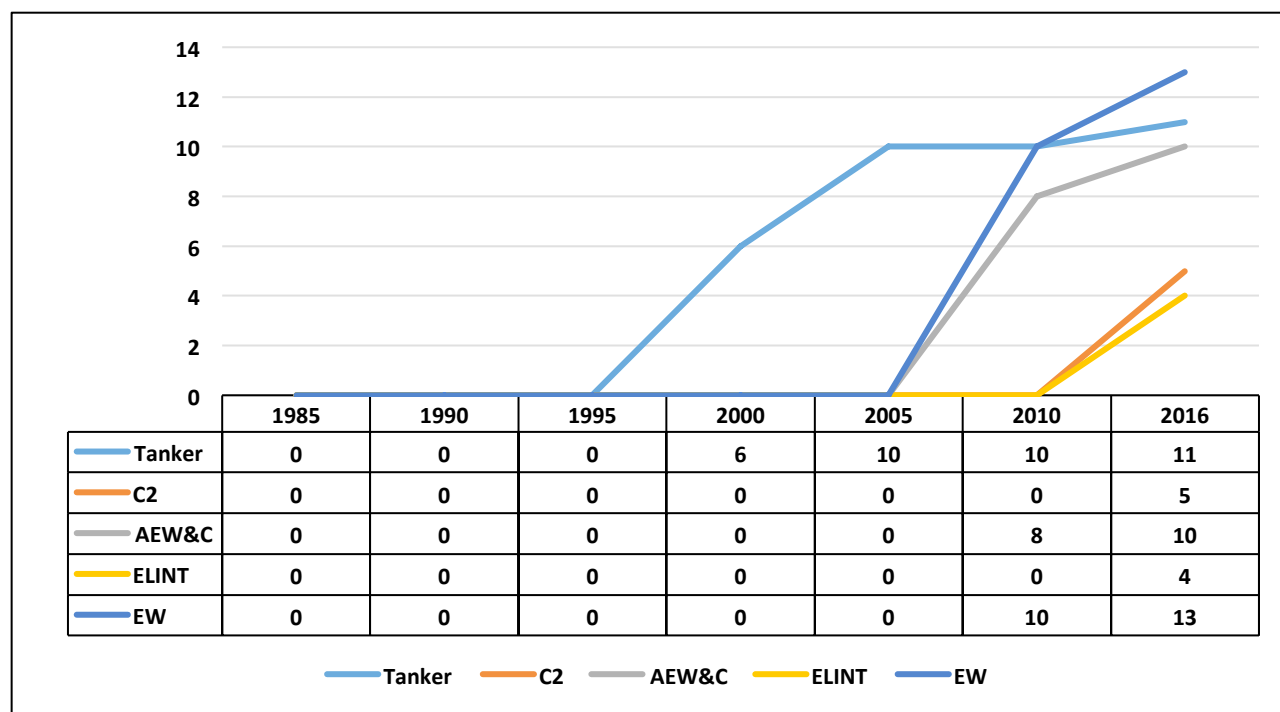
Some American experts argue that the small number of tankers, EW, ELINT, AEW&C, and C2 aircraft indicates two things: first, that the PLAAF still does not function as effectively as the Western or Russian air forces, and also that the PLAAF is focusing on planting the seeds of a broader modernization and force development, and plans to then develop similar capabilities as have the Western and Russian air forces.

**Figure 11.4: Historical PLAAF Force Structure, 1985-2016**



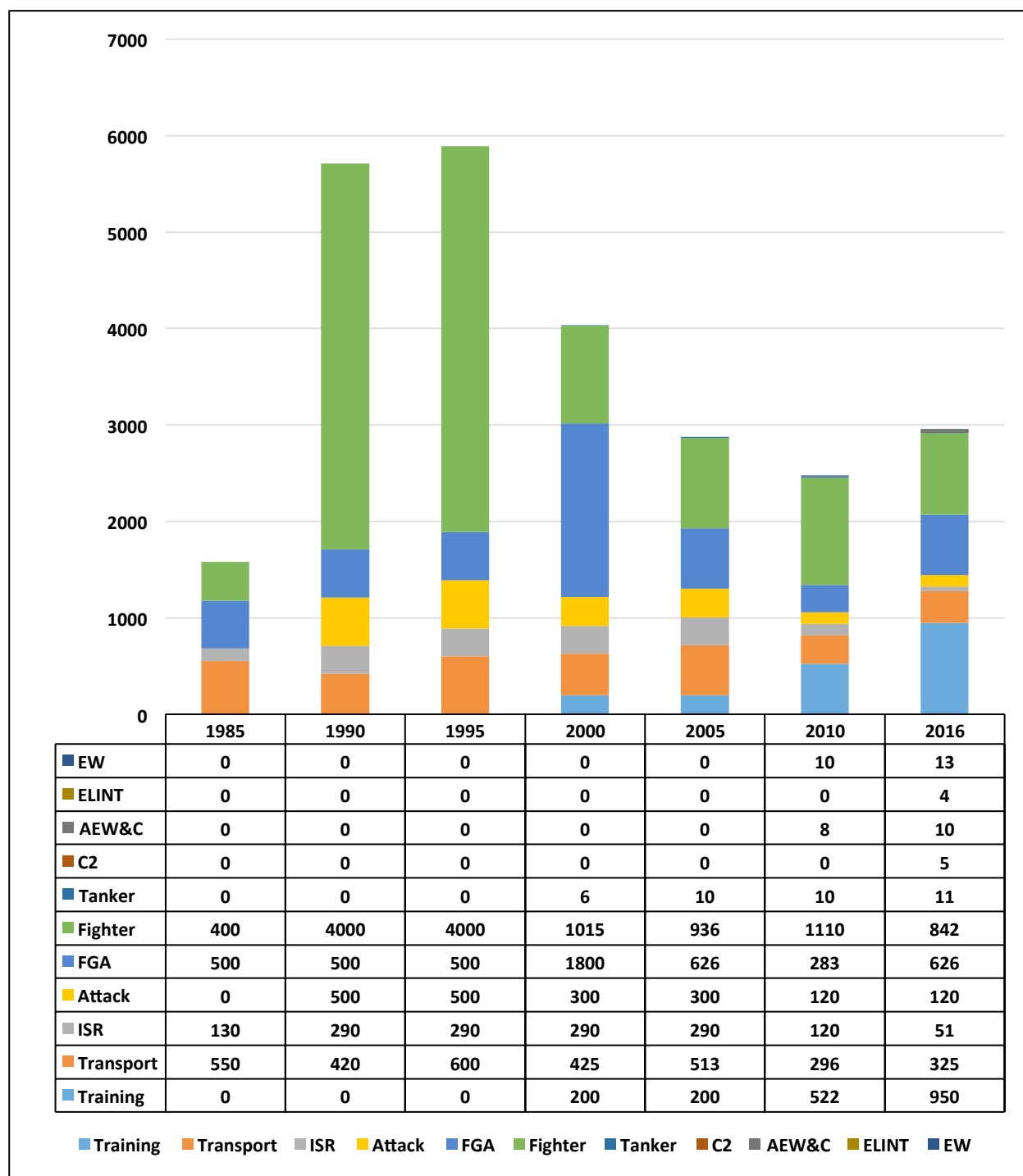
Source: IISS, *Military Balance*, 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.5: Historical PLAAF Force Structure, 1985-2016**



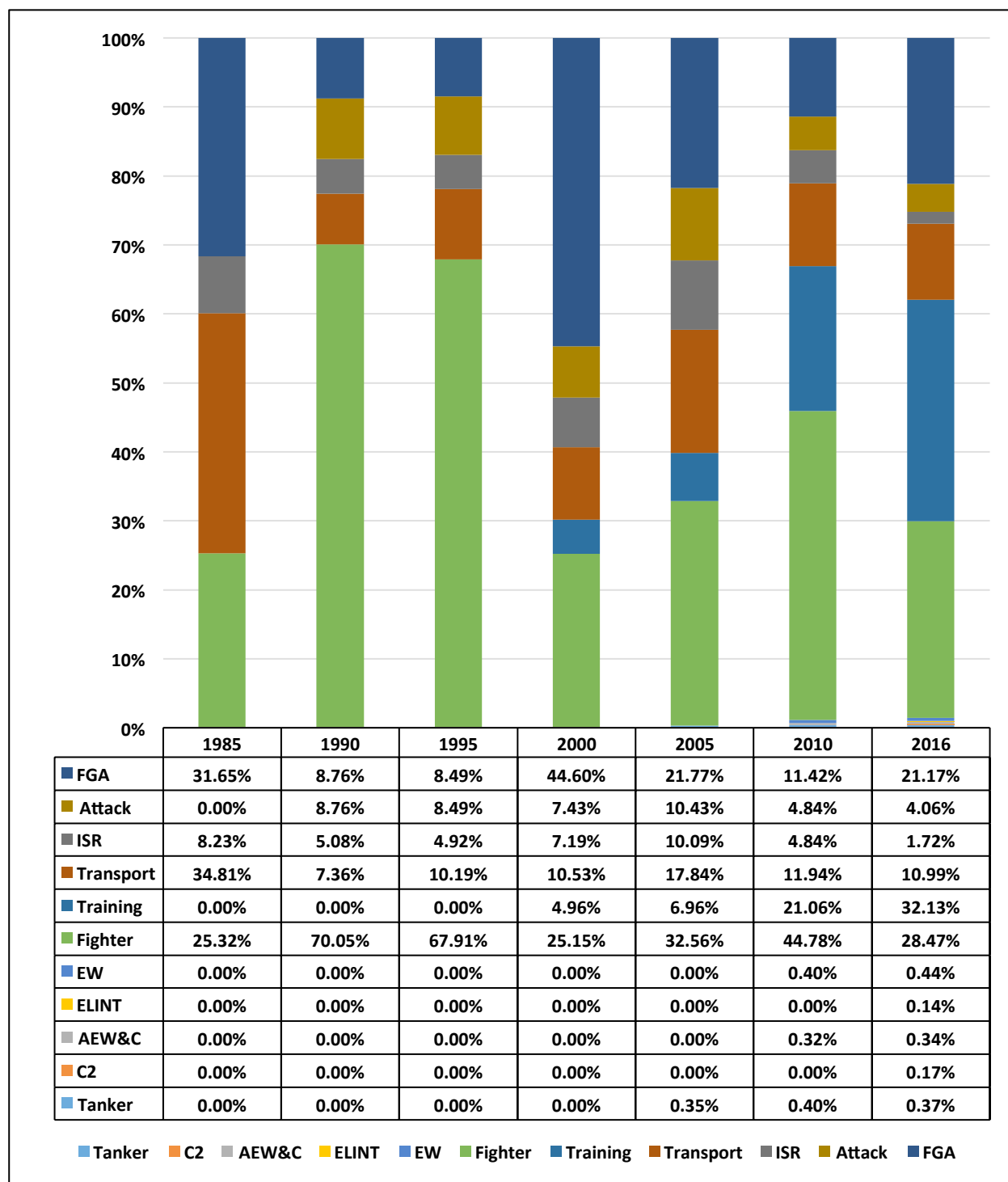
Source: IISS, *Military Balance*, 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.6: Historical Trend PLAAF Numbers by Key Missions Area, 1985-2016**



Source: IISS, *Military Balance*, 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 11.7: Historical Relative Trends in the PLAAF's Force Structure by Percent of Total Force**



Note: Percentages may not add up to 100 due to rounding.

Source: IISS, *Military Balance*, 1985-2015, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## ***Key Aspects of Equipment Modernization***

The PLAAF is now a decisively more modern force and the changing force structure of the PLAAF has significant consequences for its combat capabilities. The rapid modernization of the PLAAF's aircraft inventory has augmented its combat power relative to 2000. As is called for in the Local Wars doctrine, the PLAAF is steadily improving its capability to conduct precision strikes, air defense, ISR, EW, and strategic airlifts. The nimble, powerful military force envisioned by the Local Wars doctrine calls for an air force that can support the other services along the entire periphery of China despite any potential adversarial exploitation of weaponized information technology.

### **Anti-Access/Area Denial (A2/AD)**

U.S. and other outside reports on Chinese military power note that China is focusing on both A2/AD and stealth capabilities, as well as on precision strike capabilities and improved air defenses. The 2016 DoD report on Chinese military power described China's A2/AD capabilities:<sup>558</sup>

As China modernizes the PLA and prepares for various contingencies, it continues to develop capabilities that serve to dissuade, deter, or if ordered, defeat possible third-party intervention during a large-scale, theater campaign such as a Taiwan contingency. U.S. defense planners often refer to these collective PLA capabilities as A2/AD, though China does not use this term. China's military modernization plan includes the development of capabilities to attack, at long ranges, adversary forces that might deploy or operate within the western Pacific Ocean in the air, maritime, space, electromagnetic, and information domains. As the PLA Academy of Military Science 2013 *Science of Strategy* states, "we cannot count on luck and must keep a foothold at the foundation of having ample war preparations and powerful military capabilities of our own, rather than hold the assessment that the enemy will not come, intervene, or strike."

The 2016 DoD report also discussed the use of air capabilities in an A2/AD scenario:<sup>559</sup>

The planned development of China's fifth-generation fighter force will bolster China's air-to-air capability. These fighters feature high maneuverability, low observability, and an internal weapons bay, based on the J-20 or FC-31/J-31 prototypes. Other key features of these aircraft are modern avionics and sensors that offer more timely situational awareness for operations in network-centric combat environments, radars with advanced tracking and targeting capabilities, protection against enemy electronic countermeasures, and integrated EW systems. These fifth-generation aircraft, which could enter service as early as 2018, will significantly improve China's existing fleet of fourth-generation aircraft (Russian-built Su-27/Su-30 and J-11A, and indigenous J-10 and J-11B fighters) to support regional air superiority and strike operations. China's continuing upgrades to its bomber fleet will give them the capability to carry new, longer-range cruise missiles. In conjunction with procuring more capable military equipment, China is increasing the complexity and realism of air and air-defense training.

Similarly, the acquisition and development of longer-range UAVs will increase China's ability to conduct long-range ISR and strike operations. China is advancing its development and employment of UAVs. In 2015, Chinese media reported the development of the Shendiao (Sacred Eagle or Divine Eagle) as the PLA's newest high-altitude, long-endurance UAV for a variety of missions such as early warning, targeting, EW, and satellite communications. Last year, the PLAAF also reported on its use of a UAV to assist in HA/DR in the aftermath of an earthquake in China's west—the first public acknowledgment of PLAAF UAV operations. Photos of the UAV showed it was the Yilong (also known as the Wing Loong or Pterodactyl).

### **Stealth**

The Chinese development of stealth capabilities has been particularly striking. It became clear in early 2011 that China was developing its own "stealth" strike fighter, the J-20, although its capabilities and deployment schedule remain unknown.<sup>560</sup> DNI James R. Clapper described the



US assessment of this development as follows in his testimony to the US Intelligence Community for the House Permanent Select Committee on Intelligence on February 10, 2011.<sup>561</sup>

China's ongoing military modernization program began in earnest in the late 1990s, after Beijing observed the threat posed by long-range precision guided warfare in DESERT STORM and the Balkans. China's defense policies—initially aimed at creating credible options to forcibly bring Taiwan under Beijing's authority and developing the corresponding capabilities to prevent US intervention in a cross-Straits conflict—led Beijing to invest heavily in short- and medium-range ballistic missiles, modern naval platforms, improved air and air defense systems, counterspace capabilities, and an Intelligence, Surveillance, and Reconnaissance (ISR) system.

For example, the Chinese have recently conducted the first flight test of what we refer to as a fifth-generation fighter, the J-20. We have known about this program for a long time and the flight test was not a surprise. We judge that this event is another indication of China's aspiration to develop a world-class military, and it is a capability we take seriously. But this program, like others in China, will have to overcome a number of hurdles before reaching its full potential.

The J-20 underwent its first test flight in January 2011, and China test flew a second prototype stealth fighter model, the J-31 Falcon Eagle, on October 31, 2012. The J-31 appears to be a smaller version of the J-20. The J-31 looks similar in size and shape to Lockheed Martin's F-35 and F-22 fighters.

It has been reported that Chinese hackers stole data on the design, performance, and other characteristics of the F-35 from the British defense firm BAE Systems. Though both Chinese planes display stealth design features, their true capabilities in terms of radar-absorbing coatings, sensors, and other stealth attributes remain unknown. It is also unknown when or if either plane will enter production.<sup>562</sup>

According to the IISS:<sup>563</sup>

In September 2012, China's aerospace ambitions were again confirmed when images emerged of a twin-engine medium fighter manufactured by the Shenyang Aero-space Company, unofficially identified as either the J-21 or J-31. Unlike the Chengdu J-20 heavy fighter, unveiled in January 2011 and gauged by some analysts as of possibly Russian heritage, the J-21 reflects US designs, with echoes of the F-22 and the F-35. This has led to speculation of industrial espionage during its development.

As with the J-20, Beijing has yet to comment formally on the nature or specific purpose of the J-21 project. The J-21 airframe has almost all the hallmarks of a low observable design, and is missing the large canards that feature on the J-20. That said, the aft quadrant and engine nozzles do not appear optimized to minimize radar and infrared signatures, although this may reflect its prototype status.

The extent to which the structural materials used are appropriate for a low-observable design remains unclear, as does the degree to which the sensor suite would support stealth operations. It is widely speculated that the first aircraft could be fitted with the Russian RD-93 engine, which is being exported to China for Pakistan-bound JF-17 light fighters. The J-21 is smaller than the J-20, and it may be intended to complement the larger aircraft.

At the end of 2012, however, it remained unclear which of the services was the project's initial sponsor, or indeed whether the design began as a competitor to the J-20. The Shenyang prototype also features characteristics of a carrier-borne fighter. However, the PLAN already has a carrier-borne multi-role fighter under development, in the Shenyang J-15. The J-15 is based on the locally produced variant of the Su-27, while Chinese industry may also have benefitted from the purchase of a proto-type Su-33 from Ukraine. At least five J-15 prototypes are being tested.

The DoD summarized the place of low-observable technology in the PLA and the short timeline for PLA employment of low-observable technology in 2013:<sup>564</sup>

For decades, the PLA has been incorporating low-observable technology into each of its services to suppress signals from its weapons and equipment that can be exploited by high-technology militaries to locate and target Chinese forces. PLA doctrinal publications, such as the 2009 *Science of Army Operations*, suggest that the PLA considers low-observable technologies as part of a broader suite of information countermeasures, specifically referring to it as a type of radar jamming:

“There are two major forms of information countermeasures as far as effects are relevant....Radar jamming is meant to mainly weaken or destroy the normal operating capability of the enemy's radar system by irradiating or transmitting jamming electromagnetic waves through radar jamming equipment; or **use equipment that does not produce electromagnetic radiation by itself to reflect, scatter, or absorb electromagnetic waves transmitted from enemy radar so as to prevent the enemy radar from detecting and tracking real targets** or causing mistakes in the enemy radar.” [Emphasis added.]

New weapons and equipment that use low-observable technology that were demonstrated in 2013 include:

In February 2013, the PLA Navy launched the first ship in the new Type 056 class of corvettes, which incorporates stealth features making it more difficult to detect using radar. Although these ships can fulfill a variety of missions, they increase the PLA Navy's ability to impose a naval blockade on Taiwan.

After four years in development, in November 2013, the PLA flight tested its new stealth drone, the Lijian, which a Chinese news source described as “highly maneuverable and capable in air-to-air combat.”

In July the PLA, which has long used camouflage, introduced a new type of camouflage netting that has multiple layers of special paints, digital camouflage, and the ability to counter detection from infrared, thermal imaging and radar reconnaissance sensors.

Throughout 2013, the PLA Air Force continued testing its two fifth-generation stealth fighters—the J-20 and the J-31.

China is now the only country in the world, other than the US, to have two concurrent stealth fighter programs. The DoD 2015 report stated.<sup>565</sup>

China has been pursuing fifth-generation fighter capabilities since at least 2009 and is the only country in the world other than the United States to have two concurrent stealth fighter programs. China seeks to develop these advanced aircraft to improve its regional power projection capabilities and strengthen its ability to strike regional airbases and facilities.

The PLAAF has observed foreign military employment of stealth aircraft and views this technology as a core capability in its transformation from a predominantly territorial air force to one capable of conducting both offensive and defensive operations.

The PLA Air Force believes stealth aircraft provide an offensive operational advantage that denies an adversary the time to mobilize and conduct defensive operations. The third and fourth J-20 stealth fighter prototypes conducted first flights in March and July 2014, respectively, and test flights with a fifth prototype may occur by the end of 2015.

Within two years of the J-20 stealth fighter's first flight in January 2011, China tested a second next generation fighter prototype. The prototype, referred to as the “J-31,” is similar in size to a U.S. F-35 fighter and appears to incorporate design characteristics similar to the J-20. It conducted its first flight on October 31, 2012. At present, it is unclear if the J-31 is being developed for employment by the PLA, or as an export platform to compete with the U.S. F-35 on the arms market. It debuted at China's 10th China International Aviation & Aerospace Exhibition in Zhuhai in November 2014.

In addition to manned fighter aircraft, the PLA Air Force also views stealth technology as integral to unmanned aircraft, specifically those with an air-to-ground role, as this technology will improve that system's ability to penetrate heavily protected targets.

### Other Advanced Fighters and Carrier Aircraft

It was reported in March 2013 that China's second stealth fighter, the J-31, could be developed into an aircraft carrier-borne fighter. Meanwhile, the larger J-20 is likely to be a multi-role fighter

designed to attack both ground and air targets, a stealthy interceptor like the USSR's MiG-25 Foxbat able to shoot down incoming fleets of attack plans, or a stealth bomb truck designed to speedily evade enemy radars and attack ships and bases with bombs and cruise missiles.<sup>566</sup>

Chinese manufacturers have unveiled two next-generation fighter aircraft prototypes, the J-20 and J-31, as well as the J-15 carrier-based fighter, and have accelerated the modernization of Shenyang J-11 and Chengdu J-10 fleets. The Chinese defense industry has clearly been developing a diverse portfolio of new aircraft designs, including modernizing its traditional fighters and developing indigenous fourth and fifth generation fighters.<sup>567</sup>

The third, considerably modified prototype of the Chengdu J-20 fighter aircraft was flown for the first time in March 2014, with the fourth following in July. The airframe showed numerous refinements based on the flight-test programme of the first two aircraft, along with the addition of an electro-optical targeting system in a faceted fairing just aft of the nose. Several modifications appeared intended to reduce the aircraft's radar signature.

Work also continued on the J-10B, an upgraded Chengdu J-10 variant, although no operational unit of the type had begun to form by late 2014. The emergence of an image believed to show senior figures from the original J-10 design team in front of an Israeli *Lavi* fighter prototype, apparently on a trip to Israel in the late 1980s or early 1990s, suggested a link between the two designs. Flight testing of the Shenyang J-31 (possibly J-21) combat aircraft also continued, though as of the fourth quarter of 2014 only one airframe was observed and the extent of state support for the programme remained a matter of debate.

China still lacks the sophisticated technology required for highly advanced innovation in military equipment – in particular, advanced capabilities in material selection, process standardization, quality control, and ensuring structural strength. When combined with integration, systems design, and management problems, the result has been cost overruns, extensive testing and delays, and many modifications of the design. Furthermore, the fragmented corporate structure of AVIC makes it difficult for the group to gain compliance from its sub-units.<sup>568</sup>

China is, however, making major progress. Analyst Andrew S. Erickson has assessed China's stealth prototype developments in further depth. In particular, Chengdu Aircraft Corporation's (CAC's) production and design abilities are growing, and the company's Project 718 J-20 could become the PRC's first fifth generation (or, in Chinese terminology, fourth generation) aircraft – meaning it would include high maneuverability, supercruise, helmet-mounted sights, thrust vectoring, low observability, and sensor fusion characteristics. The J-20 prototype – which resembles the F-22 – is also large and has a significant weapons bay; when combined with China's strategic goals (as discussed in Chapter 2), it is likely that the plane could have several different applications, especially important to attack aircraft and strike fighter missions.<sup>569</sup>

One of these missions could be offensive counter-air, meaning that due to its low-detection capabilities, it would be able to strike high-value airborne assets. The J-20 could also be used to destroy key targets in heavily-defended areas inside an air-defense system. This capability could be used against both land-based targets – like air-defense radars – or ship-based assets. However, to achieve these potential capabilities, the plane needs to overcome difficulties with avionics, engine design, and systems integration. One PLAAF deputy commander projected 2017-19 as a possible first deployment for the plane.<sup>570</sup>

Shanghai Aircraft Corporation (SAC) is also working on its own stealth aircraft prototype, which has been called the F-60, J-31, and J-21 in various sources. The plane could be exported, as well. A scale model was presented in 2010, and in 2012 photographs and videos – allegedly of the prototype – appeared online, depicting a plane with “31001” painted on it, indicating that J-31 is

likely the best name for the plane until something more official is announced. The plane is the second significant fighter aircraft produced by SAC in less than a year. The other is the J-16, a plane that is similar to the Russian Su-30MKK and the US F-15E – a two-seat version of the Chinese J-11B. The J-31 is likely to be a multirole combat aircraft that can be used in both air-to-air and air-to-surface roles requiring modern precision munitions.<sup>571</sup>

Because both the J-20 and the J-31 prototypes were completed at roughly the same time, it seems likely that CAC and SAC have developed a competitive relationship, instead of the previous geographic division of labor. Or, the J-31 could simply be a lighter J-20 (similar to the US F-35 as a complement to the F-22, or the Chinese J-10 as a complement to the J-11B). A key point, however, is that “Beijing has finally decided that it can sustain multiple overlapping advanced programs, with SAC alone currently working on four major fighter aircraft: The J-31 and the aforementioned J-16, as well as the J-16’s single-seat parent the J-11B and the carrier-borne J-15, also based on the J-11B.”<sup>572</sup>

If these reports lead to successful production, China’s ability to sustain multiple overlapping advanced programs in its shipbuilding and aviation industries could be an important strategic breakthrough for the Chinese.<sup>573</sup>

### Long-Range Strike Bomber

In August 2016 the PLAAF Commander General Ma Xiaotian announced, “We are now developing a next generation, long-range strike bomber that you will see sometime in the future.”<sup>574</sup> This would mark a substantial step forward because China now only possesses a small bomber force made up of roughly 50 H-6K and 70 H-6H/M bombers.<sup>575</sup> The H-6 is based off the Soviet Tu-16 bomber and Beijing began fielding them in the 1950s—though they have been subsequently updated on numerous occasions.<sup>576</sup> As **Figure 11.9** depicts, none of the H-6 variations are considered modern bombers.

As previously noted, the DoD reports that the newest variation—dubbed the H-6K—has been updated to carry long range stand-off cruise missiles that could be used to strike Guam.<sup>577</sup> Still, even with turbofan engines that add distance, the H-6K still only possesses intermediate range and cannot be refueled in air. China also does not possess a bomber with stealth capabilities like the U.S. B-2.<sup>578</sup>

There is little information available on the new Chinese long-range bomber and this is unlikely to change in the near future. The U.S. has kept details about its long-range strike bomber program—now called the B-21—under intense wraps. Even following the award of the Engineering and Manufacturing Development contract to Northrop Grumman in October 2015, the Department of Defense has kept much of the funding information classified out of fear that other countries will be able to glean information from the numbers alone.<sup>579</sup>

However, assessing the shortcomings of the current Chinese bomber force allows for some reasonable speculation about what capabilities China will seek in its new bomber. Currently, China’s bombers lack the ability to reach the entirety of the second island chain without deploying stand-off missiles. This will almost certainly be rectified in the new bomber. China could potentially push it even further in building a bomber that could reach the continental U.S. China currently does not have a conventional platform that can strike the U.S. mainland. This will likely require the development of air refueling capabilities which no Chinese bomber currently possesses.

As noted above, China is also trying to overcome its vast deficit in stealth technology. For a long-range strike bomber to be a viable platform going forward it will almost certainly need stealth capabilities. Ultimately, China will probably try to develop a bomber with similar capabilities to the modern U.S. B-2 and forthcoming B-21.

### **UAVs, Drones, and Other Advanced ISR**

China is also working on the development of unmanned aerial vehicles. One Chinese newspaper reported that the *Lijian* weaponized stealth drone, designed jointly by the Hongdu Aviation Industry Group and Shenyang Aviation Corporation, completed taxi tests in December of 2012 and then it was reported by the BBC that it made its maiden flight in November 2013.<sup>580</sup> The drone is similar to the US X-47B and the European nEUROn. The *Lijian* is meant to replace the PLA's current slow, low-flying, propeller-driven UAVs.<sup>581</sup>

China is developing a wide range of information, ISR, and battle management systems to support all of its services, including its Air Force. The broad goals of this effort are described in Chapter 2, and the space-related efforts will be discussed later in this report. U.S. DoD reporting does note, however, that they involve a new and much broader Chinese interest in electronic warfare that would affect Chinese tactical operations in any Asian regional contingency.<sup>582</sup>

The PLA identifies electronic warfare (EW) as a way to reduce or eliminate U.S. technological advantages, and considers it an integral component of warfare. The PLA's EW doctrine emphasizes using electromagnetic spectrum weapons to suppress or deceive enemy electronic equipment. PLA EW strategy focuses on radio, radar, optical, infrared, and microwave frequencies, in addition to adversarial computer and information systems.

Chinese strategy stresses that EW is a vital fourth dimension to combat that can be key to determining the outcome of war, and should be considered equal to traditional ground, sea, and air forces. The PLA sees EW as an important force multiplier, and would likely employ it in support of all combat arms and services during a conflict.

PLA EW units have conducted jamming and anti-jamming operations, testing the military's understanding of EW weapons, equipment, and performance, which helped improve their confidence in conducting force-on-force, real-equipment confrontation operations in simulated EW environments. The advances in research and deployment of EW weapons are being tested in these exercises and have proven effective. These EW weapons include jamming equipment against multiple communication and radar systems and GPS satellite systems. EW systems are also being deployed with other sea and air-based platforms intended for both offensive and defensive operations.

China's second and third generation fighter, strike, and bomber aircraft are unlikely to survive the high-attrition military conflicts predicted by the Local Wars concept given their lack of advanced radar, BVR-combat capabilities, or reduced radar profiles. The PLAAF has responded to this reality by significantly reducing its holdings of second and third generation aircraft while developing and purchasing fourth generation or near-fourth generation aircraft.

Indigenously developed J-10, J-11, and JH-7 fighter and strike aircraft, as well as the continued development of the J-20 and J-31 fifth generation aircraft, improve the survivability and effectiveness of the PLAAF. Chinese officials have previously said that they expect to have a stealth fighter in service as early as 2017.<sup>583</sup>

The purchase of Su-27 and Su-30 aircraft provided the PLAAF with a quick fourth generation fighter capability. The production and purchase of these aircraft has and will improve the capability of the PLAAF to an extent greater than can be predicted solely by analyzing force structure or aircraft numbers. Consequently, it is necessary to examine both force structure and

force composition in order to measure the PLAAF's progress towards becoming an air force capable of winning Local Wars.

It is important to note that all aircraft with fourth generation or near-fourth generation capabilities are considered modern. In the PLAAF arsenal, this includes J-10, J-11, Su-27, Su-30, and JH-7 aircraft. As they are developed, J-15, J-20, and J-31 aircraft will be added to this list.

**Figures 11.8 and 11.9** show the numbers of modern PLAAF aircraft in comparison to overall PLAAF holdings. They indicate both the level of absolute progress the PLAAF is making in its drive to acquire modern aircraft, and its relative progress in becoming a modern air force. In 2015, with over 500 modern fighters and fighter-bombers, the modern portion of the PLAAF outnumbered most air forces in the Asia-Pacific region.

The imports of Su-27 and Su-30 aircraft, along with the manufacture of indigenous fourth generation fighter aircraft such as the J-10 and J-11, suggest that the PLAAF will continue developing into a modern air force which fields a higher proportion of fourth generation systems. Moreover, the J-20 and J-31 stealth fighter prototypes indicate that the PLAAF is seeking a fifth generation combat capability – though there remain significant technological hurdles to be overcome in this quest.

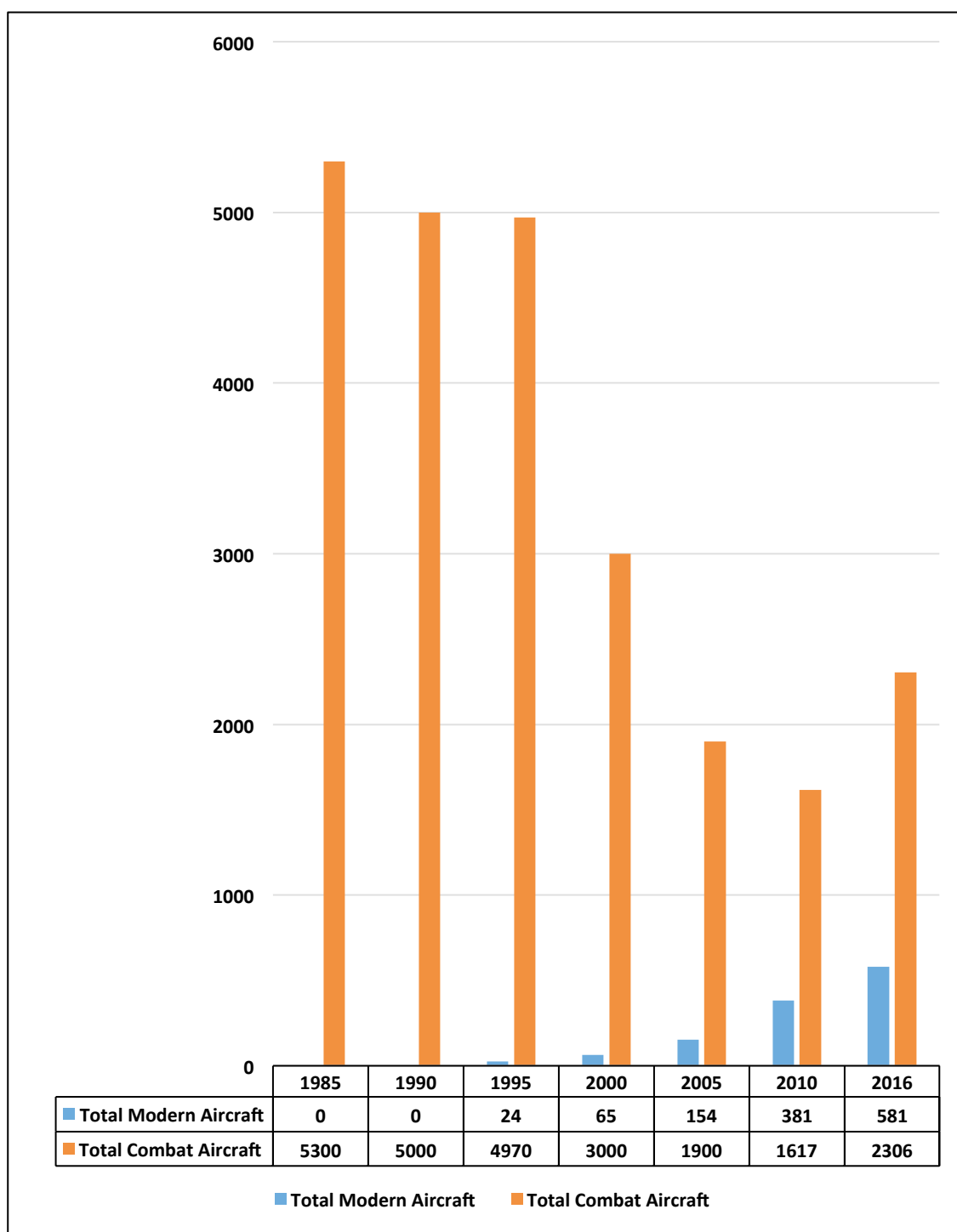
**Figure 11.10** tracks the percentage of the PLAAF that is considered modern from 1985 to place these modernization trends into better perspective and help the observer see concurrent changes in force composition and capability. The graph demonstrates the rapid modernization of the PLAAF since the year 2000 and displays the trends that are augmenting the PLAAF's ability to win Local Wars.

The most striking level of modernization is in the ground attack force: it is currently completely made up of fourth or near-fourth generation aircraft. The rapid modernization of this segment of the PLAAF shows compelling evidence of a wider shift from an air defense focus to a multi-mission, especially strike, focus for the PLAAF.

Compared to the bomber arm which currently has no modern aircraft, it appears that the indications given by the PLAAF's force structure also hold true in its force composition: the modernization of both aircraft categories indicates a PLAAF focus on targets within the first island chain. Such a posture is consistent with the Local Wars doctrine and is one indication that the doctrine is indeed influencing PLAAF modernization.

As the PLAAF's modernization trends continue, China's Air Force is likely to have greater and greater military capabilities, increasing its ability to decisively act in contingencies along its borders. In other words, it will be more capable of fighting and winning Local Wars.

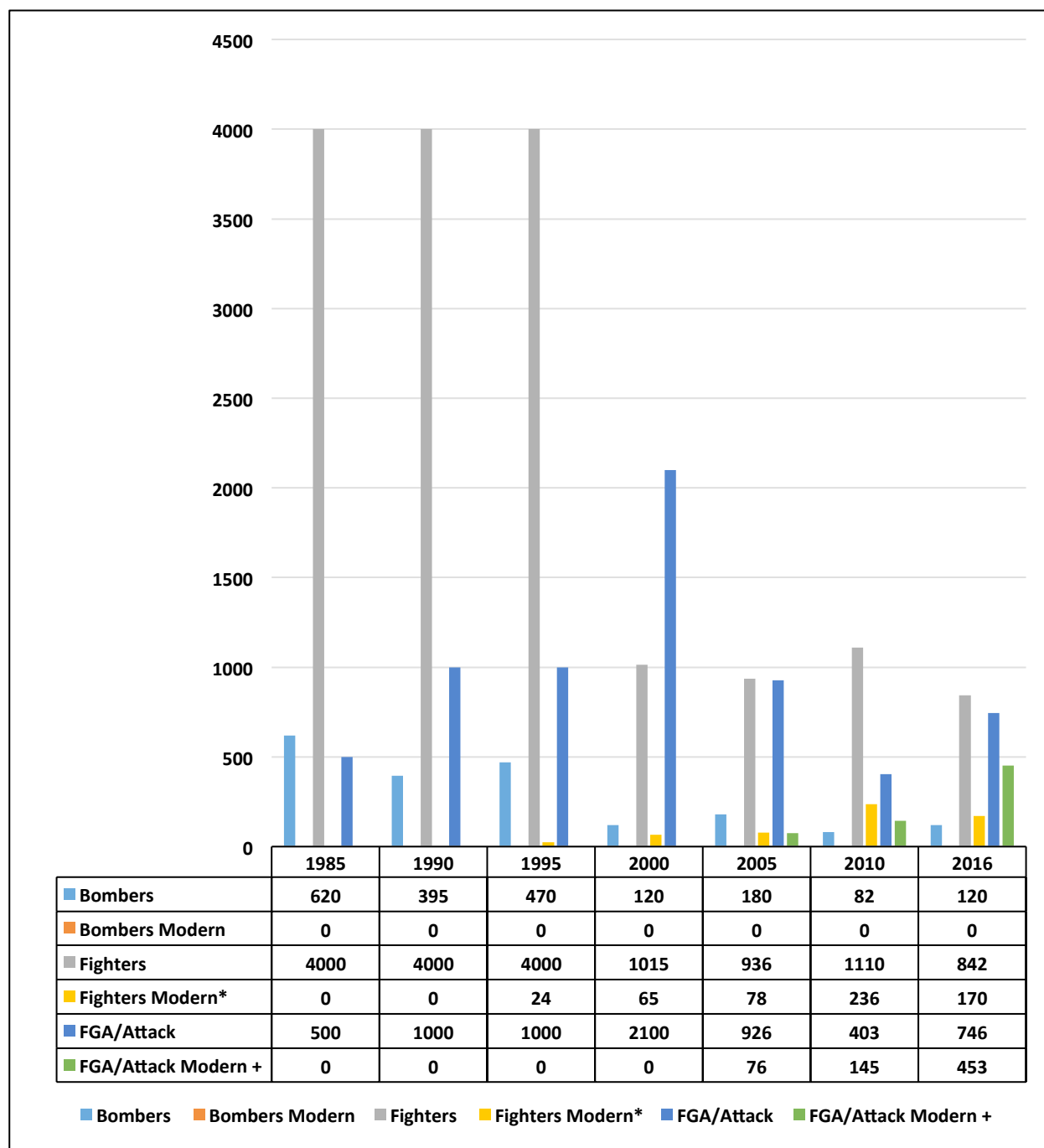
**Figure 11.8: Total Versus Modern Aircraft in the PLAAF**



\*The following systems are considered modern: J-10, J-10A, J-10B, J-10S, J-11, J-11B, J-11BS, Su-27SK, Su-27UBK, Su-30MKK

Source: IISS, *Military Balance* 1985-2016.

**Figure 11.9: Modern Versus Total PLAAF Aircraft by Major Mission Type**



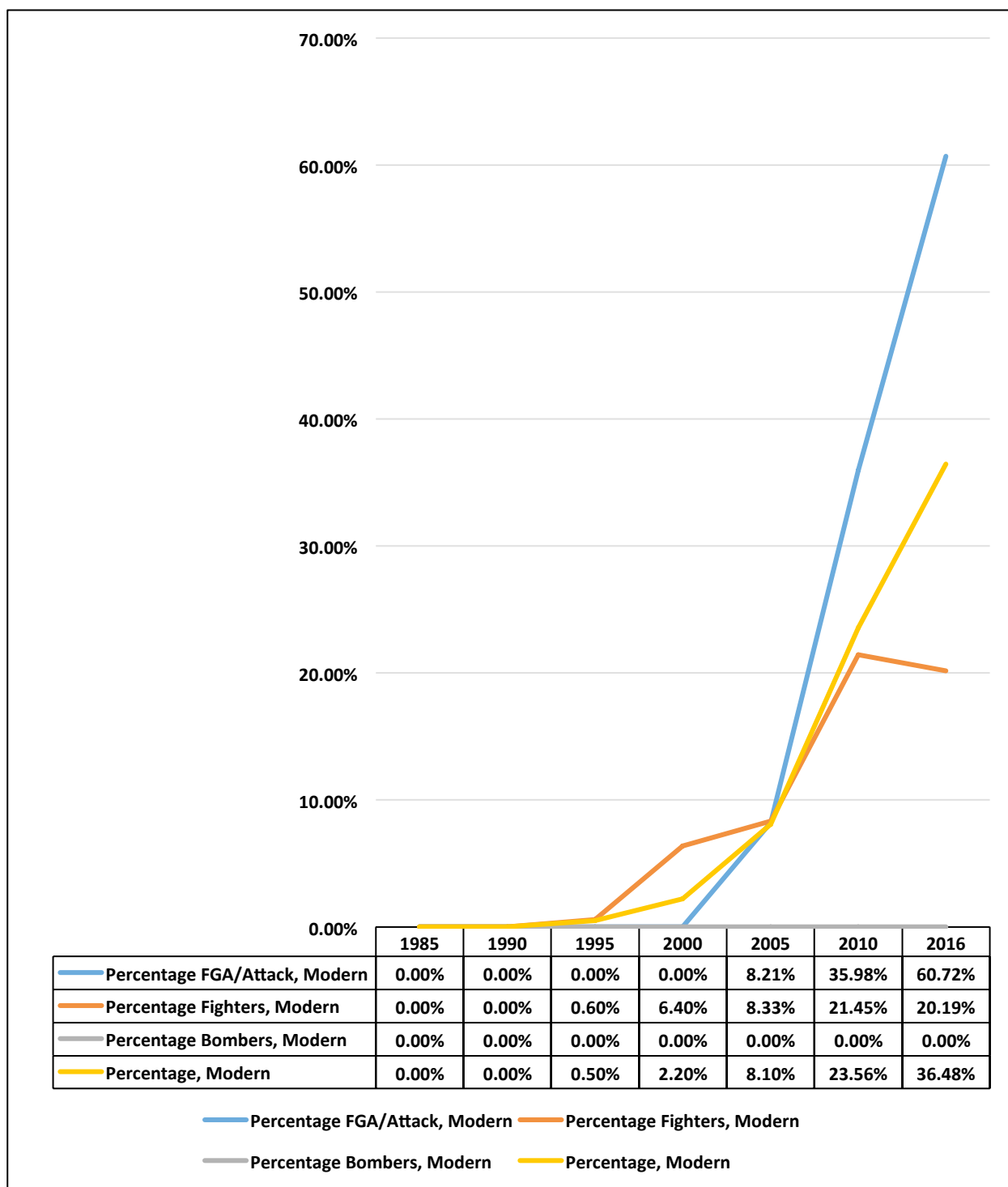
\*The following aircraft fall into this category: J-11, Su-27SK, Su-27UBK

†The following aircraft fall into this category: J-10, J-10A, J-10S, J-11B, J-11BS, Su-30MKK

Source: IISS, *Military Balance* 1985-2016.



**Figure 11.10: Percentage of Modern PLAAF Aircraft**



Note: “Percentage Modern” assesses only combat capable aircraft

Source: IISS, *Military Balance* 1985-2015.

## *Improvements in Realistic Training and Pilot Quality*

The PLA does lack of combat experience. China has not fought a modern war and that has led to concerns about the actual capabilities of PLA personnel. In order to mitigate this lack of experience China has taken substantial responsibility in UN peacekeeping operations and in UN efforts to combat piracy in the Gulf of Aden. However, their most concerted efforts have been placed on improving training and crafting more realistic training scenarios.

A 2016 RAND report offers a breakdown of the PLAAF's two most important training bases: Cangzhou Flight Test and Training Base and Dingxin Test and Training Base. On Cangzhou the report notes:<sup>584</sup>

In the late 1980s and early 1990s, the base solidified its role as the facility for elite pilot training. Particularly noteworthy is that Cangzhou is home to the PLAAF's first blue force unit, which is equipped with J-10 fighters and plays the role of the enemy air force in PLAAF training. While Western militaries traditionally train against a unit or collection of units that plays the role of the opposition force (OPFOR) and labels these OPFOR elements the *red force* (红方), the Chinese OPFOR is known as the *blue force* (蓝方). Reportedly, the unit motto is "think and fly like the enemy". According to one *PLA Daily* article, the PLAAF's J-10 blue force plays the role of a realistic simulated opponent in "free air combat training," thus helping address the problem of PLAAF units "training against an invisible opponent and fighting in an unrealistic environment." According to the commander of the base, the involvement of the J-10 blue force unit allows pilots on both sides of OPFOR exercises to engage in "free air combat" training that will better prepare them for future aerial battlefields. Reportedly, PLAAF blue force training simulated Soviet Union air force units at first, and the OPFOR elements later switched to playing the roles of Taiwan and the United States as the simulated adversaries.

In addition to providing realistic training via OPFOR units, Cangzhou's Test and Training Base gives the PLAAF a venue for developing modern air combat tactics. PLA media reports indicate that Cangzhou FTTB is responsible for development of tactics and techniques, training programs, and certification of new equipment. Specifically, Cangzhou is where the PLAAF further develops tactics that originate on paper at the PLA Air Force Command College. Although exact documentation of this process is scant, it seems that Cangzhou's blue force OPFOR training units may have the responsibility for translating top-down, doctrinal guidance into air-combat tactics.

Additionally, the testing component of Cangzhou's mission also refers to testing one final prototype of all new fighter aircraft models before they are approved for delivery from the factory to an operational unit. At some point during the testing phase, one prototype is sent to the Xi'an Yanliang Airfield, where the PLAAF's main test-flight unit is located (the factory test flight units are subordinate to this unit). The aircraft is usually then sent to the PLAAF's Flight Test and Training Base at Cangzhou near Tianjin, where it is tested for tactics capabilities.

The RAND report provides further elaboration on the Dingxin and how it complements what is done at Cangzhou:<sup>585</sup>

The PLAAF's other training facility, Dingxin Test and Training Base, is located on the opposite end of the country from Cangzhou. Situated in northwestern Gansu province, the Dingxin Test and Training Base gives PLAAF pilots a much larger operating area. For example, the PLAAF has reportedly constructed mockups of Taiwan military facilities at Dingxin to enable practice runs against intended targets. Specifically, Taiwan media reports indicate that China has built a mock airfield near Dingxin that appears to be nearly identical to the Taiwan Air Force's Chingchuankang airbase in central Taiwan. The large training areas available at Dingxin thus give the PLAAF unique opportunities to develop proficiency in the strategies and tactics initially developed at Cangzhou. What advanced units can work through experimentally at Cangzhou can be practiced until perfection at Dingxin and its supporting facilities. Besides serving as a test and training area for aircraft, Dingxin has a separate area for testing surface-to air missiles (SAMs). In addition, Dingxin is home to the Golden Helmet competition.

This difference in size and location is a key distinction between the two PLAAF advanced training bases. Dingxin is located a significant distance from population centers, giving PLAAF pilots the opportunity to benefit from live-fire ranges and the ability to train under actual electromagnetic jamming conditions. Conversely, Cangzhou allows pilots to conduct test and training in the appropriate flight zones over the Bohai Gulf, which is becoming even more relevant as the PLAAF expands its maritime reach. The two facilities can thus be seen as complementary, and this arrangement allows for advanced pilots at Cangzhou to work to translate new, theoretical guidance on tactics into operational tactics, techniques, and procedures. Given the distance of Dingxin, the PLAAF can give its pilots training opportunities to practice new tactics and combat methods. In addition, the large Dingxin facility offers space for large exercises, including the PLAAF's annual Red Sword/Blue Sword exercise, which aims to prepare the PLAAF for the possibility of future high-technology combat against highly capable adversaries

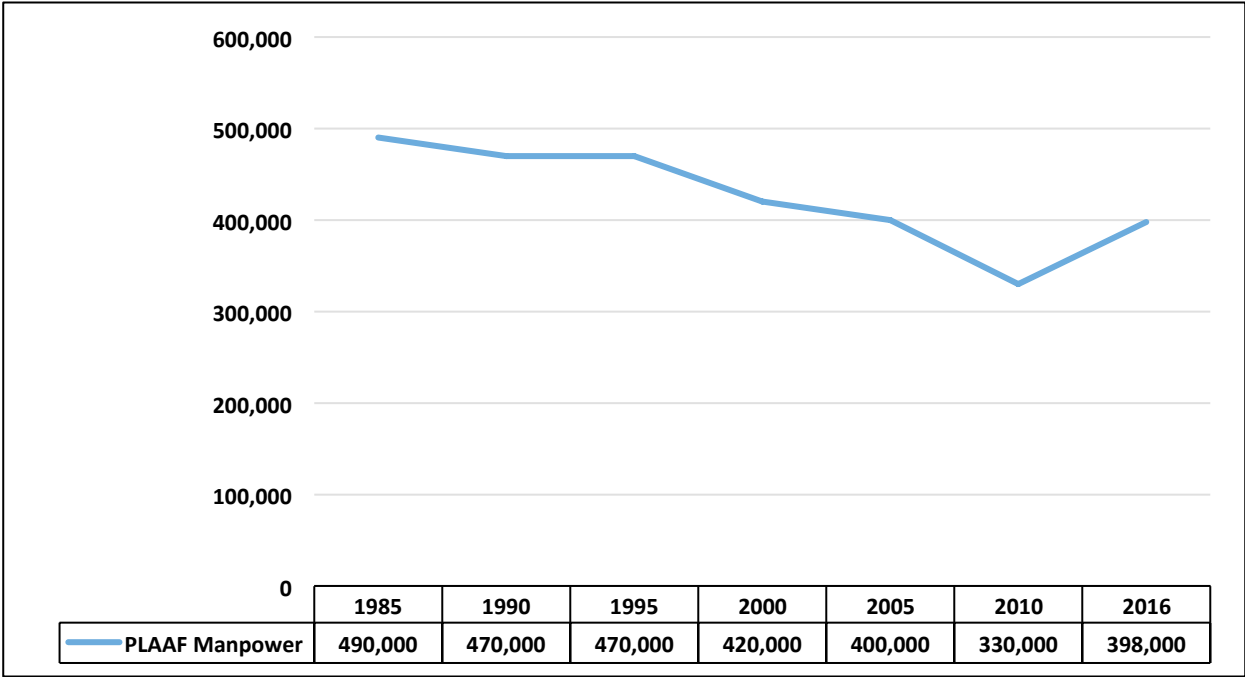
The last few years have seen a change in the PLAAF's training regime to adopt the more realistic training methods that other countries use. The RAND report notes.<sup>586</sup>

Chinese military media reports note that, historically, China's air combat training practices "could not match actual combat (实战) conditions," whereas the air forces of many other countries were already engaging in much more realistic "free air combat" training. In 2009, China proposed to address this problem by adopting "free air combat" training, and, in 2010, it initiated some new pilot training programs. By 2011, according to one report, "free air combat training and contests were extended to all air force units." One key issue closely related to "free air combat" training is flight safety, as the PLAAF had to relax its safety standards following the issuance of the 2002 Outline of Military Training and Evaluation (OMTE) (□事□□与考核大□) in order to meet its requirements for more realistic training.

### *Shifts in Personnel*

As is the case with the other services, the PLAAF's personnel policies have sought to reduce the size of the PLAAF while improving the combat and leadership skills of its personnel. The PLAAF aims to achieve the second goal by increasing the realism of training, offering academic courses to currently serving personnel, and conducting military exercises with other countries. These Personnel trends are shown in **Figure 11.11**.

*Figure 11.11: Historical PLAAF Personnel Trends*



Source: IISS, *Military Balance* 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

## CHAPTER 12: THE PLA ROCKET FORCE: EVOLVING BEYOND THE SECOND ARTILLERY CORPS (SAC) AND NUCLEAR DIMENSION

Since 1985, Chinese missile forces, which are under the command of the Second Artillery Force (SAF) or Second Artillery Corps (SAC) – have changed strikingly in character. The forces have shifted from a nuclear deterrent force based primarily on intermediate and medium-range missiles to a force of intercontinental- and medium-range nuclear forces combined with a powerful conventional missile arm capable of conducting precision attacks at a medium range.

Further changes took place on the eve of 2016 as the SAF was recommissioned as the PLA Rocket Force (PLARF) on December 31, 2015. Additionally, the PLARF was elevated from an independent branch to the fourth military service alongside the PLA, PLAN, and PLAAF. Though the decision to reconstitute the PLARF as a military service indicates the importance China puts on maintaining modern missile forces, at this point it seems unlikely that the PLARF's roles and responsibilities will differ substantially from the SAF.

The PRC Ministry of National Defense provided the following explanation of the role of the PLARF on its website:<sup>587</sup>

(President) Xi stressed that the PLA Rocket Force is China's core strategic deterrence power. The PLA Rocket Force should strengthen the trustworthy and reliable nuclear deterrence and nuclear counter-attack capabilities, intensify the construction of medium and long range precision strike power, and reinforce the strategic check-and-balance capability, so as to build a powerful and modern Rocket Force.

According to the US-China Economic and Security Review Commission, the PLARF<sup>588</sup> “has at least 1,330 and potentially more than 1,895 ballistic and cruise missiles, which includes 1,000-1,200 short-range ballistic missiles, 75-100 medium range ballistic missiles, 5-20 intermediate-range ballistic missiles, 50-75 intercontinental ballistic missiles, and 200-500 ground-launched land-attack cruise missiles.”<sup>589</sup>

The PLARF's missile systems, coupled with the PLA's rapidly developing space and counter-space platforms, have become critical components of China's emerging power projection capabilities. With the addition of new modernized missile classes and various satellite and counter-space capabilities, the PLARF is now capable of credibly deterring adversaries at intercontinental ranges and conventionally holding at risk adversary forces within 1,500 km of China. These changes are the result of major doctrinal modifications that started during the 1980s and fundamentally altered the PLARF's overarching mission as well as its position within the wider PLA.

At the same time, the development of conventional short-range ballistic missiles (SRBMs), medium-range ballistic missiles (MRBMs), and land attack cruise missiles (LACMs), as well as its improving intercontinental ballistic missiles (ICBMs) means China must modify its strategy, and develop a wide range of additional command and control, and battle management capability. These include developing a new approach to deterrence, new approaches to war fighting, and a more sophisticated capability to target enemy forces over the horizon while coordinating such attacks with joint PLA forces.

As with many aspects of China's military modernization, the overhaul and growth of China's missile capabilities has been swift and substantial. Only a little over a decade ago, China's conventional missile forces only had the capability to hit Taiwan. Now, China possesses the capability to hit the first island chain and in all likelihood the second island chain.<sup>590</sup> Mark Stokes of the Project 2049 predicts that China could have fully global precision strike capabilities by the year 2030.<sup>591</sup> In the mid-1990s China possessed only around 30-50 SRBMs, that number has grown to over 1,200.<sup>592</sup> Overall, in a very short period of time China has built one of the most diverse and capable missile forces in the world.

It should be noted, however, that some key uncertainties exist which are mentioned in other aspects of this analysis. The word "precision" is often used in unclassified reports without any definition or indication whether this is empirical intelligence or test data on which to base such a term. Actual estimates of precision are often made on the basis of the theoretical engineering limits of the guidance platform rather than test data, and made regardless of the overall reliability of the missile. Missile technology has advanced over the years, but systems are still deployed where it later becomes clear that their real-world capability was far more limited than their design indicated.

Accuracy per se is less critical in describing nuclear armed missiles than conventional missiles, but it is important to note that the most common definition of accuracy used in public estimates is circular error probable (CEP) (also circular error probability or circle of equal probability). This is defined as the radius of a circle, centered about the mean, whose boundary is expected to include the landing points of 50% of the missiles fired.

The basic mathematics used in defining and making these calculations have some uncertainties and the methods can vary. The more critical point, however, is that they normally assume the entire missile functions perfectly from launch through its entire flight to impact or detonation. Unless the warhead or missile have terminal guidance or homing, they also assume that the launch point and target are perfectly known, and that flight and reentry conditions are not relevant.

These are not casual issues, and it is important to note that no estimate is made of missile failures or where the other 50% of the missiles fired actually land. Major misfires can be acutely annoying in the case of nuclear weapons. Any serious deviation relative to real world warhead lethality can make a conventional warhead totally ineffective against the target involved even if it is a matter of meters in some cases. It can make it impossible for both the attacker and defender to estimate intentions and damage in the case of nuclear weapons, and create serious problems in managing an escalation ladder – if relevant.

There also historical cases where even the U.S. deployed nuclear armed cruise missiles and ballistic missiles later proved to be far less reliable and accurate than was originally assumed. Complex military bureaucracies may or may not demand meaningful test data, and targeters and policy makers may or may not understand the data they are given. There are strong indications that countries like China may not conduct enough real-world operational tests to estimate a valid derived aim point for at least some systems.

Much of the unclassified data on missile performance are also based on nominal warhead weights rather than any actual knowledge of the warhead. This can radically affect the combined range-payload of the missile – either reducing or increasing range dependent on real-world warhead weight. The actual design of a nuclear, biological, chemical, or conventional warhead also radically affects its lethality and reliability – particularly during the reentry phase if relevant and at

the points where height and effectiveness of burst/dissemination become critical. This is generally more of a problem with ballistic missiles than cruise missiles, but terminal guidance can be a separate problem with all missiles.

Three other key issues where insufficient data exist to characterize these developments include:

- The extent to which China is developing more sophisticated warheads and the level of reliable precision strike capability to use conventional missile warheads against key military and infrastructure targets.
- The linkages between the steady improvement in China's missile forces, and the development of its theater and strategic nuclear forces – a subject addressed in the next chapter.
- The degree to which China sees its missiles as a deterrent to conventional escalation and a political weapon versus an operational aspect of joint warfare linked to its air, land, and naval operations.

It is not clear that China's declared strategy matches its actual strategy or longer term force and modernization goals, or how China uses such forces in its exercises and operational plans.

### ***PLARF Strategy and Developments***

China does have a declared strategy for using its missile forces. During the 1980s, the CMC ordered the PLARF to operate according to the concept of "Dual Deterrence and Dual Operations." This doctrine was developed in response to China's perception of the recent changes in the nature of modern warfare, and the CMC believed that these changes required the PLARF to maintain both a conventional strike capability and augmented security for its nuclear deterrent. The PLARF had been founded with a mission solely focused on nuclear deterrence before it also assumed conventional responsibilities in the 1980's.

One key document that describes China's declared strategy is the *Science of Second Artillery Campaigns*. This document was issued in 2004, but still provides one of the most detailed and current public descriptions of China's strategy and goals for PLARF.<sup>593</sup>

In the late 1980s, the Central Military Commission assigned the Second Artillery Force the mission to build and develop a conventional guided missile force. Especially after the Gulf War, the PLA, under the correct leadership of President Jiang Zemin (江泽民), formulated the military strategic guidelines of the new era. To meet the needs of future high tech local wars, the Central Military Commission issued the new task of "dual deterrence and dual operations" and set up a new conventional guided missile force.

The basic logic of "dual deterrence and dual operations" was that both conventional and nuclear missile capabilities could deter China's adversaries, while both conventional and nuclear operations were necessary in wartime. By nuclear operations, the PLARF refers to nuclear counter-attack and nuclear deterrence operations.

The requirements placed on the PLARF by the new service strategy had significant implications for its force structure, equipment composition, and personnel policies. In the mid-1980s, the PLARF was a force comprised mostly of medium- and intermediate-range nuclear and atomic weapons. The PLARF had few intercontinental ballistic missiles (ICBMs) and no conventional capabilities. The requirements of the new service strategy created doctrinal and practical challenges.

As the *Science of Second Artillery Campaigns* stated, several changes had to occur:<sup>594</sup>

First is to shift the footing of the theoretical research of Second Artillery Force campaigns from dealing with a nuclear war in the past to participating in a high tech local war under the condition of nuclear deterrence; Second is to shift the focus of the research from using the single nuclear means to accomplish the mission of nuclear counter attack in the past to using two types of means, both nuclear and conventional, namely to a

mission of “dual deterrence and dual operations.” Third is to change the content of research from focusing on strategizing in the past to focusing on a combined use of strategizing and technical means.

The PLARF’s dual deterrence and dual operations strategy easily fits into the construct of the Local Wars concept the PLA adopted in 1993, and its emphasis on developing a conventional strike capability fits into the Local Wars requirements for long-range precision strikes.

As a result, the PLARF now plays an important supporting role for the Army, Navy, and Air Force in joint operations. Long-range conventional strikes and nuclear counterattacks (assuming that China has already been attacked with nuclear weapons), targeting enemy C4ISR, and air bases. However, the PLARF is also described as being capable of conducting independent operations if necessary.

As is the case with the other key elements of PLA’s forces, improvements in the realism of training appear to reflect the PLARF’s ability to conduct joint and independent operations. In addition to training exercises in conjunction with other services across multiple military regions, the PLARF has practiced operating under harsh conditions, which may describe contingencies such as loss of communication with the command chain, constrained mobility, and electronic attacks.<sup>595</sup>

China does not have a clear separation between the assets of the conventional and nuclear assets of the PLARF. Indeed, the *Science of Second Artillery Campaigns* emphasized that “nuclear missile force deterrence actions and conventional missile strike operations must be fused together and mutually interwoven.”<sup>596</sup> Although China’s no first use policy would suggest that only conventional missiles will be active in a campaign—provided that China is not attacked by nuclear weapons—nuclear tipped missiles still have a role to play. These missiles serve as a nuclear “backstop” to escalation of a conflict. The *Science of Second Artillery Campaigns* states:<sup>597</sup>

These units aim mainly to fully demonstrate their role in nuclear deterrence and prevent the war from moving towards widening or spreading, and to deter the enemy from initiating nuclear war, and thereby controlling the war by keeping it localized, limited and bearable in scope.

Moreover, China emphasizes the value of utilizing its substantial conventional missile capabilities in a conflict situation. Jeremy Medeiros notes in a September 2007 report:<sup>598</sup>

The dominant theme in these writings is the offensive nature of conventional missile operations, that is, conventional missiles are not just for deterrence and retaliation. The PLA emphasizes using conventional missiles to strike first, strike hard, strike precisely, and strike rapidly. The aim of this approach is to “seize the initiative” and quickly gain “campaign control” in order to speed up the process of warfare leading to the adversary’s quick capitulation. PLA writings state that the goals of such attacks are to “smash or weaken the enemy’s military strength, to politically shock the 168 enemy, to shake the [enemy’s] willpower [to wage] war, to check the escalation of war, and to speed up the progress of war.”<sup>45</sup> The conceptual importance of preemption and striking critical targets to joint firepower attacks is reflected in the PLA’s “guiding ideology” for conventional missile operations— “forestalling the enemy and striking with focus” (xianji zhidi zhongdian tuji)—which is repeatedly stressed in PLA publications.

Jeffrey Lewis states in his 2014 book *Paper Tigers* that:<sup>599</sup>

Westerners tend to think of the Second Artillery as China’s nuclear force, but today conventionally armed missiles account for the majority of the inventory of missiles and launchers, as well as about half the brigades. Nuclear missions play a declining role in the broader portfolio of Second Artillery capabilities, a shift that has far-reaching implications.

The PLARF can undertake various activities in order to “demonstrate their role.” These activities can include exercises, feints in order to confuse enemy intelligence, revealing certain capabilities,



preparing launch facilities to give the appearance of escalation, increasing readiness levels, conducting missile tests (tests closer to enemy assets will send stronger messages), and possibly lowering the nuclear deterrence threshold or adjusting nuclear policy.<sup>600</sup> Analysts are concerned that some of these actions can be easily misinterpreted as preparation for an attack, potentially sparking an unwanted conflict.<sup>601</sup>

## PLARF Strategy

China's recent strategy papers have reaffirmed these trends in the PLARF, along with the strategy emphasized in the *Science of Second Artillery Campaigns*. The 2013 defense white paper, supplemented with the current PRC Ministry of Defense explanation of the PLARF, provides more details available through open sources than the 2015 defense white paper. It described China's 2013 strategy for building and developing the PLARF as follows:<sup>602</sup>

The PLA Second Artillery Force (PLASAF) is a core force for China's strategic deterrence. It is mainly composed of nuclear and conventional missile forces and operational support units, primarily responsible for deterring other countries from using nuclear weapons against China, and carrying out nuclear counterattacks and precision strikes with conventional missiles.

Following the principle of building a lean and effective force, the PLASAF is striving to push forward its informationization transform, relying on scientific and technological progress to boost independent innovations in weaponry and equipment, modernizing current equipment selectively by applying mature technology, enhancing the safety, reliability and effectiveness of its missiles, improving its force structure of having both nuclear and conventional missiles, strengthening its rapid reaction, effective penetration, precision strike, damage infliction, protection and survivability capabilities.

The PLASAF capabilities of strategic deterrence, nuclear counterattack and conventional precision strike are being steadily elevated. The PLASAF has under its command missile bases, training bases, specialized support units, academies and research institutions. It has a series of "Dong Feng" ballistic missiles and "Chang Jian" cruise missiles.

When it comes to future force goals, China's 2015 defense white paper stated that the PLARF will strengthen its capabilities and remain vigilant in peacetime. The most extensive portion of the 2015 paper referring the PLARF was limited to the following statement:<sup>603</sup>

In line with the strategic requirement of being lean and effective and possessing both nuclear and conventional missiles, the PLA Second Artillery Force (PLASAF) will strive to transform itself in the direction of informationization, press forward with independent innovations in weaponry and equipment by reliance on science and technology, enhance the safety, reliability and effectiveness of missile systems, and improve the force structure featuring a combination of both nuclear and conventional capabilities. The PLASAF will strengthen its capabilities for strategic deterrence and nuclear counterattack, and medium- and long-range precision strikes.

The PRC Ministry of Defense website further explained PLARF force building in 2015 by stating:<sup>604</sup>

Following the principle of building a lean and effective force and going with the tide of the development of military science and technology, the Second Artillery Force strives to raise the informationization level of its weaponry and equipment, ensure their safety and reliability, and enhance its capabilities in protection, rapid reaction, penetration, damage and precision strike. After several decades of development, it has created a weaponry and equipment system with both nuclear and conventional missiles, both solid-fueled and liquid-fueled missiles, different launching ranges and different types of warheads.

The Second Artillery Force is endeavoring to form a complete system for war preparations, optimize its combat force structure, and build a missile operational system suited to informationized warfare. Its nuclear and conventional missile forces are kept at an appropriate level of readiness.

The Second Artillery Force is making steady head-way in the construction of its battlefield system, and makes extensive use of modern mechanical equipment and construction methods. Each completed project is up to standard.

The Second Artillery Force is also dedicated to logistical reforms and innovations. It has created integrated data bases for field support and informationized management platforms for logistic materials, and improved support systems for the survival of combatants in operational positions. As a result, its integrated logistical support capabilities in case of actual combat have been markedly enhanced.

To ensure the absolute safety of nuclear weapons, the Second Artillery Force strictly implements rules and regulations for nuclear safety control and accreditation of personnel dealing with nuclear weapons, has adopted reliable technical means and methods, strengthens the safe management of nuclear weapons in the process of storage, transportation and training, improves mechanisms and methods for emergency response to nuclear accidents, and has put in place special safety measures to avoid unauthorized and accidental launches.

### **Power Projection**

China's missile programs cannot be separated from its nuclear weapons capabilities but they also have a major impact on its power projection capabilities and the ongoing improvements in its naval and air forces discussed earlier. The PLARF's force development and modernization efforts indicate that China has sought to obtain both the conventional and nuclear capabilities necessary for fighting and winning Local Wars under Conditions of Informatization in the 21<sup>st</sup> century. It is also clear that the PLARF's modernization and force development is an ongoing process, one that will likely continue into the near future.

The PLARF's equipment procurement policies are in line with the Local Wars concept, although they give China and the PLA many other options. The PLARF has modernized its missile systems and built a conventional arsenal comprised entirely of modern missiles that utilize solid fuel and are road-mobile. Moreover, the PLARF's conventional missile systems are increasing in accuracy, thus augmenting the potency of a hypothetical PLARF long-range precision strike.

If current unclassified estimates are correct that PLARF possesses only about 260 nuclear warheads compared to thousands of missiles, it seems that the majority of China's missile program is focused more on conventional capabilities. At the same time, the nuclear element of the PLARF's dual mission is making progress.

The nuclear missiles are lagging behind the conventional force in its development of a solid-fueled, mobile forces – China's nuclear deterrent posture still relies heavily on less advanced fixed, liquid-fueled missiles. However, China's nuclear deterrent is modernizing with the decision to MIRV the DF-5B ICBM.

Along with progress in China's SLBMs, this raises increasing questions to the future size of its nuclear armed forces, and its targeting doctrine, along with questions about the degree to which it is responding to regional and U.S. missile defenses. This, in turn, raises questions about China's impact on U.S.-Russian nuclear arms control efforts – as does Russia's increasing emphasis on nuclear modernization and theater nuclear options in Europe.

The PLARF's modernization and force development involves other aspects in addition to is developing new missiles. The PLARF has also fundamentally changed its force structure over the last twenty years, shifting from a medium-intermediate-range nuclear force to a bifurcated force armed with an array of missile categories, classes, and variants. The PLARF is now capable of and required to carry out a variety of missions. Capabilities such as regional conventional precision

strike, which did not exist in 1995, now make up more than half of the PLARF's missile launcher arsenal.

The PLARF is currently modernizing and developing new forces with new weapons systems like the DF-21D anti-ship ballistic missile (ASBM), Anti-Satellite missiles (ASAT), and conventional DF-21C. At the operational level, some reports also indicate that the PLARF has built tunnel networks with a total length that could reach 5,000 kilometers to provide protection for its mobile missile systems. This would reduce the risk of preemption and complicate targeting by any potential adversary.<sup>605</sup>

Moreover, the forces with the greatest potential precision strike capability – the SRBM and LACM forces – have large numbers of reserve missiles per missile launcher, thus ensuring the possibility of sustained combat operations and repeated salvo fire. This combination of enhanced mobility, survivability, and large supplies of ammunition ensures that, in the case of any potential conflict, adversary forces in the region must operate in an environment in which there would be no sanctuaries within hundreds of kilometers of China.

It also makes the real world reliability and accuracy of Chinese forces – something that cannot be determined without access to highly classified test data – a critical issue. A large precision strike force that can do critical damage to fixed military and civilian infrastructure targets can become something approaching a force capable of mass effectiveness even if it does not come close to a nuclear level of mass destruction.

### **The US Official View and the Growth of China's Precision Strike Capability**

There have been a number of official U.S. assessments of China's missile capabilities. Some have come from expert sources. In May 2013, the US National Air and Space Intelligence Center issued the latest version of its assessment, with contributions from the Defense Intelligence Agency Missile and Space Intelligence Center and the Office of Naval Intelligence.<sup>606</sup>

This assessment summarized Chinese missile developments as follows:<sup>607</sup>

China has the most active and diverse ballistic missile development program in the world. It is developing and testing offensive missiles, forming additional missile units, qualitatively upgrading missile systems, and developing methods to counter ballistic missile defenses.

...The Chinese ballistic missile force is expanding in both size and types of missiles. China continues to field conventionally armed SRBMs opposite Taiwan, and is developing a number of new mobile, conventionally armed MRBMs. Missiles such as the CSS-5 ASBM are key components of the Chinese military modernization program, specifically designed to prevent adversary military forces' access to regional conflicts.

...China continues to maintain regional nuclear deterrence, and its long-term, comprehensive military modernization is improving the capability of its ballistic missile force to conduct high-intensity, regional military operations, including "anti-access and area denial" (A2/AD) operations. The term A2/AD refers to capabilities designed to deter or counter adversary forces from deploying to or operating within a defined space. Currently, China deploys the nuclear armed CSS-2, CSS-5 Mod 1, and CSS-5 Mod 2 for regional nuclear deterrence. China is also acquiring new conventionally armed CSS-5 MRBMs to conduct precision strikes. These systems are likely intended to hold at-risk or strike logistics nodes, regional military bases including airfields and ports, and naval assets. Notably, China has likely started to deploy the DF-21D, an ASBM based on a variant of the CSS-5.

...China is strengthening its strategic nuclear deterrent force with the development and deployment of new ICBMs...China currently has a single XIA Class SSBN that is intended to carry 12 CSS-NX-3/JL-1 missiles. In addition, China will deploy the new CSS-NX-14/JL-2 SLBM on new 12-tube JIN Class SSBNs. This

missile will, for the first time, allow Chinese SSBNs to target portions of the United States from operating areas located near the Chinese coast...The CJ-10 (DH-10) is the first of the Chinese Changjian series of long-range missiles and LACMs. It made its public debut during a military parade in 2009 and is currently deployed with the Second Artillery Corps.

The U.S. Department of Defense and U.S. Congress have also issued a long series of annual assessments. The 2016 edition of the DoD report on *Military and Security Developments Involving the People's Republic of China*, and the *2015 Report to Congress of the US-China Economic Security Review Commission*, describe the current structure and trends in the PLARF in some detail.

The US summarized Chinese missile developments in its 2016 DoD report as follows:<sup>608</sup>

The Rocket Force, renamed from the PLASAF late last year, operates China's land-based nuclear and conventional missiles. It is developing and testing several new classes and variants of offensive missiles, including a hypersonic glide vehicle; forming additional missile units; upgrading older missile systems; and developing methods to counter ballistic missile defenses.

The force possesses approximately 1,200 short-range ballistic missiles (SRBM) in its inventory. China is increasing the lethality of its conventional missile force by fielding the CSS-11 (DF-16) ballistic missile with a range of 800-1,000 km. The CSS-11, coupled with the already deployed conventional land-attack and anti-ship variants of the CSS-5 (DF-21C/D) medium-range ballistic missile (MRBM), will improve China's ability to strike not only Taiwan, but other regional targets. These ballistic missile systems are complimented by the CJ-10 ground-launched cruise missile (GLCM). The CJ-10 has a range in excess of 1500 km and offers flight profiles different from ballistic missiles that can enhance targeting options.

The 2016 report continued describing Chinese MRBM and ICBM developments, as well as highlighting the development of the multiple independently-targetable re-entry vehicle (MIRV), which will be discussed in greater detail in the next chapter.<sup>609</sup>

China is fielding a growing number of conventionally armed MRBMs, including the CSS-5 Mod 5 (DF-21D) anti-ship ballistic missile (ASBM). The CSS-5 Mod 5, with a range of 1,500 km and maneuverable warhead, gives the PLA the capability to attack ships, including aircraft carriers, in the western Pacific Ocean.

China unveiled the DF-26 intermediate-range ballistic missile (IRBM) during the September 2015 parade in Beijing. When fielded, the DF-26 will be capable of conducting precision strikes against ground targets and contribute to strategic deterrence in the Asia-Pacific region. The official parade announcer also referenced a nuclear version of the DF-26, which, if it shares the same guidance capabilities, would give China its first nuclear precision strike capability against theater targets.

The PLARF continued to modernize its nuclear forces by enhancing its silo-based intercontinental ballistic missiles (ICBM) and adding more survivable, mobile delivery systems. China's ICBM arsenal to date consists of approximately 75-100 ICBMs, including the silo-based CSS-4 Mod 2 (DF-5) and multiple independently-targetable reentry vehicle (MIRV)-equipped Mod 3 (DF-5B); the solid-fueled, road-mobile CSS-10 Mod 1 and 2 (DF-31 and DF-31A); and the shorter range CSS-3 (DF-4). The CSS-10 Mod 2, with a range in excess of 11,200 km, can reach most locations within the continental United States. China also is developing a new road-mobile ICBM, the CSS-X-20 (DF-41) capable of carrying MIRVs.

The 2016 DoD report provided considerable detail regarding China's precision strike capabilities – although it did not define “precision strike,” describe the empirical basis for measuring accuracy, describe the warheads involved and their lethality, or describe missile reliability. This is critical because estimates of accuracy based purely on the potential limits of estimates or the limits of the guidance platform can be highly uncertain and are often based on theoretical estimates of warhead size that do not indicate anything about warhead sophistication and lethality. The 2016 DoD report notes:<sup>610</sup>

**Short-Range Ballistic Missiles (SRBMs) (less than 1,000 km).** The PLA Rocket Force, formerly called the PLASAF, had approximately 1,200 SRBMs at the end of 2015. The force fields advanced variants with improved ranges and accuracy in addition to more sophisticated payloads, while gradually replacing earlier generations that do not possess true precision strike capability.

**Medium-Range Ballistic Missiles (MRBMs) (1,000-3,000 km).** The PLA is fielding conventional MRBMs to increase the range at which it can conduct precision strikes against land targets and naval ships operating far from China's shores out to the first island chain.

**Intermediate-Range Ballistic Missiles (IRBMs) (3,000-5,500 km).** The PLA is developing a nuclear and conventional road-mobile IRBM, which increases its capability for near-precision strike out to the "second island chain." The PLAN also is improving its over-the-horizon (OTH) targeting capability with sky wave and surface wave over the horizon (OTH) radars, which can be used in conjunction with reconnaissance satellites to locate targets at great distances from China, thereby supporting long-range precision strikes, including employment of ASBMs.

**Land-Attack Cruise Missiles (LACMs).** The PLA continues to field air- and ground-launched LACMs for standoff precision strikes. Air-launched cruise missiles include the YJ-63, KD-88, and the CJ-20 (the air-launched version of the CJ-10 ground-launched cruise missile still fielded in the PLASAF). China recently adapted the KD-88 LACM, with an advertised range of more than 100 km, and may be testing a longer-range version. China also is developing the CM-802AKG LACM, an export system that can strike both land and ship targets from fighters or bombers.

**Ground Attack Munitions.** The PLAAF has a small number of tactical air-to-surface missiles (ASM) as well as precision-guided munitions including all-weather, satellite-guided bombs, anti-radiation missiles, and laser-guided bombs. China is developing smaller-sized ASMs such as the AR-1, HJ-10 anti-tank, Blue Arrow 7 laser-guided, and KD-2 missiles in conjunction with its increasing development of UAVs. Additionally, China is also adapting to UAVs GPS-guided munitions such as the FT-5 and LS-6 that are similar to the U.S. Joint Direct Attack Munitions (JDAM).

**Anti-Ship Cruise Missiles (ASCMs).** The PLAN is deploying a wide range of advanced ASCMs. The most capable include the domestically produced ship-launched YJ-62 ASCM and the Russian SS-N-22/SUNBURN supersonic ASCM, which is fitted on China's SOVREMENNY-class DDGs acquired from Russia. China's submarine force is also increasing its ASCM capability, with the long-range YJ-18 ASCM replacing the older YJ-82 on the SONG, YUAN, and SHANG classes. The YJ-18 is similar to the Russian SS-N-27B/SIZZLER ASCM, which is capable of supersonic terminal sprint and is fielded on eight of China's 12 Russian-built KILO SS. In addition, PLAN Aviation employs the 200 km range YJ-83K ASCM on its JH-7 and H-6G aircraft. China has also developed the YJ-12 ASCM for the PLAN. The new missile provides an increased threat to naval assets, due to its long range and supersonic speeds. It is capable of being launched from H-6 bombers.

The *2014 Report to Congress of the US-China Economic Security Review Commission* described the progress in China's missile industry as follows:<sup>611</sup>

China is able to rapidly develop and produce a diverse array of advanced ballistic and cruise missiles. China maintains the largest and most lethal short-range ballistic missile force in the world; fielded the world's first anti-ship ballistic missile in 2010; deployed its military's first long-range, air-launched land-attack cruise missile in 2012; and will widely deploy its military's first indigenous advanced, long-range submarine launched anti-ship cruise missile in the next few years, if it has not already. Furthermore, the PLA is developing hypersonic glide vehicles as a core component of its next-generation precision strike capability. Hypersonic glide vehicles could render existing U.S. missile defense systems less effective and potentially obsolete.

It then went on to discuss China's conventional strike capabilities in some detail, albeit with the same lack of specifics regarding "precision" and strike capability as the 2016 DoD report:<sup>612</sup>

**Short-Range Ballistic Missiles (less than 621 miles):** In 2002, China had 350 short-range ballistic missiles. After a rapid expansion, China today has the world's largest short-range ballistic missile force, with 1,000–1,200 missiles. The force also has become more lethal as China has gradually replaced older missiles lacking a true precision-strike capability with new short-range ballistic missiles and variants of existing short-range ballistic missiles that feature longer ranges and improved accuracies and payloads.

China's short-range ballistic missile force consists mainly of multiple variants of the DF-11 and DF-15. All of these missiles are solid-propelled and road-mobile; most variants have a maximum range of more than 373 miles, allowing them to strike targets throughout Taiwan.<sup>136</sup> Moreover, the Second Artillery in 2010–2011 fielded a new short-range ballistic missile, the DF-16. The DF-16 reportedly has a higher reentry velocity than the DF-11 and DF-15 and an extended range of 621 miles. In addition to increasing China's ability to penetrate Taiwan's missile defenses, the DF-16 for the first time allows the Second Artillery to target large sections of the East China Sea with short-range ballistic missiles.

China also is developing several new road-mobile short-range ballistic missiles: the CSS-9, the CSS-14, the CSS-X-15, and the CSS-X-16. These missiles have maximum ranges of between 93–174 miles<sup>138</sup> and presumably feature greater accuracy and precision than previous models. According to Mr. Fisher, "China's development of new classes of short-range ballistic missiles is prompted by the requirement to strengthen its ability to coerce or attack Taiwan, but also by commercial pressures to offer better short-range ballistic missiles to capture export markets. Short-range ballistic missiles are produced at two, possibly three Chinese factories, and it is Chinese government policy to promote vigorous competition between them and to support export efforts."

During a conflict with Taiwan, China likely would use its short-range ballistic missiles to strike critical military infrastructure and command and control nodes as well as key political and economic centers. Chinese military doctrine suggests the Second Artillery would fire large salvos from multiple axes to confuse, overwhelm, and exhaust Taiwan's ballistic missile defenses. The Second Artillery has been conducting increasingly larger missile exercises; to date, its live-fire exercises have included salvos of at least ten missiles.<sup>140</sup> Mr. Murray testified to the Commission that China's expanding and modernizing missile force could rapidly defeat Taiwan's defenses, despite Taipei's significant investments in ballistic missile defenses.

**Theater-Range Ballistic Missiles (621 miles to 3,418 miles):** In 2008, the PLA fielded its first conventional theater-range ballistic missile, the DF-21C medium-range ballistic missile. With a range of more than 1,087 miles, the DF-21C gives China the ability to target U.S. forces in Japan and South Korea. China also may have deployed a second conventional medium-range ballistic missile in 2010–2011: a DF-16 variant with a maximum range of 746 miles.

China plans to deploy a new conventional intermediate-range ballistic missile that can strike land targets out to at least 1,864 miles and potentially as far as 3,418 miles.<sup>142</sup> This missile, which probably will be operationally deployed in the next five years, could allow China to threaten U.S. forces in Guam, Northern Australia, and Alaska, and U.S. bases in the Middle East and the Indian Ocean, depending on its ultimate range. Moreover, according to Ian Easton, research fellow at the Project 2049 Institute, "If the PLA's conventional intermediate-range ballistic missile program is successful, it is possible that China could develop the means to threaten Hawaii and the West Coast of the United States with a conventional intermediate-range ballistic missile by sometime in the early-to-mid 2020s."

**Antiship Ballistic Missiles:** In 2010, China deployed the world's first antiship ballistic missile, the DF-21D. The DF-21D has a maximum range of more than 932 miles and is armed with a maneuverable warhead, providing China with the ability to threaten U.S. Navy aircraft carriers operating east of Taiwan from secure sites on the Chinese mainland. China may be developing an even longer-range antiship ballistic missile capable of striking ships operating in maritime areas as far as Guam.<sup>144</sup> The Second Artillery appears to have already formed two antiship ballistic missile brigades— not testing or training units—in Qingyuan City (southeastern China) and Laiwu City (northeastern China). The antiship ballistic missile brigade in Qingyuan reportedly conducted one of its first major field training exercise in spring 2011.

**Ground-Launched Land-Attack Cruise Missiles:** In 2007–2008, the Second Artillery introduced its first ground-launched land-attack cruise missile, the CJ-10. China's large inventory of CJ-10s— 200–500 missiles deployed on 40–55 road-mobile launchers— suggests the missile plays a central role in China's

regional strike strategy. The CJ-10 reportedly features a stealthy design and has a maximum range over 932 miles, giving the PLA the ability to hold at risk U.S. forces in Japan and South Korea.<sup>149</sup> Although it appears to be primarily intended for conventional missions, a 2013 NASIC report suggests the missile also could carry a nuclear warhead.

One key question about these developments is the extent to which U.S. advances in airpower have forced China to focus on missile development and forces in ways that can potentially “leap forward” ahead of forces relying on manned aircraft, fixed air bases, and carriers. Like the development of battle ships versus carriers before World War II, or the German emphasis on armor before 1939, it is sometimes difficult to identify what really is a revolution in military affairs.

### Japanese Views

Regional powers certainly focus on Chinese missile capabilities. The 2015 Japanese Defense White Paper provided the following summary of the PLARF:<sup>613</sup>

China has made independent efforts to develop nuclear capabilities and ballistic missile forces since the mid-1950s, seemingly with a view to ensuring deterrence, supplementing its conventional forces, and maintaining its voice in the international community. With regard to the nuclear strategy, it is recognized that China employs a strategy where it can deter a nuclear attack on its land by maintaining a nuclear force structure able to conduct retaliatory nuclear attacks on a small number of targets such as cities in the adversary’s country.

China possesses various types and ranges of ballistic missiles: intercontinental ballistic missile (ICBM); submarine-launched ballistic missile (SLBM); intermediate-range ballistic missile/medium-range ballistic missile (IRBM/MRBM); and short-range ballistic missile (SRBM). The update of China’s ballistic missile forces from a liquid propellant system to a solid propellant system is improving their survivability and readiness. Moreover, it is believed that China is working to increase performance by extending ranges, improving accuracy, mounting warheads, and by other means.

China’s main ICBM strategic nuclear asset had been the fixed-site liquid-fuel DF-524. However, China has deployed the DF-31, which is a mobile type ICBM with a solid propellant system mounted onto a transporter erector-launcher (TEL), and the DF-31A, a model of the DF-31 with extended range. According to some analysts, China has already deployed the DF-31A and will increase its numbers. Regarding SLBM, China currently appears to be deploying Jin-class nuclear-powered ballistic missile submarines (SSBNs) to carry the JL-2, whose range is believed to be approximately 8,000 km, which is currently under development. Once the JL-2 reaches a level of practical use, it is believed that China’s strategic nuclear capabilities will improve by a great margin.

As for the IRBM/MRBM covering the Asia-Pacific region including Japan, China has deployed the solid propellant DF-21, which can be transported and operated on a TEL, in addition to the liquid-propellant DF-3 missiles. These missiles are capable of carrying nuclear warheads. It is believed that China possesses conventional ballistic missiles with high targeting accuracy based on the DF-21, and it has been pointed out that China has deployed conventional anti-ship ballistic missiles (ASBMs), which could be used to attack ships at sea including aircraft carriers. In addition to IRBM/MRBM, China possesses the DH-10 (CJ-10), a cruise missile with a range of at least 1,500 km, as well as the H-6 (Tu-16), bombers that are capable of carrying nuclear weapons and cruise missiles. It is deemed that these missiles will complement ballistic missile forces, covering the Asia-Pacific region including Japan. Concerning SRBM, China possesses a large number of solid-propellant DF-16, DF-15, and DF-11, and they are believed to be deployed facing Taiwan. It is believed that their ranges cover also a part of the Southwestern Islands including the Senkaku Islands, which are inherent territories of Japan.

Furthermore, in order to acquire striking force that will enable penetration of the missile defense shield, China is considered to be developing a hypersonic glide vehicle which is launched by mounting to a ballistic missile. Attention will be paid to the relevant developments.

China announced that it had conducted tests on midcourse missile interception technology in January 2010

and 2013. Attention will be paid to China's future trends in ballistic missile defense.

### **South Korean Views**

The 2014 South Korean defense white paper provided a similar, but briefer description of the PLARF:<sup>614</sup>

The 2nd Artillery Force controls nuclear and conventional ballistic missiles and focuses on improving capabilities in relation to strategic threats, nuclear counter-attack and precision strikes of conventional missiles. In December 2013, it test-launched the DF-41 strategic missile and the JL-2 submarine-launched ballistic missile.

As part of its efforts to become a space power, China successfully launched the Chang'e 3 probe and succeeded in landing the probe safely on the surface of the moon in December 2013.

### ***Shifts in Force Structure, Equipment Composition, and Personnel***

The PLARF has responded to the CMC's concept of "Dual Deterrence and Dual Operations" by fundamentally altering its force structure, equipment composition, and personnel policies. Force structure changes are illustrated by the proliferation of missile categories and units within the PLARF as well as by the dual development of conventional and nuclear weapon systems.

Providing the weapons to meet its nuclear and conventional objectives have largely similar capabilities: they both require missile systems that are mobile and survivable. However, the differing requirements of nuclear and conventional missile campaigns mean that the PLARF requires both conventional missiles accurate enough to target mobile or small targets and nuclear missiles capable of evading and surviving enemy nuclear attacks. Neither capability is simple nor easy to achieve; the PLARF is still making progress towards both.

As the previous U.S. reporting on the Chinese program has shown, the PLARF has made significant progress in all of these capabilities compared to its position in 1985. In the conventional field, the PLARF, which had no conventional missiles in 1985, now has the largest conventional missile arsenal in the Asia-Pacific.<sup>615</sup>

Since 1985, the PLARF has developed conventional systems that are mobile, solid-fueled, and may well be precise or near-precise in accuracy if all of the elements of the missile system are reliable and consistently function perfectly within their design tolerances.<sup>616</sup> Moreover, it has also developed indigenous cruise missiles where achieving precision-strike capability has proved to present fewer engineering changes and related warhead penetration, accuracy, and operational lethality problems than is the case with ballistic missiles. In addition, these conventional systems now enjoy increased survivability due to the development of a reportedly 5,000-kilometer-long tunnel network<sup>617</sup> and improving PLAAF air defenses.<sup>618</sup>

Chinese nuclear forces have also made significant progress. Since 1985, the PLARF has retired much of its liquid-fueled nuclear missile arsenal. In turn, these systems have been replaced by new, solid-fueled, mobile missile systems. Unlike the conventional forces, however, the nuclear forces—particularly the ICBMs—still retain a number of liquid-fueled missiles. Consequently, while the PLARF's nuclear delivery modernization continues, it has yet to achieve a fully modern force in terms of missile booster, although the Former Soviet Union demonstrated that such missiles can be used to carry a high load of MIRVs with limited technical upgrades and by using



advanced thermonuclear and boosted weapons designs that have far lower weights than the original warhead.

All of these developments have occurred within the context of the PLARF's efforts to create a force capable of winning Local Wars along China's periphery. Consequently, the PLARF has developed its strongest capabilities in precision-strike weapon systems that can hit targets within 600 km of China's borders: The DoD has estimated that the PLARF has 1,200-1,700 SRBMs and GLCMs.<sup>619</sup>

In addition, the DoD has reported that the PLARF is increasing its numbers of MRBMs, anti-ship ballistic missiles (ASBMs), and long-range GLCMs. Consequently, the PLARF enables the PLA to mitigate some of the weaknesses still existent in its other branches. This dynamic, combined with the PLARF's proven anti-satellite capability, illustrates the importance of the PLARF to the PLA's Local Wars concept.

*Figure 12.1: List of China's Ballistic Missile Designations*Table 1 **China's Ballistic Missiles: Designations**

US designation	PLA service designation	Export designation	Missile type	Reported maximum range (km)	Fuel	Deployment
CSS-1 mod 1	DF-2	-	MRBM	1,050	Liquid	Transportable
CSS-1 mod 2	DF-2A	-	MRBM	1,250	Liquid	Transportable
CSS-2 mod 1	DF-3	-	IRBM	3,000	Liquid	Transportable
CSS-2 mod 2	DF-3A	-	IRBM	3,000	Liquid	Transportable
CSS-3	DF-4	-	ICBM	5,500	Liquid	Transportable
CSS-4 mod 1	DF-5	-	ICBM	12,000	Liquid	Silo
CSS-4 mod 2	DF-5A	-	ICBM	13,000	Liquid	Silo
CSS-4 mod 3	DF-5B	-	ICBM	13,000	Liquid	Silo
CSS-5 mod 1	DF-21	-	MRBM	1,750	Solid	Road-mobile
CSS-5 mod 2	DF-21A	-	MRBM	1,750	Solid	Road-mobile
CSS-5 mod 4	DF-21C	-	MRBM	1,750	Solid	Road-mobile
CSS-5 mod 5	DF-21D	-	MRBM	1,500	Solid	Road-mobile
CSS-6 mod 1	DF-15	M-9	SRBM	600	Solid	Road-mobile
CSS-6 mod 2	DF-15A	-	SRBM	850	Solid	Road-mobile
CSS-6 mod 3	DF-15B	-	SRBM	725	Solid	Road-mobile
CSS-7 mod 1	DF-11	M-11	SRBM	300	Solid	Road-mobile
CSS-7 mod 2	DF-11A	-	SRBM	600	Solid	Road-mobile
CSS-8	-	M-7	SRBM	150	Solid/Liquid	Road-mobile
CSS-9 mod 1	-	B-611	SRBM	150	Solid	Road-mobile
CSS-9 mod-X-2	-	B-611M	SRBM	260	Solid	Road-mobile
CSS-10 mod 1	DF-31	-	ICBM	7,000	Solid	Road-mobile
CSS-10 mod 2	DF-31A	-	ICBM	11,000	Solid	Road-mobile
CSS-11 mod 1	DF-16	-	MRBM	1,000	Solid	Road-mobile
CSS-X-12?	-	-	n.k.	n.k.	n.k.	n.k.
CSS-X-13?	-	-	n.k.	n.k.	n.k.	n.k.
CSS-14 mod-X-1	-	P-12	SRBM	150	Solid	Road-mobile
CSS-14 mod-X-2	-	BP-12A	SRBM	280	Solid	Road-mobile
CSS-X-15	-	M-20	SRBM	280	Solid	Road-mobile
CSS-X-16	-	SY400	SRBM	200	Solid	Road-mobile
CSS-X-17?	-	-	n.k.	n.k.	n.k.	n.k.
CSS-X-18?	-	-	n.k.	n.k.	n.k.	n.k.
CSS-X-19?	-	-	n.k.	n.k.	n.k.	n.k.
CSS-X-20	DF-41	-	ICBM	15,000	Solid	Road-mobile
*	DF-26	-	IRBM	3,500+	Solid	Road-mobile

\*No CSS designation has been publicly associated with the new DF-26 IRBM

(Numbers -12, -13, -17, -18, -19 have not been associated with a known system in open-source press.)

Source: IISS, *China's ballistic missiles: more systems; improved designs*, 2016, p. 14.

## Trends in Total Missile Forces

The trends in these developments – which have played out over the course of nearly three decades – are illustrated by shifts in the number of missile forces in the PLARF order of battle from 1985-2015. The data in **Figures 12.2, 12.4, and 12.5** are drawn from the IISS and show the historical trends in Second Artillery Personnel and missile strength.

- **Figure 12.2** provides detailed quantitative data on the SAF's order of battle since 1985.
- **Figures 12.2 to 12.5** compare both absolute and relative trends – absolute numbers alone do not indicate institutional change; it is necessary to tie changes in absolute numbers to changes in relative force structure.

- **Figure 12.3** depicts the number of missiles that China possesses in 2016 with data from IHS. This is contrasted with the IISS data that focuses on missile launcher numbers.
- **Figures 12.4 and 12.5** also demonstrate such a change between 1985 and 2015: the SAF's evolving force structure illustrates a shift from a medium-/intermediate-range nuclear force to a bifurcated force dually dedicated to conventional short-medium range missions and a nuclear force capable of medium-range and intercontinental strikes.
- **Figure 12.6** shows the range of China's missiles and how they affect its full range of operations – in Asia and in extending its sea-air extension of operations in the second island chain and in areas affecting the South China Sea.

These figures have some uncertainties, but they still provide several key indicators of China's shift from a medium-/intermediate-range nuclear force to a multi-mission force. The first such indicator is the diminishing number of missile launchers solely suited to nuclear missions. Even if an observer ignores the DF-21C/D and counts the DF-21 series as a nuclear-only class, the IISS estimates indicate that percentage of the PLARF's missile launcher strength suited only for nuclear missions drops from 100% in 1985 to slightly over 40% in 2012.

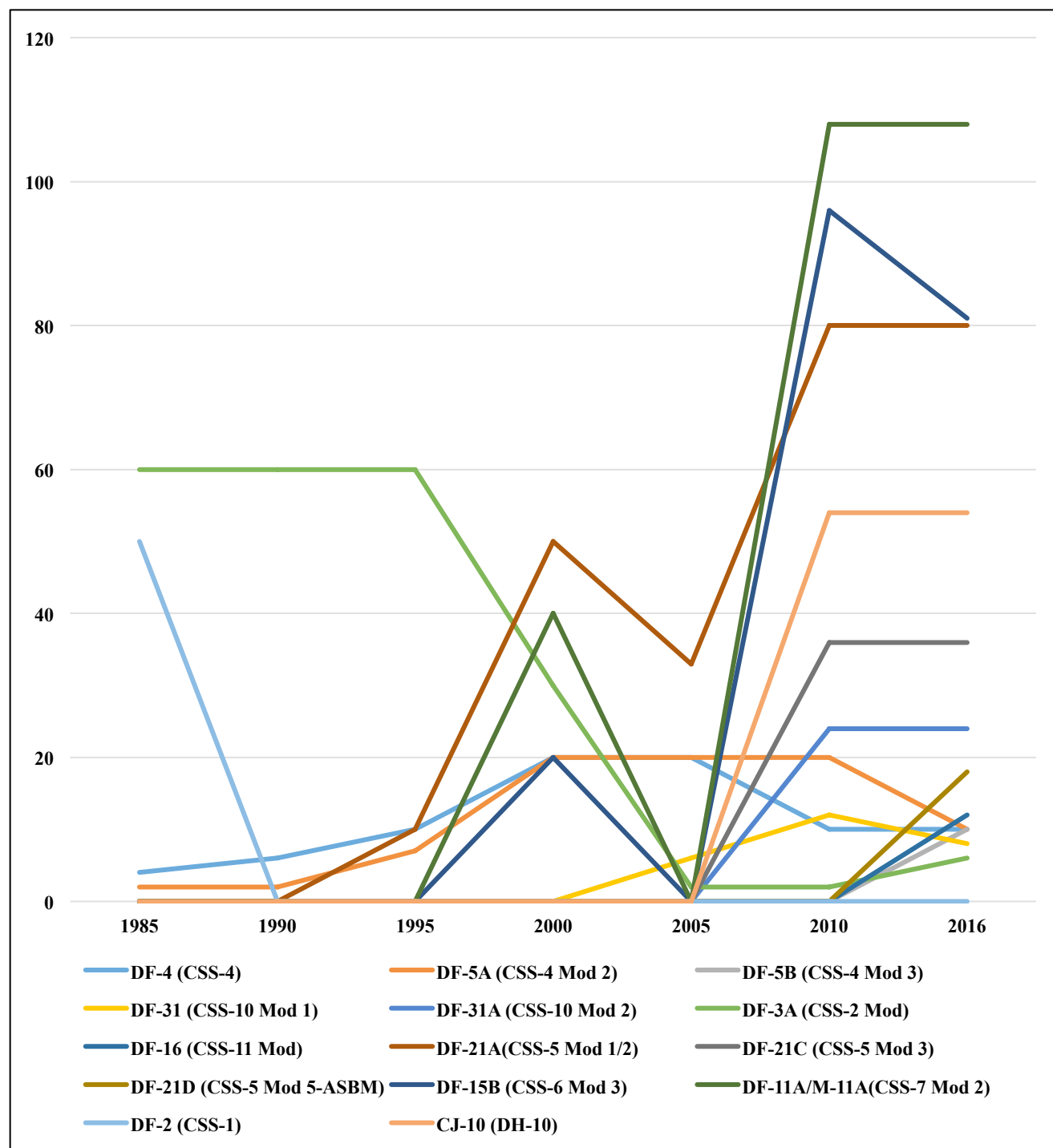
Roughly 80% of the current PLARF arsenal can conduct effective conventional missions and thus contribute to victory in non-nuclear Local Wars under Conditions of Informatization. As the Figures show, the reason for this significant change has been the introduction of precision or near-precision strike SRBMs and LACMs.

When SRBMs first appeared on the graph in 2000, the IISS estimates that they accounted for 30% of the PLARF's missile launchers; by 2015, SRBMs accounted for approximately 41%. This change is complemented by the introduction of cruise missiles: by 2010, LACMs accounted for roughly 11% of PLARF strength. These trends occur in contrast to the effective destruction of the PLARF's nuclear intermediate-range ballistic missile (IRBM) force. In 1985, the PLARF's nuclear IRBMs accounted for over 50% of the force; by 2015, the total was roughly 1.2%.

The second major indicator of a shift in PLARF doctrine and capability is the significant growth in the relative size of the ICBM arsenal. Not only does the ICBM force increase in relative size from 5% to 12%, but also much of the growth is due to modern DF-31 and DF-31A ICBMs. This trend may be an indication of a shifting priority from regional and Eurasian deterrence missions to intercontinental deterrence missions. Consequently, not only have the PLARF's equipment holdings revealed a shift from nuclear to nuclear and conventional missions, it is possible that the same equipment holdings also indicate a shift in the priority of nuclear deterrence missions.

The third indicator is the change in the geographic range of the force. In 1985, 100%<sup>620</sup> of the PLARF's missile force could reach the critical US base on Guam, located in the second island chain.<sup>621</sup> In 2012, the composition of the PLARF is such that only roughly 15% of the PLARF's capabilities can hit the US base on Guam. This change indicates a significant shift in priorities from the second island chain and beyond to China's immediate periphery. Such a shift is fully in line with the Local Wars concept.

**Figure 12.2: Historical Quantitative Data on the PLARF Missile Launcher Capabilities- Part I**



Source: IISS, *Military Balance* 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

Note: All IISS numbers regarding missiles refer only to launchers not the number of missiles themselves.

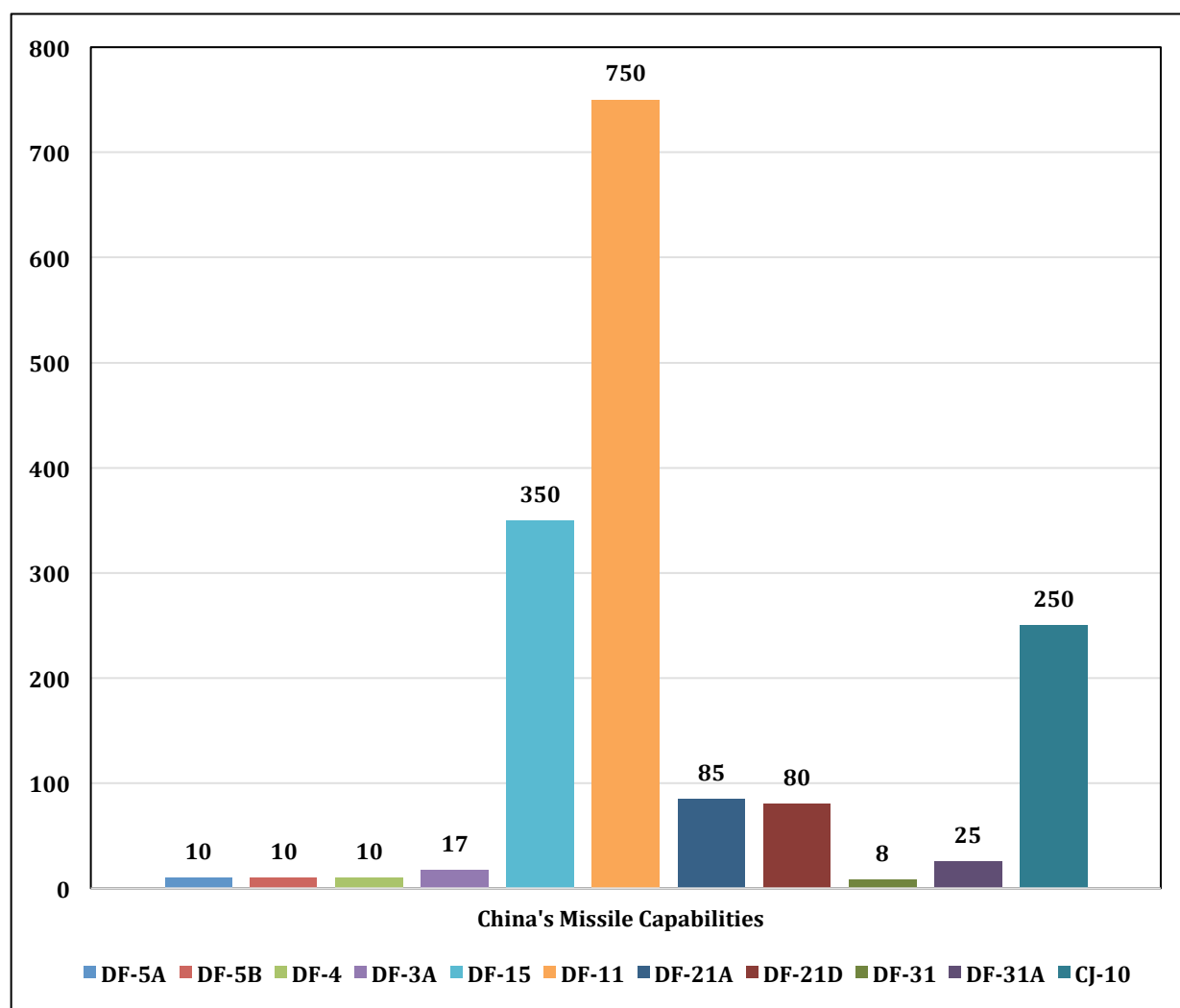
**Figure 12.2: Historical Quantitative Data on the PLARF Missile Launcher Capabilities - Part II**

Source: IISS, *Military Balance* 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for

		1985	1990	1995	2000	2005	2010	2016
<b>ICBM</b>	<b>DF-4 (CSS-4)</b>	4	6	10+	20+	20	10	10
	<b>DF-5A (CSS-4 Mod 2)</b>	2	2	7	20+	20	20	10
	<b>DF-5B (CSS-4 Mod 3)</b>	0	0	0	0	0	0	10
	<b>DF-31 (CSS-10 Mod 1)</b>	0	0	0	0	6	12	8
	<b>DF-31A (CSS-10 Mod 2)</b>	0	0	0	0	0	24	24
<b>IRBM</b>	<b>DF-3A (CSS-2 Mod)</b>	60	60	60+	30+	2	2	6
<b>MRBM</b>	<b>DF-16 (CSS-11 Mod)</b>	0	0	0	0	0	0	12
	<b>DF-21A (CSS-5 Mod 1/2)</b>	0	0	10	50+	33	80	80
	<b>DF-21C (CSS-5 Mod 3)</b>	0	0	0	0	0	36	36
	<b>DF-21D (CSS-5 Mod 5-ASBM)</b>	0	0	0	0	0	0	18
<b>SRBM</b>	<b>DF-15B (CSS-6 Mod 3)</b>	0	Some	Some	20	Some	96	81
	<b>DF-11A/M-11A (CSS-7 Mod 2)</b>	0	Some	Some	40	Some	108	108
	<b>DF-2 (CSS-1)</b>	50	0	0	0	0	0	0
<b>LACM</b>	<b>CJ-10 (DH-10)</b>	0	0	0	0	0	54	54

Strategic and International Studies.

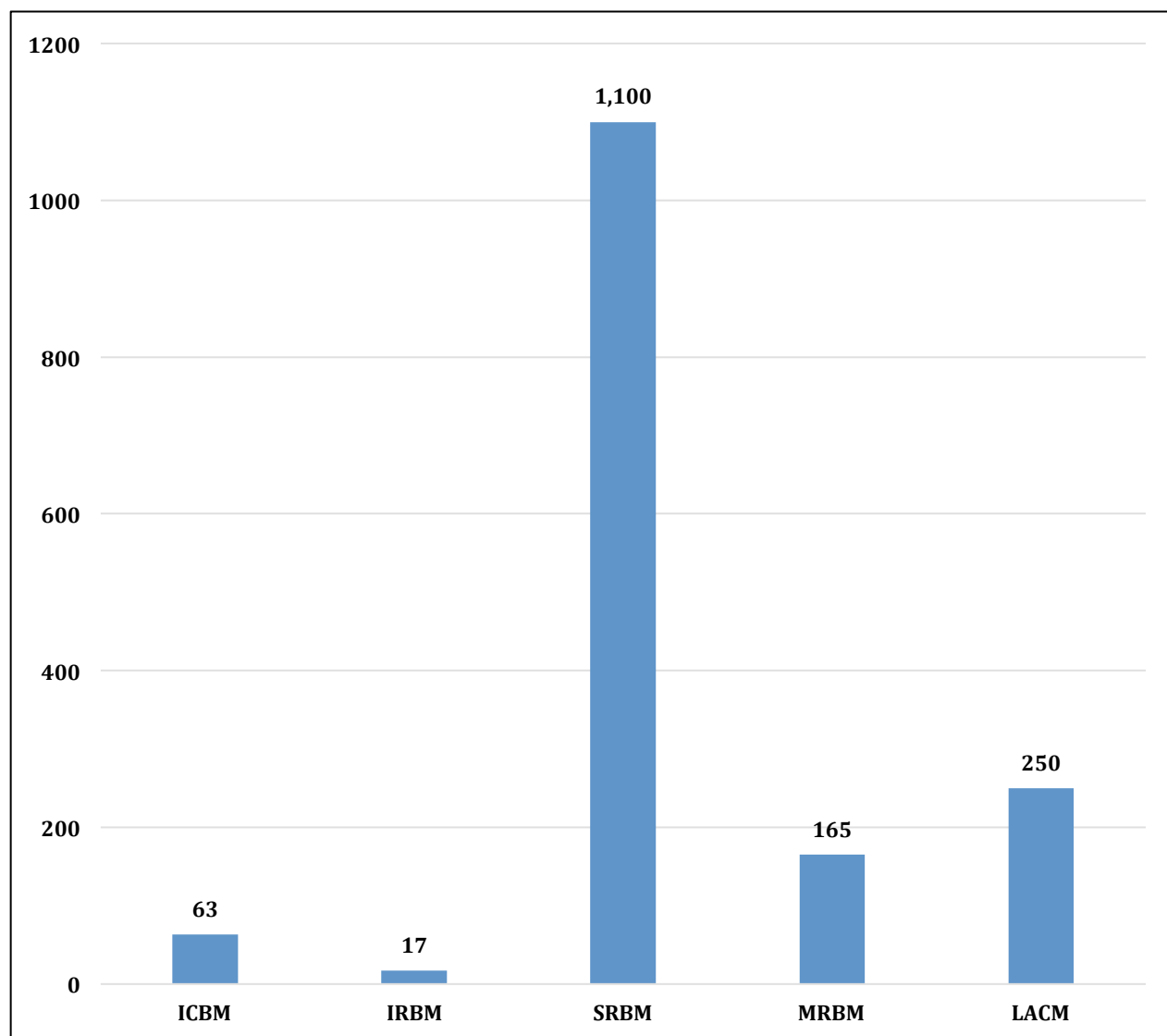
**Figure 12.3: China's 2016 Missile Capabilities**



Source: "China Strategic Weapons Systems", *Jane's Sentinel Security Assessment*, March 3, 2016.

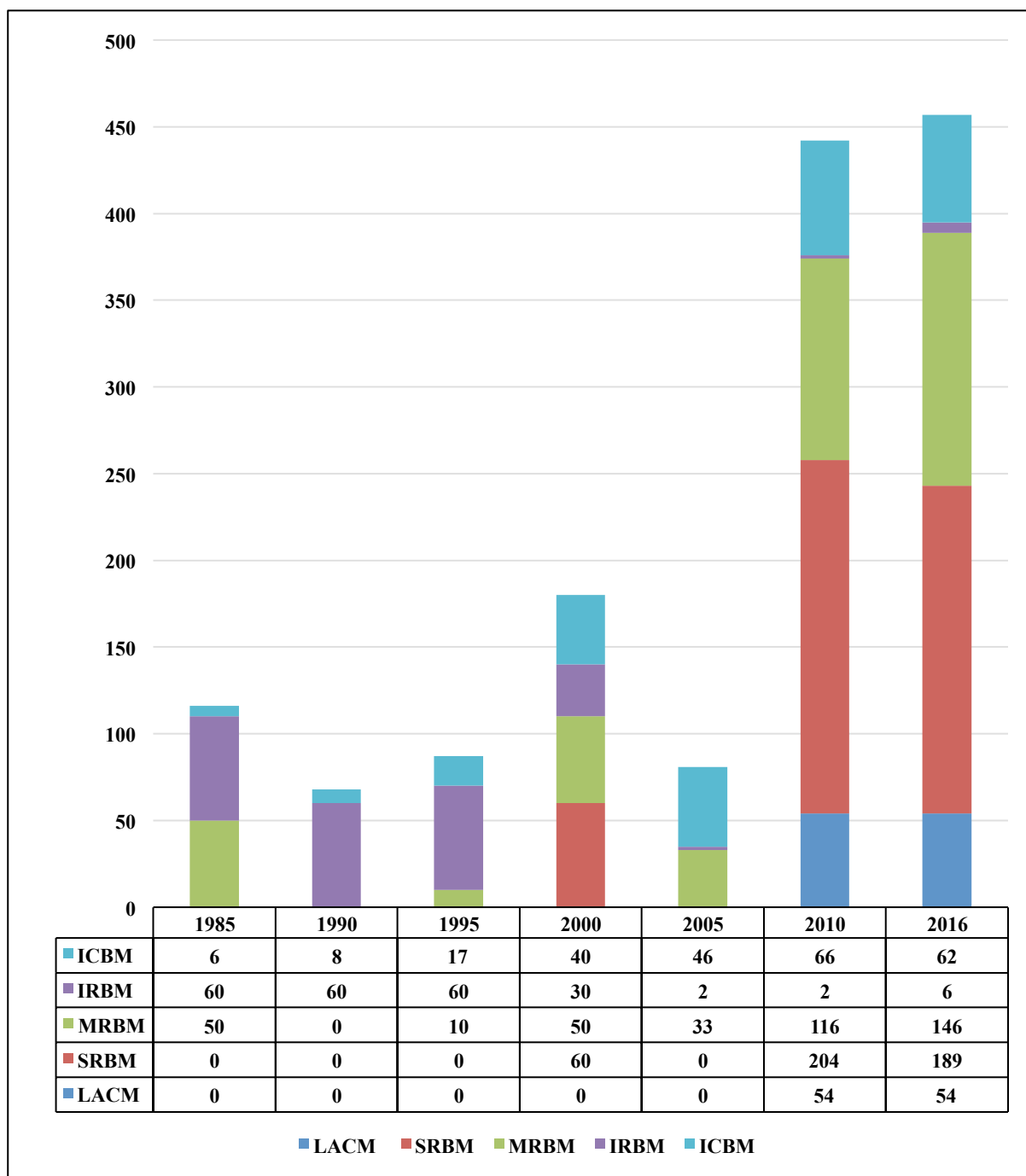
Note: Missile range estimates were averaged for the purpose of visual clarity.

**Figure 12.3: China's 2016 Missile Capabilities by Classification-Part II**



Source: "China Strategic Weapons Systems", *Jane's Sentinel Security Assessment*, March 3, 2016

**Figure 12.4: Historical Size and Composition of the PLARF Launcher Arsenal**

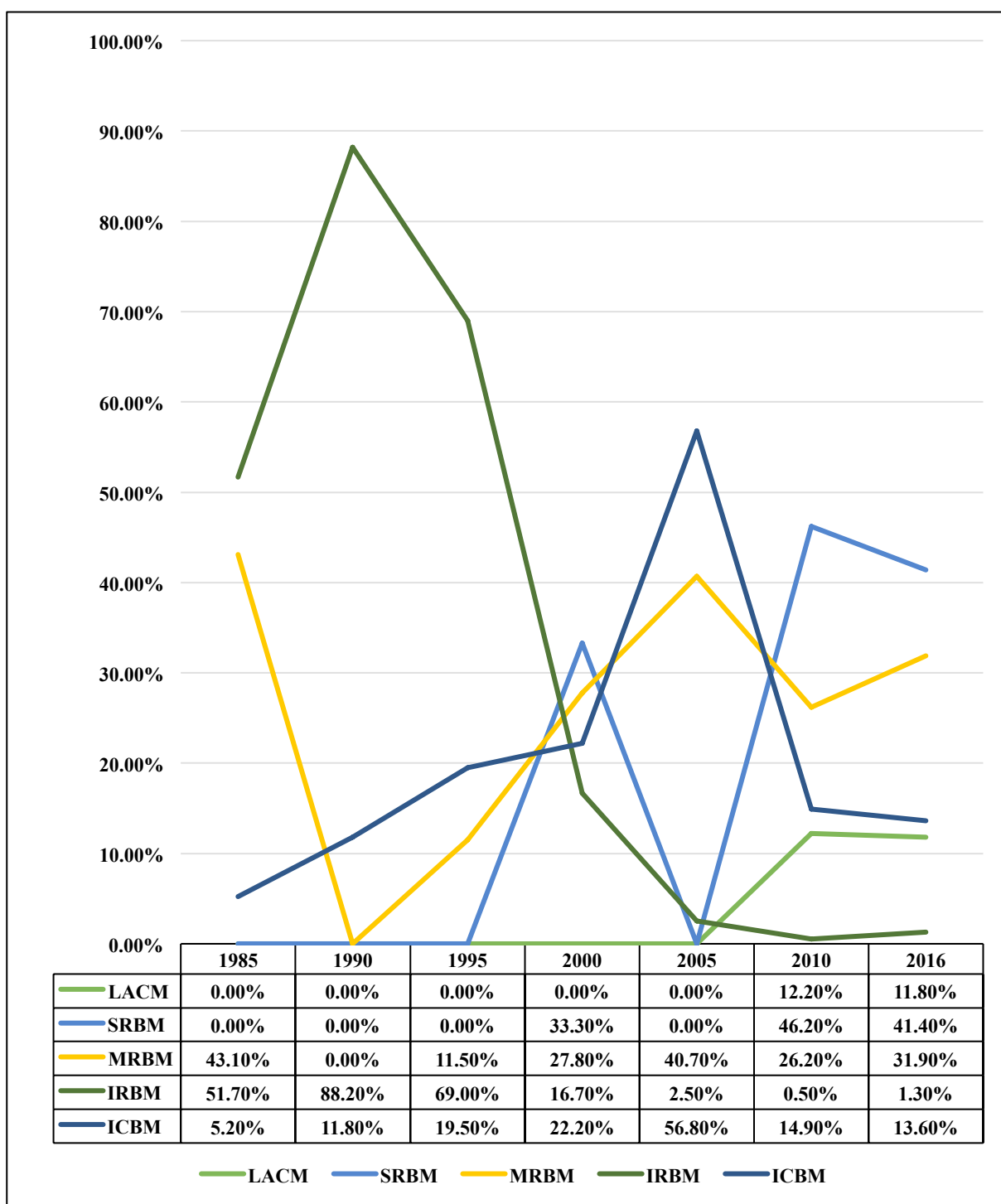


Note: IISS lists total SRBM missile launcher numbers, not SRBM missile launchers for 2005. Consequently, while it is possible to estimate the number of launchers, such estimates are very rough given uncertainty regarding missile-to-launcher ratios and the uneven distribution of both types of equipment to missile forces. Consequently, the authors have chosen to leave the field for 2005 SRBM numbers blank, but it should be kept in mind that there was a sustained increase in SRBM launcher numbers between 2000 and 2010.

Source: IISS, *Military Balance* 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.



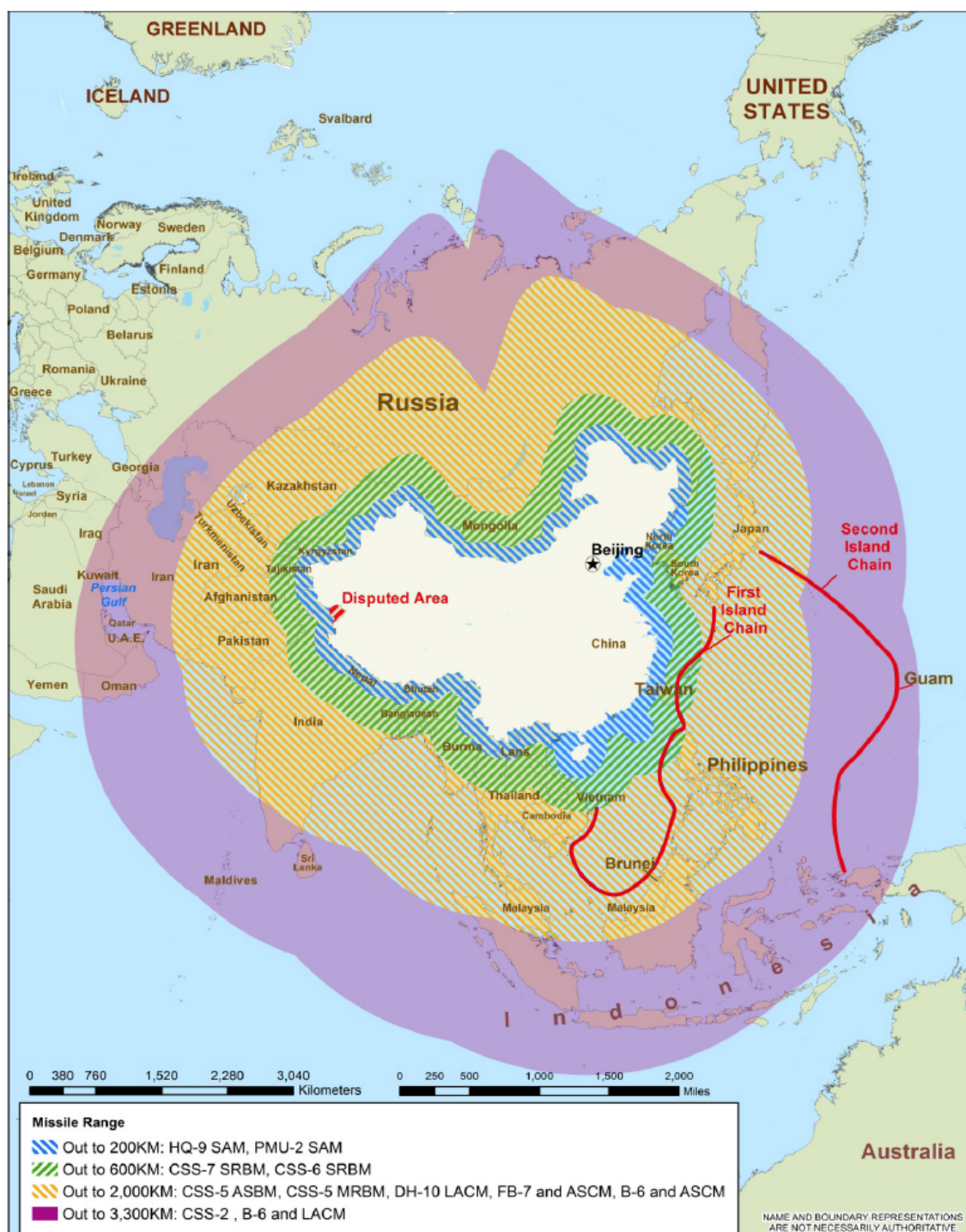
**Figure 12.5: The PLARF's Changing Force Structure, 1985-2016 (Percent)**



Note: Due to rounding, numbers may not add up to 100.

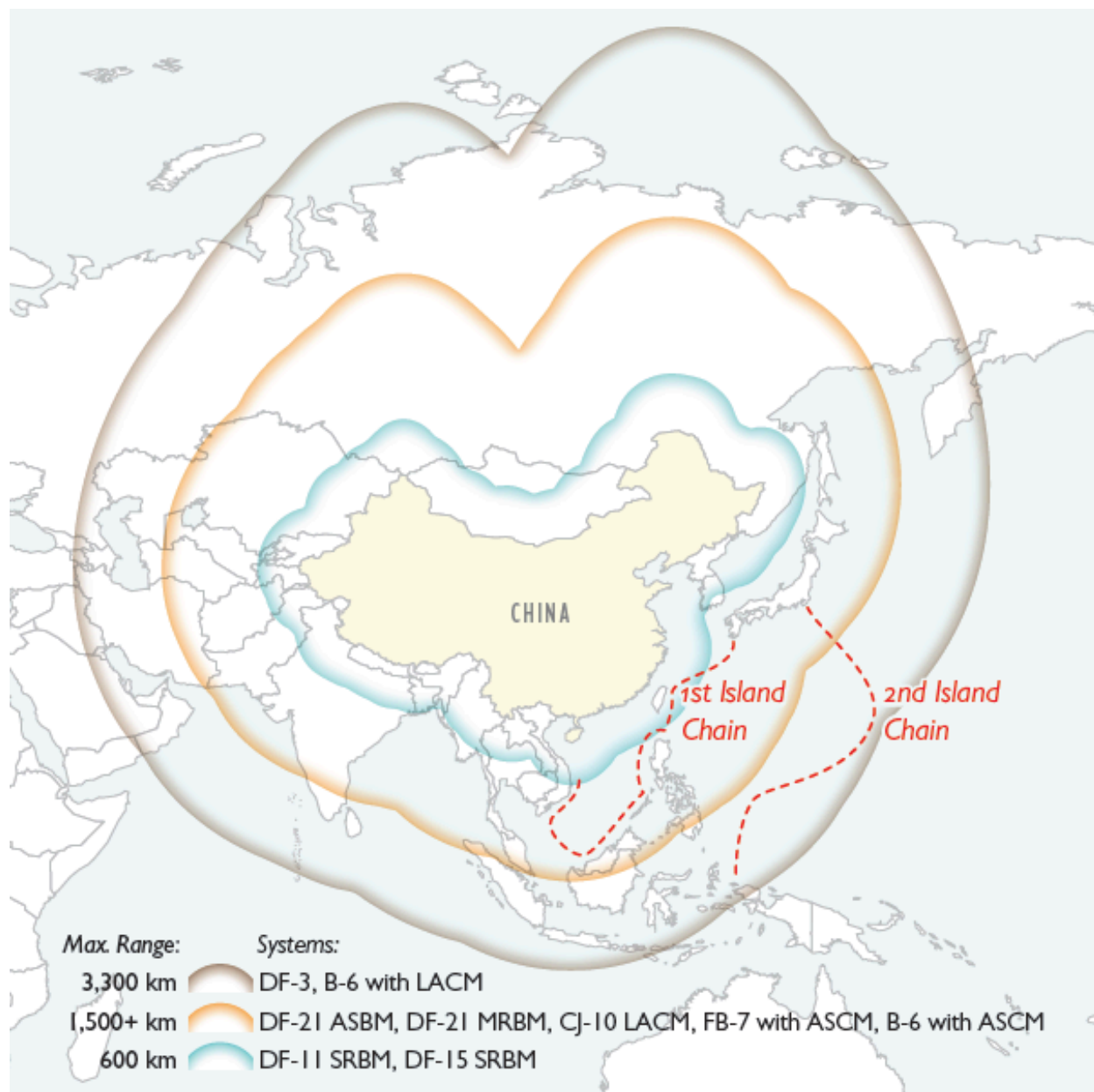
Source: IISS, *Military Balance* 1985-2016, adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 12.6: The Expanding Range of China's Theater Missile Forces – Part I**



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2014, April 2014, 85.

**Figure 12.6: The Expanding Range of China's Theater Missile Forces – Part II**



Note: the PLA's conventional forces are currently capable of striking targets well beyond China's immediate periphery (counter-intervention capability). Not included are ranges for naval surface- and sub-surface-based weapons, whose employment distances from China would be determined by doctrine and the scenario in which they are employed.

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2013, May 2012, 42.

**Figures 12.2, 12.4, and 12.5** rely on missile launcher statistics provided by the IISS. However, the arsenal of actual missiles, not just missile launchers, also has important implications for the

PLARF's force structure and these are shown in **Figure 12.3**. The number of missiles per missile launcher indicates military planning, operational concepts, and PLARF progress towards its stated goals. Using DoD-reported data through 2012 – the subsequent reports did not include any updates – it is possible to analyze the PLARF's missile holdings.

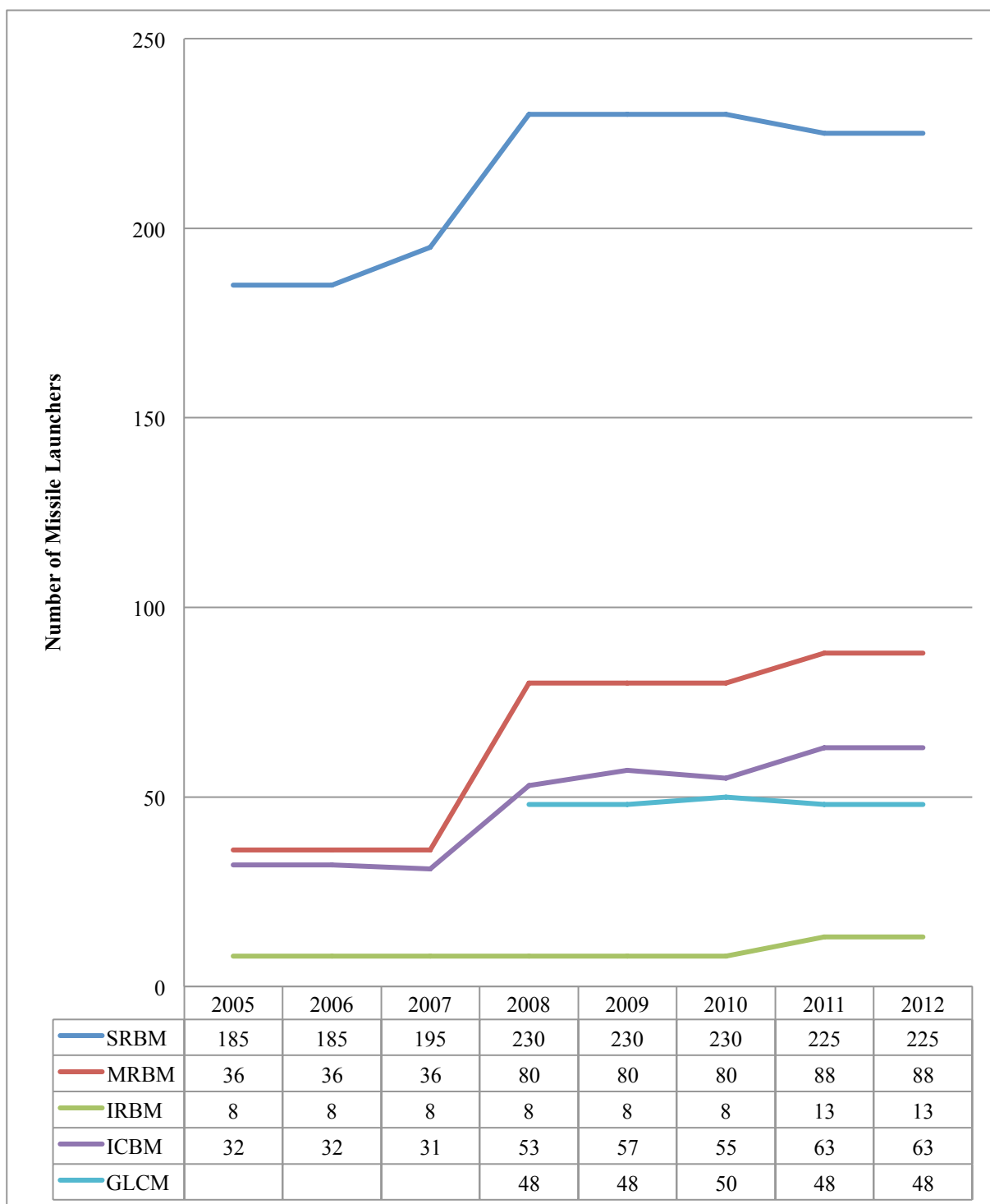
**Figures 12.7 and 12.8** have significant implications.

- **Figure 12.7** shows DoD-reported numbers for year-on-year growth in PLARF missile launchers.
- **Figure 12.8** shows DoD-reported PLARF missile strength from 2002 onwards, on a year-on-year basis.

These figures show that, unlike other missile categories, the SRBM and LACM launchers are assigned a relatively large number of missiles per launcher. Moreover, trend lines indicate growing gaps between missile and missile launcher numbers leading to larger and larger reserve stockpiles of SRBMs and LACMs. This may indicate that the PLARF plans to fire repeated salvos of SRBMs and LACMs during hypothetical contingencies.

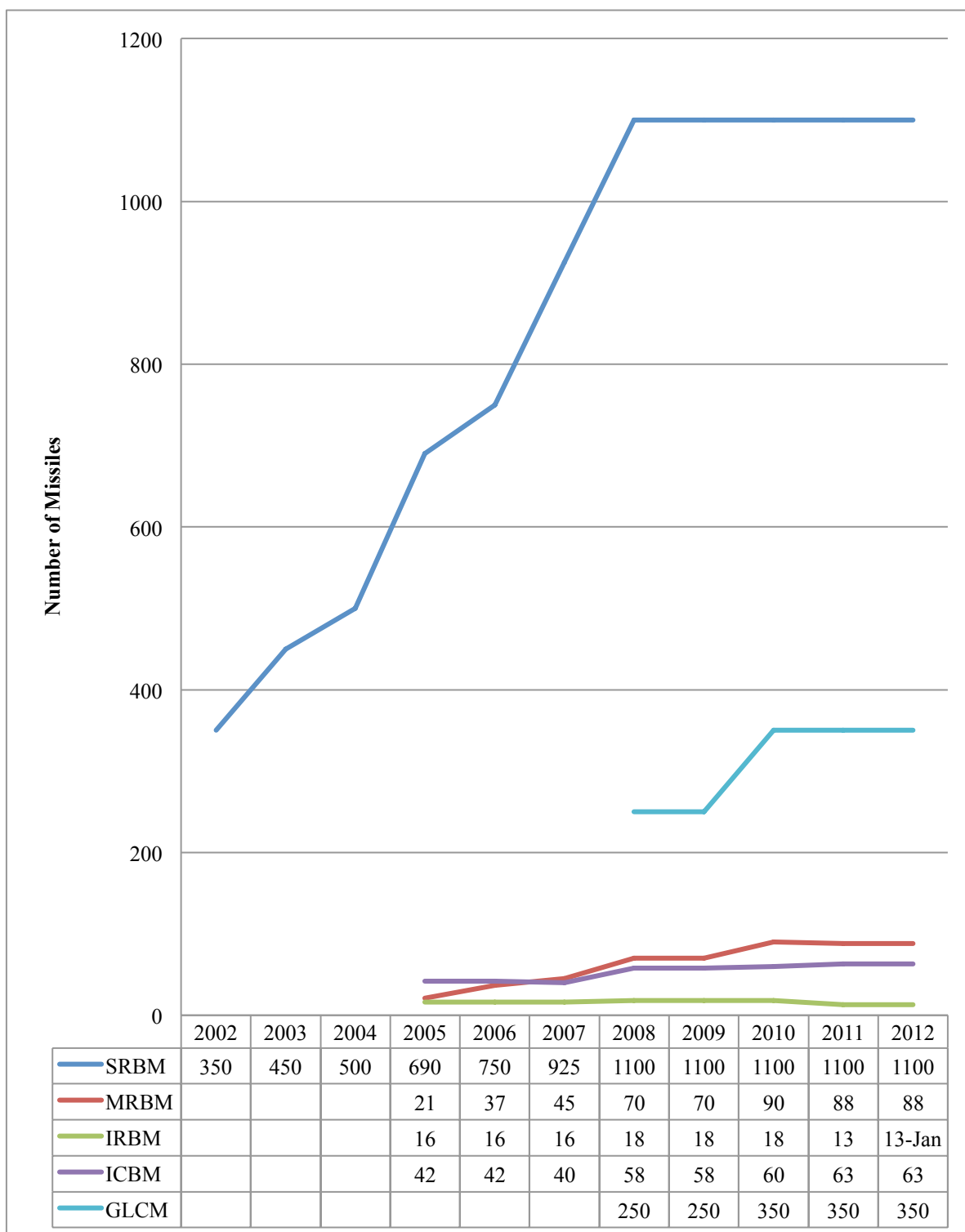
Unlike the PLARF's inventory of medium- and longer-range missiles, potential adversaries could face multiple salvos per SRBM or GLCM launcher, possibly in a counter-air role as has been proposed by RAND.<sup>622</sup> Such a capability falls perfectly in line with the conventional requirements of Local Warfare under Conditions of Informatization and, when supplemented by an increasingly secure nuclear second-strike capacity, provide the PLA with critical capabilities necessary for fighting and winning Local Wars while deterring further escalation.

**Figure 12.7: Year-on-Year Missile Launcher Strength, 2005-2012**



Source: DOD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2012*.

**Figure 12.8: Year-on-Year Missile Inventory, 2005-2012**



Source: DOD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2012*.

## *Shifts in Equipment Composition*

As noted earlier, the trends in **Figure 12.4** reflect several important trends in the modernization of the PLARF. Since 1985, in line with the PLA concept of winning Local Wars under Conditions of Informatization, the PLARF has reduced its relative holdings of non-mobile, liquid-fueled missiles with nuclear warheads and shifted to a force structure heavily comprised of mobile, solid-fueled conventional missile systems.

### **SRBMs**

It is important to note that China is scarcely the only power deploying SRBMs. A US National Air and Space Intelligence Center estimate of regional balance in short-range ballistic missile forces is shown in **Figure 12.9**. It shows that many other powers have such systems, and these figures do not include US capability to launch cruise missiles and South Korea's decision to acquire SRBMs. The NASIC summarizes key regional trends as follows:<sup>623</sup>

Several countries are now producing and/or developing SRBM systems, while many other countries have purchased missiles or missile technologies from one or more of the missile producers.

The Russian SS-1C Mod 1, also called the SCUD B, has been exported to more countries than any other type of guided ballistic missile, and has proven to be a versatile and adaptable weapon.

For example, North Korea has produced its own version of the SCUD B and the SCUD C, which is an extended-range version of the SCUD B. Although the SCUD was originally designed as a tactical battlefield support weapon, many countries view it and other SRBM systems as strategic weapons to be used against urban areas.

... Other countries could modify SCUD missiles to significantly improve their accuracy and use them against high-value military targets and cities.

New SRBM systems are in development in several countries. China has deployed a very large force of modern solid-propellant SRBMs in the vicinity of Taiwan, and according to Taiwanese government officials, China has recently started to deploy a new SRBM known as the Dong Feng 16 (DF-16/CSS-11 Mod 1).

Since 1985, the PLARF has steadily increased the number of Short-Range Ballistic Missiles (SRBMs) in its arsenal. Everything are mobile and solid-fueled, enabling the PLARF to conduct rapid strikes against regional threats while limiting the risk of preemption. What is striking about China's SRBM capabilities is the massive proliferation in recent years. In the mid-1990s, China possessed somewhere between 30-50 SRBMs, they current have around 1,100-1,200. Moreover, in line with the Local Wars concept, the PLARF has increased the range of its SRBMs to improve their regional utility, created numerous variants for different purposes, and improved their accuracy.

On this last point, the 2011 DoD report stated, "The PLA continues to field advanced variants with improved ranges and more sophisticated payloads that are gradually replacing earlier generations that do not possess true precision strike capability."<sup>624</sup> The 2013 DoD on Chinese military power report noted that, "the PLA is also introducing new SRBM variants with improved ranges, accuracies, and payloads."<sup>625</sup>

**Figures 12.10 and 12.11** showed the rise in SRBM strength as well as a plateau and later a slight decrease in SRBM missile launcher numbers. However, this drop in force numbers does not necessarily indicate a drop in SRBM combat power. As the 2015 DoD Report stated:<sup>626</sup>

The Second Artillery Force had more than 1,200 SRBMs at the end of 2014. The Second Artillery Force continues to field advanced variants with improved ranges and accuracy in addition to more sophisticated payloads, while gradually replacing earlier generations that do not possess true precision strike capability.

The DoD has since confirmed what has been reported throughout the decade in open-source literature: the PLARF is creating new variants of both its DF-11 and DF-15 SRBMs that have improved range and, most importantly, significantly improved circular error probability (CEP). Consequently, a reduction in overall force numbers, if the result of a reduction in older SRBMs that are concurrently being replaced with fewer – but newer – models, will most likely result in an overall increase in PLARF SRBM combat power.

A RAND report released in 2009 illustrates this point effectively. Comparing open-source information on various PLARF SRBM classes and their variants, the report estimated the number of SRBMs needed to completely, albeit temporarily, neutralize the Republic of China (ROC or Taiwanese) Air Force. The report drew two conclusions: first, older, less accurate SRBMs had very little conventional utility in precision-strike operations. Second, newer SRBMs with significantly improved CEPs are capable of achieving ambitious operational objectives with a much smaller quantity of SRBMs than earlier variants of the same class. **Figures 12.10 and 12.11** illustrate these developments.

- **Figure 12.10** is a graph that shows open-source data collected and used by RAND to estimate the parameters of the PLARF's SRBM capability.
- **Figure 12.11** uses that data to compute the number of SRBMs necessary to achieve a given probability of neutralizing a single runway.

As these Figures show, the replacement of newer SRBMs with precision strike capabilities has a significant impact on the combat utility of each individual SRBM. For example, the replacement of a DF-15 with a DF-15A, according to the RAND data, would augment the PLARF's combat power by 500% – in other words, it would take 5 DF-15s to achieve the same kill probability as a single DF-15A. Consequently, replacing older SRBMs with newer ones, even if not on a one-to-one basis, will significantly augment the PLARF's SRBM-based combat power. Thus, while the growth in SRBM numbers indicates growth in the PLARF's SRBM capacity, the converse is not automatically true – a reduction in SRBM numbers may simply reflect the impact of missile modernization and represent an increase in overall capability.



**Figure 12.9: NASIC Estimate of the Regional Balance of Short-range Ballistic Missiles (SRBMs)**

MISSILE	PROPELLANT	DEPLOYMENT MODE	MAXIMUM RANGE (km)	Number of Launchers (By Country)*
<b>RUSSIA</b>				Fewer than 200
SCUD B (SS-1c Mod 1)	Liquid	Road-mobile	300	
SS-1c Mod 2	Liquid	Road-mobile	240+	
SS-21 Mod 2	Solid	Road-mobile	70	
SS-21 Mod 3	Solid	Road-mobile	120	
SS-26	Solid	Road-mobile	300	
Iskander-E	Solid	Road-mobile	280	
<b>CHINA</b>				More than 200
CSS-11 Mod 1	Solid	Road-mobile	800+	
CSS-6 Mod 1	Solid	Road-mobile	600	
CSS-6 Mod 2	Solid	Road-mobile	850+	
CSS-6 Mod 3	Solid	Road-mobile	725+	
CSS-7 Mod 1	Solid	Road-mobile	300	
CSS-7 Mod 2	Solid	Road-mobile	600	
CSS-8	Solid/Liquid	Road-mobile	150	
CSS-9 Mod 1	Solid	Road-mobile	150	
CSS-9 Mod-X-2	Solid	Road-mobile	260	
CSS-14 Mod-X-1	Solid	Road-mobile	150	
CSS-14 Mod-X-2	Solid	Road-mobile	280	
CSS-X-16	Solid	Road-mobile	200	
CSS-X-15	Solid	Road-mobile	280	
<b>NORTH KOREA</b>				Fewer than 100
SCUD B	Liquid	Road-mobile	300	
SCUD C	Liquid	Road-mobile	500	
Toksa	Solid	Road-mobile	120	
ER SCUD	Liquid	Road-mobile	700-995	
<b>INDIA</b>				Fewer than 75
Prithvi I	Liquid	Road-mobile	150	
Prithvi II	Liquid	Road-mobile	250	
Dhanush	Liquid	Ship-based	400	
Agni I	Solid	Road-mobile	700	
<b>PAKISTAN</b>				Fewer than 50
Hatf-9	Solid	Road-mobile	60	
Hatf-1	Solid	Road-mobile	50	
Shaheen I	Solid	Road-mobile	750	
Ghaznavi	Solid	Road-mobile	250	
<b>IRAN</b>				Fewer than 100
Fateh-110	Solid	Road-mobile	200-300	
Shahab 1	Liquid	Road-mobile	300	
Shahab 2	Liquid	Road-mobile	500	
CSS-8 (M-7)	Solid/Liquid	Road-mobile	150	
Qiam -1	Liquid	Road-mobile	unknown	
<b>SYRIA</b>				Fewer than 100
SCUD D	Liquid	Road-mobile	700	

Note: All ranges are approximate.

\* The missile inventory may be larger than the number of launchers; launchers can be reused to fire additional missiles

Source US National Air and Space Intelligence Center, Defense Intelligence Agency Missile and Space Intelligence Center and Office of Naval Intelligence, *Ballistic & Cruise Missile Threat*, NASIC, May 2013, 11-13.

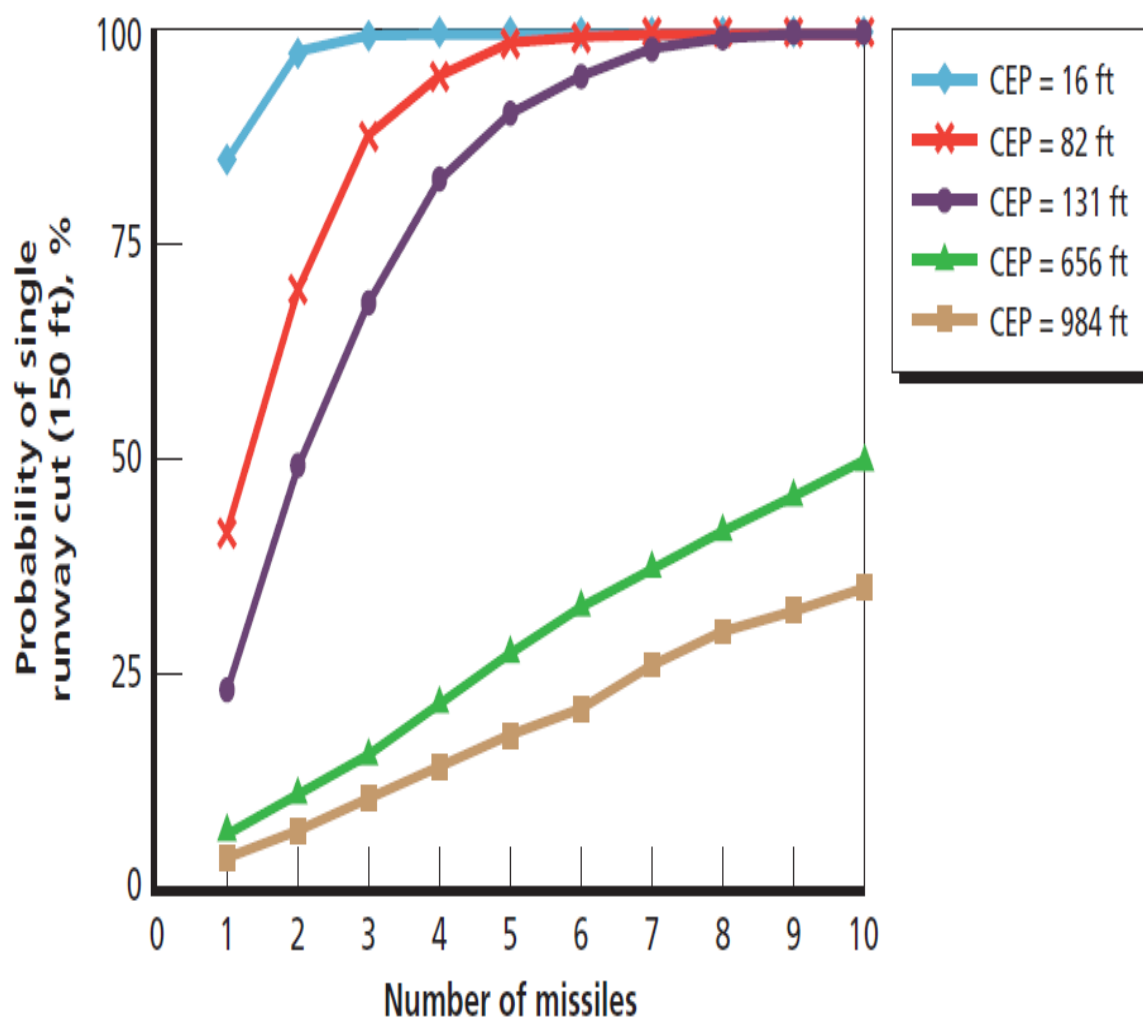
**Figure 12.10: RAND Data on PRC SRBMs and the “Notional SRBM” Model (2009)**

**Characteristics of CSS-7, CSS-6, and Notional SRBM**

Characteristic	CSS-7		CSS-6			Notional SRBM
	DF-11	DF-11A	DF-15	DF-15A	DF-15B	
Range (km)	280–350	350–530	600	600	600	>280
Warhead (kg)	800	500	500	600	600	500
CEP (m)	600	20–30; 600 for oldest version	300	30–45	5	5, 25, 40, 200, 300
Number of missiles	675–715			315–355		900
Number of launchers	120–140			90–110		200

Source: Shlapak, et al, *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute*, RAND, 2009, 34, <http://www.rand.org/pubs/monographs/MG888.html>.

**Figure 12.11: SRBMs Needed to Obtain Given Probabilities of Neutralizing a Single Runway**



Source: Shlapak, et al, *A Question of Balance: Political Context and Military Aspects of the China-Taiwan Dispute*, RAND, 2009, 41, <http://www.rand.org/pubs/monographs/MG888.html>.

### Cruise Missiles

Cruise missiles often do not receive the same attention as ballistic missiles but they serve as both a method of delivering nuclear weapons and can provide precision strikes with conventional weapons. As such, they are as important – if not more important in terms of probable use and the ability to conduct lethal attacks – than most SRBMs and MRBMs without high-yield nuclear weapons.

The US National Air and Space Intelligence Center estimate of the regional balance in short-range ballistic missile forces is shown in **Figure 12.12**. *It should be stressed that this assessment does not include sea-launched or air-launched cruise missiles, which sharply understate the well-proven capabilities of US forces and the potential threat perceived by China.*

The NASIC summarizes key regional trends as follows:<sup>627</sup>

Unlike ballistic missiles, cruise missiles are usually categorized by intended mission and launch mode (instead of maximum range). The two broadest categories are LACMs and antiship cruise missiles. Each type can be launched from an aircraft, ship, submarine, or ground-based launcher.

A LACM is an unmanned, armed aerial vehicle designed to attack a fixed or mobile ground-based target. It spends the majority of its mission in level flight, as it follows a preprogrammed path to a predetermined target. Propulsion is usually provided by a small jet engine.

Because of highly accurate guidance systems that can place the missile within a few feet of the intended target, the most advanced LACMs can be used effectively against very small targets, even when armed with conventional warheads. LACM guidance usually occurs in three phases: launch, midcourse, and terminal.

During the launch phase, a missile is guided using only the inertial navigation system. In the midcourse phase, a missile is guided by the inertial navigation system updated by one or more of the following systems: a radar-based terrain contour matching system, a radar or optical scene matching system, and/or a satellite navigation system such as the US Global Positioning System or the Russian Global Navigation Satellite System. The terminal guidance phase begins when a missile enters the target area and uses either more accurate scene matching or a terminal seeker (usually an optical or radar-based sensor).

Defending against LACMs will stress air defense systems. Cruise missiles can fly at low altitudes to stay below enemy radar and, in some cases, hide behind terrain features. Newer missiles are incorporating stealth features to make them even less visible to radars and infrared detectors. Modern cruise missiles also can be programmed to approach and attack a target in the most efficient manner. For example, multiple missiles can attack a target simultaneously from different directions, overwhelming air defenses at their weakest points. Furthermore, LACMs may fly circuitous routes to get to the target, thereby avoiding radar and air defense installations.

Some developmental systems may incorporate chaff or decoys as an added layer of protection, though concealment will remain a cruise missile's main defense. The cruise missile threat to US forces will increase over the next decade. At least nine foreign countries will be involved in LACM production during the next decade, and several LACM producers will make their missiles available for export.

The success of US Tomahawk cruise missiles has heightened interest in cruise missile acquisition in many countries. Many cruise missiles available for purchase will have the potential to perform precision-strike missions. Many of these missiles will have similar features: a modular design, allowing them to be manufactured with a choice of navigational suites and conventional warhead options; the incorporation of stealth technology; the ability to be launched from fighter-size aircraft; and the capability to fly high-subsonic, low-altitude, terrain-following flight profiles.

The cruise missile threat to US forces will continue to increase. At least nine foreign countries will be involved in LACM production during the next decade, and several of the LACM producers will make their missiles available for export.

The CJ-10 (DH-10) is the first of the Chinese Changjian series of long-range missiles and LACMs. It made its public debut during a military parade in 2009 and is currently deployed with the Second Artillery Corps.

Iran recently announced the development of the 2,000-km range Meshkat cruise missile, with plans to deploy the system on air-, land-, and sea-based platforms.

The Club-K cruise missile "container launcher" weapons system, produced and marketed by a Russian firm, looks like a standard shipping container. The company claims the system can launch cruise missiles from cargo ships, trains, or commercial trucks.

The first flight test of the Brahmos, jointly developed by India and Russia, took place in June 2001. India plans to install Brahmos on a number of platforms, including destroyers, frigates, submarines, maritime patrol aircraft, and fighters. Russia and India are also working on a follow-up missile, the Brahmos 2, which was flight-tested in 2012. Pakistan continues to develop the Babur (Hatf-VII) and the air-launched Ra'ad (Hatf-VIII). Each missile was flight tested in 2012.

The Japanese 2014 defense white paper made only a short statement regarding Chinese SRBMs:<sup>628</sup>

Concerning SRBM, China possesses a large number of solid-propellant DF-15 and DF-11, and they are believed to be deployed facing Taiwan. It is believed that their ranges cover also a part of the Southwestern Islands including the Senkaku Islands, which are inherent territories of Japan.

While Chinese and other cruise missiles achieve considerable attention in non-governmental reporting, their importance is badly understated in the official reporting – which is the focus of this report. Also, there is no matching literature on the balance in air and sea-launched cruise missiles. Cruise missiles need far more attention in official reports, dialogue, and arms control negotiations, and cannot meaningfully be separated from the balance of ballistic missiles.

A 2014 publication by the National Defense University's Center for the Study of Chinese Military Affairs focuses on Chinese cruise missile development and direction and is a step towards greater attention and understanding of this underreported aspect of the PLA. Cruise missiles and their development apparatuses have long been a part of the PLA's and even received protection during the upheaval of the Cultural Revolution.

Today, China has made striking progress in developing and fielding high-end cruise missiles, both anti-ship (ASCM) and land attack (LACM). Chinese cruise missile doctrine appears to emphasize a scenario that involves Taiwan-based targets and the prevention of US intervention.<sup>629</sup> Accordingly, extensive studies have been made in order to determine how best to penetrate missile defenses and deter carrier groups from approaching the battlefield.<sup>630</sup>

Indeed, cruise missiles form a vital part of China's A2/AD concept and present a serious threat to any force that engages the PLA in battle. The PLA has a wide variety of cruise missiles that can be launched from land, air, sea, and sub-surface platforms. China envisions using multi-axis missile salvos containing SRBMs, LACMS, and other applicable missile capabilities to penetrate missile defenses and incur substantial damage during a Local War situation. Thanks to help from Russian technicians and an increasingly skilled indigenous R&D sector, Chinese cruise missiles can conceivably strike targets thousands of kilometers away. Potential ASCM targets include aircraft carriers, AEGIS-equipped destroyers and potential LACM targets include Taiwan and American bases in the Asia-Pacific as far as Guam.<sup>631</sup>

While these modern cruise missiles are rendering older missiles obsolete, these older missiles may still have use in exhausting anti-cruise missile defenses through large saturation attacks carried out in conjunction with modern missiles. Saturation attacks with modern cruise missiles are not out of the question either. Despite Chinese concerns about whether or not their missiles can penetrate American missile defenses, there exists a clear cost-efficiency advantage for the attacker; missile defense is extremely difficult and costly compared to missile attack. In short, quantity may have a quality all its own.<sup>632</sup> But unlike the PLA of old, which could only field a handful of modern systems with large numbers of older systems, the PLA is building a cruise missile force that can contain large numbers of both modern and older systems.

What is even more striking is the apparent neglect that the US has had in publically discussing its own cruise missile development, particularly ASCM's.<sup>633</sup> Some Flight IIA *Arleigh Burke* class destroyers are not equipped with Harpoon missiles, the sole American ASCM which was developed in the 1960's and entered service in the 1970's.<sup>634</sup> Although the LRASM is being developed by DARPA to rectify this issue, it is still in a development stage.

*Figure 12.12: NASIC Estimate of the Regional Balance of Land Attack Cruise Missiles*

MISSILE	LAUNCH MODE	WARHEAD TYPE	RANGE (km)	IOC
<b>CHINA</b>				
YJ-63	Air	Conventional	Undetermined	Undetermined
DH-10	Undetermined	Conventional or nuclear	Undetermined	Undetermined
<b>FRANCE</b>				
APACHE-AP	Air	Submunitions	100+	2002
SCALP-EG	Air and ship	Penetrator	250+	2003
Naval SCALP	Sub and surface ship	Penetrator	250+	2013+
<b>UAE</b>				
BLACK SHAHEEN*	Air	Penetrator	250+	2006
<b>GERMANY, SWEDEN, SPAIN</b>				
KEPD-350	Air	Penetrator	350+	2004
<b>INDIA, RUSSIA</b>				
Brahmos 1	Air, ground, ship, and sub	Conventional	less than 300	2010+
Brahmos 2	Air, ground, ship, and sub	Conventional	less than 300	2013+
<b>ISRAEL</b>				
Popeye Turbo	Air	Conventional	300+	2002
<b>PAKISTAN</b>				
RA'AD	Air	Conventional or nuclear	350	Undetermined
Babur	Ground	Conventional or nuclear	350	Undetermined
<b>RUSSIA</b>				
AS-4	Air	Conventional or nuclear	300+	Operational
AS-15	Air	Nuclear	2,800+	Operational
SS-N-21		Nuclear	12,800+	Operational
Kh-555	Air	Conventional	Undetermined	Undetermined
Kh-101	Air	Conventional	Undetermined	2013
3M-14E	Ground, ship, and sub	Conventional	275	Undetermined
<b>SOUTH AFRICA</b>				
MUPSOV	Air and ground	Conventional	150	2002
Torgos	Air and ground	Conventional	300	Undetermined
<b>TAIWAN</b>				
Wan Chien	Air	Conventional	250+	2006
HF-2E	Ground	Conventional	Undetermined	Undetermined
<b>UNITED KINGDOM</b>				
Storm Shadow	Air	Penetrator	250+	2003
<b>IRAN</b>				
Meshkat	Air, ground, and ship	Conventional	Undetermined	Undetermined

Note: All ranges are approximate and represent the range of the missile only. The effective system range may be greatly increased by the range of the launch platform.

\*The BLACK SHAHEEN is an export version of the SCALP-EG.

Source US National Air and Space Intelligence Center, Defense Intelligence Agency Missile and Space Intelligence Center and Office of Naval Intelligence, *Ballistic & Cruise Missile Threat*, NASIC, May 2013, 11-13.

## MRBMs

A US National Air and Space Intelligence Center estimate of the regional balance in MRBMs and IRBMs is shown in **Figure 12.13**. It again illustrates a broad set of trends in the regional balance that both affects and is affected by China, and once again, these figures do not include US capability to launch cruise missiles. The NASIC summarizes key regional trends as follows:<sup>635</sup>

New MRBM and/or IRBM systems are in development in China, North Korea, Iran, India, and Pakistan. These are strategic systems, and many will be armed with nonconventional warheads. All of these countries... have tested nuclear weapons. Neither Russia nor the United States produce or retain any MRBM or IRBM systems because they are banned by the Intermediate-Range Nuclear Forces Treaty, which entered into force in 1988.

China continues to maintain regional nuclear deterrence, and its long-term, comprehensive military modernization is improving the capability of its ballistic missile force to conduct high-intensity, regional military operations, including “anti-access and area denial” (A2/AD) operations.

The term A2/AD refers to capabilities designed to deter or counter adversary forces from deploying to or operating within a defined space. Currently, China deploys the nuclear armed CSS-2, CSS-5 Mod 1, and CSS-5 Mod 2 for regional nuclear deterrence. China is also acquiring new conventionally armed CSS-5 MRBMs to conduct precision strikes. These systems are likely intended to hold at-risk or strike logistics nodes, regional military bases including airfields and ports, and naval assets.

Notably, China has likely started to deploy the DF-21D, an ASBM based on a variant of the CSS-5. North Korea has an ambitious ballistic missile development program and has exported missiles and missile technology to other countries, including Iran and Pakistan. North Korea has also admitted its possession of nuclear weapons. It has displayed new IRBMs and older No Dong MRBMs in recent military parades.

... India continues to develop and improve its ballistic missiles. All of India’s long-range missiles use solid propellants. Indian officials have stated that the Agni II MRBM is deployed. The Agni III IRBM has been flight tested four times since 2006, and has been pronounced ready for deployment. The Agni IV IRBM has been flight tested twice since 2010, with the 2011 launch successful.

Pakistan continues to improve the readiness and capabilities of its Army Strategic Force Command and individual strategic missile groups through training exercises that include live missile firings. Pakistan has tested its solid-propellant Shaheen 2 MRBM six times since 2004, and this missile system probably will soon be deployed.

The 2014 Japanese defense white paper summarized these developments as follows:<sup>636</sup>

As for the IRBM/MRBM covering the Asia-Pacific region including Japan, China has deployed the solid-propellant DF-21, which can be transported and operated on a TEL, in addition to the liquid-propellant DF-3 missiles. These missiles are capable of carrying nuclear warheads. It is believed that China possesses conventional ballistic missiles with high targeting accuracy based on the DF-21, and it has been pointed out that China has deployed conventional anti-ship ballistic missiles (ASBM), which could be used to attack ships at sea including aircraft carriers.

In addition to IRBM/MRBM, China also possesses the DH-10 (CJ-10), a cruise missile with a range of at least 1,500 km, as well as the H-6 (Tu-16), bombers that are capable of carrying nuclear weapons and cruise missiles. It is deemed that these missiles will complement ballistic missile forces, covering the Asia-Pacific region including Japan.

China announced that it had conducted tests on midcourse missile interception technology in January 2010 and 2013. Attention will be paid to China’s future trends in ballistic missile defense.

Chinese development of mobile, solid-fueled Medium-Range Ballistic Missiles (MRBMs) provides a further indication of a larger institutional shift towards missile forces, as “the PLA is acquiring and fielding conventional MRBMs to increase the range at which it can conduct precision strikes against land targets and naval ships, including aircraft carriers, operating far from

China's shores out to the first island chain."<sup>637</sup> The 2015 DoD report reiterated this point, assessing, "China is fielding a growing number of conventionally armed MRBMs."<sup>638</sup> This trend is evident in the development of the more precise DF-21C and DF-21D missile systems – although again, the unclassified estimates of precision involved seems to be based on design and platform potential rather than empirical test data.

Indeed, the PLARF's nuclear-armed forces underwent similar modernization. The need to deter nuclear attacks on the mainland and—according to the *Science of Second Artillery Campaigns*—to reduce the scope of conventional warfare,<sup>639</sup> forced the PLARF to increase the survivability of its nuclear counter-attack forces. In turn, this requirement necessitated mobility, rapid deployment, and quick firing of the missile system.

The PLARF replaced the aging, liquid-fueled DF-2 MRBM with the solid-fueled mobile DF-21A/B MRBM. Between 1985 and 2000, the PLARF not only entirely retired the DF-2 but replaced it with nuclear-tipped DF-21s, missile for missile. Such a change in MRBM holdings illustrates several important elements of the PLARF nuclear modernization: a shift from liquid to solid fuel, a shift from transportable to mobile systems, and a shift to more accurate missiles.

These trends are fully detailed in **Figure 12.14**, which provides a visual representation of the data and trends described above. Important elements to notice are: the rapid expansion in SRBM numbers, the brief dip in MRBM numbers (the DF-2 to DF-21 series transition), the drawdown of IRBMs (China has yet to develop a mobile solid-fueled IRBM), the growth in ICBMs as the PLARF seeks an invulnerable second-strike capability, and the sudden appearance of cruise missile units.



**Figure 12.13: NASIC Estimate of the Regional Balance of MRBMs and IRBMs**

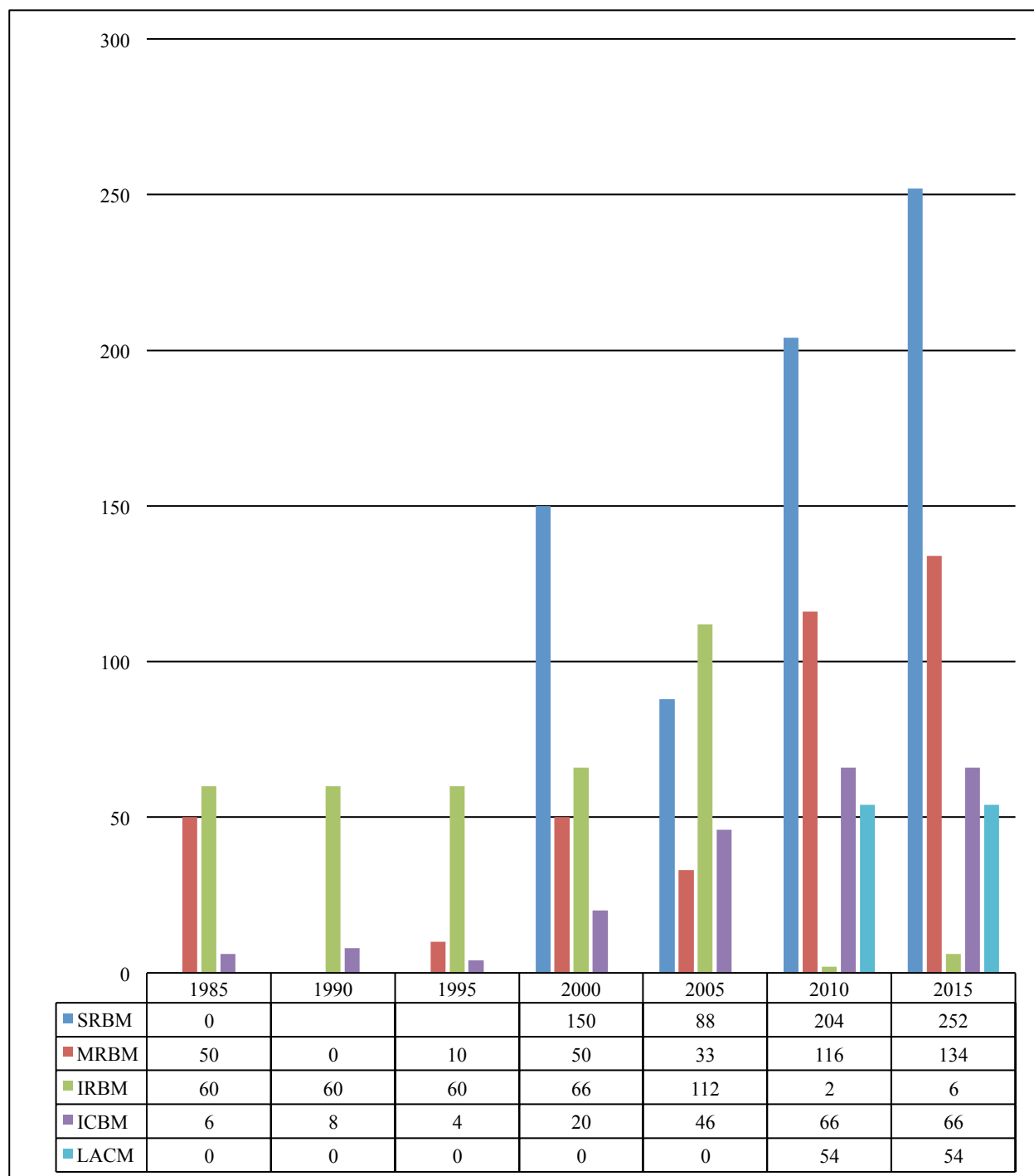
MISSILE	NUMBER OF STAGES	PROPELLANT	DEPLOYMENT MODE	MAXIMUM RANGE (km)	NUMBER OF LAUNCHERS*
<b>China</b>					
CSS-2	1	Liquid	Transportable	3,000	5 to 10 (Limited Mobility)
CSS-5 Mod 1	2	Solid	Road-mobile	1,750+	Fewer than 50
CSS-5 Mod 2	2	Solid	Road-mobile	1,750+	Fewer than 50
CSS-5 Conventional	2	Solid	Mobile	1,750+	Fewer than 30
CSS-5 ASBM	2	Solid	Mobile	1,500+	Unknown
<b>Saudi Arabia (Chinese-produced)</b>					
CSS-2 (conventional)	1	Liquid	Transportable	3,000	Fewer than 50 (Limited Mobility)
<b>North Korea</b>					
No Dong	1	Liquid	Road-mobile	1,250	Fewer than 50
IRBM	1	Liquid	Road-mobile	3,000+	Fewer than 50
<b>India</b>					
Agni II	2	Solid	Rail-mobile	2,000+	Fewer than 10
Agni III	2	Solid	Rail-mobile	3,200+	Not yet deployed
Agni IV	2	Solid	Rail-mobile	3,500+	Not yet deployed
<b>Pakistan</b>					
Ghauri	1	Liquid	Road-mobile	1,250	Fewer than 50
Shaheen 2	2	Solid	Road-mobile	2,000	Unknown
<b>Iran</b>					
Shahab 3	1	Liquid	Silo & road-mobile	2,000	Fewer than 50
Sejjil	2	Solid	Road-mobile	2,000	Unknown
IRBM/ICBM	Undetermined	Undetermined	Undetermined	Undetermined	Undetermined

Note: All ranges are approximate.

\* The missile inventory may be larger than the number of launchers; launchers can be reused to fire additional missiles

Source US National Air and Space Intelligence Center, Defense Intelligence Agency Missile and Space Intelligence Center and Office of Naval Intelligence, *Ballistic & Cruise Missile Threat*, NASIC, May 2013, 16.

**Figure 12.14: Development of Ballistic and Cruise Missile Launchers, 1985-2015**



Source: IISS, *Military Balance* 1985-2015.

### ICBMs and SLBMs

A US National Air and Space Intelligence Center estimate of regional balance of ICBMs and SLBMs – made in 2013 – is shown in **Figure 12.15**. This Figure again illustrates a broad set of

trends in the regional balance – a balance that that both affects and is affected by China. The NASIC summarizes key regional trends as follows:<sup>640</sup>

### **ICBMs**

Russia retains about 1,200 nuclear warheads on ICBMs. Most of these missiles are maintained on alert, capable of being launched within minutes of receiving a launch order. Although the size of the Russian ICBM force will continue to decrease because of arms control agreements, aging missiles, and resource constraints, Russia probably will retain the largest ICBM force outside the United States. Efforts to maintain and modernize the force are underway. Russia successfully tested a new type of mobile ICBM in 2012 according to Russian press reports. The Russian SS-27 Mod 1 ICBM, a missile designed with countermeasures to ballistic missile defense systems, is now deployed in silos in six regiments. Russia began deployment of the road-mobile version of the SS-27 Mod 1 in 2006. A MIRV version of the SS-27, the SS-27 Mod-2 (RS-24), was deployed in 2010.

In addition, Russian officials claim a new class of hypersonic vehicle is being developed to allow Russian strategic missiles to penetrate missile defense systems, and the Russian press has indicated deployment of a new rail-mobile ICBM is being considered. Furthermore, Russia has stated that a new heavy liquid-propellant ICBM is under development to replace the aging SS-18. Russia's goal is to begin its deployment in the 2018-2020 timeframe.

In 2011, the New Strategic Arms Reduction Treaty, which limits the United States and Russia to no more than 1,550 warheads each (including those on ICBMs, SLBMs, and heavy bombers), entered into force.

China is strengthening its strategic nuclear deterrent force with the development and deployment of new ICBMs. China retains a relatively small number of nuclear armed, liquid-propellant CSS-3 limited range ICBMs and CSS-4 ICBMs capable of reaching the United States. It is also modernizing solid-propellant CSS-10 Mod 1 and the longer range CSS-10 Mod 2 ICBMs have been deployed to units within the Second Artillery Corps. The CSS-10 Mod 1 is capable of reaching targets throughout Europe, Asia, and parts of Canada and the northwestern United States. The longer range CSS-10 Mod 2 will allow targeting of most of the continental United States. China may also be developing a new road-mobile ICBM capable of carrying a MIRV payload, and the number of warheads on Chinese ICBMs capable of threatening the United States is expected to grow to well over 100 in the next 15 years.

North Korea continues development of the TD-2 ICBM/SLV, which could reach the United States if developed as an ICBM. Launches in July 2006, April 2009, and April 2012 ended in failure, but a December 2012 launch successfully placed a satellite in orbit. In an April 2012 military parade, North Korea unveiled the new Hwasong-13 road-mobile ICBM. This missile has not yet been flight tested. Either of these systems could be exported to other countries in the future. Continued efforts to develop the TD-2 and the newly unveiled ICBM show the determination of North Korea to achieve long-range ballistic missile and space launch capabilities.

Since 2008, Iran has conducted multiple successful launches of the two-stage Safir SLV. In early 2010, Iran unveiled the larger Simorgh SLV. Iran will likely continue to pursue longer range ballistic missiles and more capable SLVs, which could lead to the development of an ICBM system. Iran could develop and test an ICBM capable of reaching the United States by 2015.

India conducted the first flight test of the Agni V ICBM in April 2012. An even longer range Agni VII is reportedly in the design phase.

### **SLBMs**

Russia maintains a substantial force of nuclear powered ballistic missile submarines (SSBNs) with intercontinental-range missiles. Russia is developing new and improved SLBM weapon systems to replace its current inventory of Cold War vintage systems. Upgraded SS-N-23s are intended to replace older SS-N-23s on DELTA IV Class SSBNs. The SS-NX-32/Bulava is a new solid-propellant SLBM that is primarily intended for deployment on new DOLGORUKIY class SSBNs. Russian SLBMs are capable of launch from surfaced and submerged SSBNs from a variety of launch locations.

China currently has a single XIA Class SSBN that is intended to carry 12 CSS-NX-3/JL-1 missiles. In addition, China will deploy the new CSS-NX-14/JL-2 SLBM on new 12-tube JIN Class SSBNs. This missile

will, for the first time, allow Chinese SSBNs to target portions of the United States from operating areas located near the Chinese coast.

India is developing a new ballistic missile-capable submarine, the INS Arihant. The K-15 is reportedly ready for induction when the Arihant is deemed ready.

Japan provided a somewhat similar summary in its 2014 defense white paper:<sup>641</sup>

China has made independent efforts to develop nuclear capabilities and ballistic missile forces since the middle of the 1950s, seemingly with a view to ensuring deterrence, supplementing its conventional forces, and maintaining its voice in the international community. With regard to the nuclear strategy, it is recognized that China employs a strategy where it can deter a nuclear attack on its land by maintaining a nuclear force structure able to conduct retaliatory nuclear attacks on a small number of targets such as cities in the enemy country.

China possesses various types and ranges of ballistic missiles: intercontinental ballistic missiles (ICBM); submarine-launched ballistic missiles (SLBM); intermediate-range ballistic missiles/medium-range ballistic missiles (IRBM/ MRBM); and short-range ballistic missiles (SRBM).

The update of China's ballistic missile forces from a liquid propellant system to a solid propellant system is improving their survivability and readiness. Moreover, it is also believed that China is working to increase performance by extending ranges, improving accuracy, mounting warheads, introducing Maneuverable Reentry Vehicles (MaRV) and Multiple Independently Targetable Reentry Vehicles (MIRV), and other means.

China has deployed the DF-31, which is a mobile type ICBM with a solid propellant system mounted onto a Transporter Erector Launcher (TEL), and the DF-31A, a model of the DF-31 with extended range. According to some analysts, China has already deployed the DF-31A and will increase its numbers<sup>19</sup>. Regarding SLBM, China currently appears to be developing a new JL-2 whose range is believed to be approximately 8,000 km, and constructing and commissioning Jin-class nuclear-powered ballistic missile submarines (SSBN) to carry the missiles. Once the JL-2 reaches a level of practical use, it is believed that China's strategic nuclear capabilities will improve by a great margin.

The numbers of Chinese ICBMs shown earlier in **Figure 12.4** and **Figure 12.5** have shown a steady increase in the ICBM force, but one that understates the actual rise in Chinese capabilities because obsolete ICBMs have been retired as more modern versions were produced. During this time period, the PLARF reduced its holdings of its relatively vulnerable, liquid-fueled, and non-mobile DF-4s while it deployed DF-5, DF-31, and DF-31A ICBM systems.

As a result, it is necessary to combine the analysis of absolute ICBM numbers with an analysis of the relative modernization of the ICBM arsenal. Such a combined analysis is not necessary for the other missile classes because the ICBM category is the only one in which the deployment of modern systems occurred at the same time as obsolete missiles were discarded; the culling of obsolete MRBMs happened before modern versions were produced, no modern IRBMs have been developed, and the PLARF never had obsolete SRBMs or LACMs.

**Figure 12.15** shows that the introduction of the DF-31 and DF-31A significantly increased the percentage of the ICBM force that is modern, and **Figure 12.17** shows the expanding range of China's conventional weapons, ICBMs, and MRBMs. This figure shows that China can now reach any target in the world, including the US.

As a result, the growth in ICBM numbers during the 2005-2013 period understates the growth in the PLARF's intercontinental deterrence capability and its increasing survivability. Paired with improved PLAAF AD and the development of the PLARF's tunnel network, the modernization of the PLARF's ICBM arsenal has positive implications for the PLARF's ICBM survivability, and thus for one of the PLARF's two core missions. Moreover, China's newer missiles, such as the

DF-5B, DF-31A and DF-41, are now believed to be equipped with MIRV warheads or capable of being MIRVed.

In December 2012, China successfully conducted a second test of its DF-31A missile, allowing it to reach any city in the US. The missile is believed to have had three warheads per missile and a range of approximately 7,000 miles. While the Chinese DF-5 has similar capabilities, the DF-5 requires a stationary launch pad and contains only one nuclear warhead. In contrast, the DF-31A is portable and can be launched from the back of a truck, train, or tank.<sup>642</sup> China appears to have supplied missiles to Saudi Arabia, Iran, Iraq, Libya, Pakistan, Syria, and North Korea.<sup>643</sup>

The US assessment of China's military capabilities has long focused on China's growing nuclear and missile forces and increasing capability to target the US and Japan in ways that directly affect the regional balance of power and the potential risk of US involvement any regional crisis or conflict. The 2011 DoD report on *Military and Security Developments Affecting the People's Republic of China* stated that,<sup>644</sup>

China has prioritized land-based ballistic and cruise missile programs. It is developing and testing several new classes and variants of offensive missiles, forming additional missile units, upgrading older missile systems, and developing methods to counter ballistic missile defenses.

The PLA is acquiring large numbers of highly accurate cruise missiles, many of which have ranges in excess of 185 km. This includes the domestically-produced, ground-launched DH-10 land-attack cruise missile (LACM); the domestically produced ground- and ship-launched YJ-62 anti-ship cruise missile (ASCM); the Russian SS-N-22/SUNBURN supersonic ASCM, which is fitted on China's SOVREMENNY-class DDGs acquired from Russia; and, the Russian SS-N-27B/SIZZLER supersonic ASCM on China's Russian-built, KILO-class diesel-electric attack submarines.

By December 2010, the PLA had deployed between 1,000 and 1,200 short-range ballistic missiles (SRBM) to units opposite Taiwan. To improve the lethality of this force, the PLA is introducing variants of missiles with improved ranges, accuracies, and payloads.

China is developing an anti-ship ballistic missile (ASBM) based on a variant of the CSS-5 medium-range ballistic missile (MRBM). Known as the DF-21D, this missile is intended to provide the PLA the capability to attack large ships, including aircraft carriers, in the western Pacific Ocean. The DF-21D has a range exceeding 1,500 km and is armed with a maneuverable warhead.

China is modernizing its nuclear forces by adding more survivable delivery systems. In recent years, the road mobile, solid propellant CSS-10 Mod 1 and CSS-10 Mod 2 (DF-31 and DF-31A) intercontinental-range ballistic missiles (ICBMs) have entered service. The CSS-10 Mod 2, with a range in excess of 11,200 km, can reach most locations within the continental United States.

China may also be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targetable re-entry vehicle (MIRV).

...China's nuclear arsenal currently consists of approximately 55-65 intercontinental ballistic missiles (ICBMs), including the silo-based CSS-4 (DF-5); the solid-fueled, road-mobile CSS-10 Mods 1 and 2 (DF-31 and DF-31A); and the more limited range CSS-3 (DF-3). This force is complemented by liquid-fueled CSS-2 intermediate-range ballistic missiles and road-mobile, solid-fueled CSS-5 (DF-21D) MRBMs for regional deterrence missions. The operational status of China's single XIA-class ballistic missile submarine (SSBN) and medium-range JL-1 submarine-launched ballistic missiles (SLBM) remain questionable.

By 2015, China's nuclear forces will include additional CSS-10 Mod 2s and enhanced CSS-4s. The first of the new JIN-class (Type 094) SSBN appears ready, but the associated JL-2 SLBM has faced a number of problems and will likely continue flight tests. The date when the JIN-class SSBN/JL-2 SLBM combination will be fully operational is uncertain. China is also currently working on a range of technologies to attempt to counter U.S. and other countries' ballistic missile defense systems, including maneuvering re-entry vehicles, MIRVs, decoys, chaff, jamming, thermal shielding, and anti-satellite (ASAT) weapons. PRC official media also cites numerous Second Artillery Corps training exercises featuring maneuver, camouflage, and launch operations under simulated combat conditions, which are intended to increase survivability. Together with

the increased mobility and survivability of the new generation of missiles, these technologies and training enhancements strengthen China's nuclear force and enhance its strategic strike capabilities.

The introduction of more mobile systems will create new command and control challenges for China's leadership, which now confronts a different set of variables related to deployment and release authorities. For example, the PLA has only a limited capacity to communicate with submarines at sea, and the PLA Navy has no experience in managing a SSBN fleet that performs strategic patrols with live nuclear warheads mated to missiles. Land-based mobile missiles may face similar command and control challenges in wartime, although probably not as extreme as with submarines.

Beijing's official policy towards the role of nuclear weapons continues to focus on maintaining a nuclear force structure able to survive an attack, and respond with sufficient strength to inflict unacceptable damage on the enemy. The new generation of mobile missiles, maneuvering and MIRV warheads, and penetration aids are intended to ensure the viability of China's strategic deterrent in the face of continued advances in U.S. and, to a lesser extent, Russian strategic intelligence, surveillance, and reconnaissance; precision strike; and missile defense capabilities.

Beijing has consistently asserted that it adheres to a "no first use" (NFU) policy, stating it would use nuclear forces only in response to a nuclear strike against China. China's NFU pledge consists of two stated commitments: China will never use nuclear weapons first against any nuclear-weapon state, and China will never use or threaten to use nuclear weapons against any non-nuclear-weapon state or nuclear-weapon-free zone. However, there is some ambiguity over the conditions under which China's NFU policy would apply, including whether strikes on what China considers its own territory, demonstration strikes, or high altitude bursts would constitute a first use.

Moreover, some PLA officers have written publicly of the need to spell out conditions under which China might need to use nuclear weapons first; for example, if an enemy's conventional attack threatened the survival of China's nuclear force, or of the regime itself. However, there has been no indication that national leaders are willing to attach such nuances and caveats to China's "no first use" doctrine.

Beijing will likely continue to invest considerable resources to maintain a limited nuclear force, also referred to by some PRC writers as "sufficient and effective" to ensure the PLA can deliver a damaging retaliatory nuclear strike.

The DoD provided updates in the 2013 edition of *Military and Security Developments Affecting the People's Republic of China* that described China's nuclear-armed missile developments as follows.<sup>645</sup>

The Second Artillery controls China's nuclear and conventional ballistic missiles. It is developing and testing several new classes and variants of offensive missiles, forming additional missile units, upgrading older missile systems, and developing methods to counter ballistic missile defenses. (p. 5-6)

By December 2012, the Second Artillery's inventory of short-range ballistic missiles (SRBM) deployed to units opposite Taiwan stood at more than 1,100. This number reflects the delivery of additional missiles and the fielding of new systems. To improve the lethality of this force, the PLA is also introducing new SRBM variants with improved ranges, accuracies, and payloads.

China is fielding a limited but growing number of conventionally armed, medium-range ballistic missiles, including the DF-21D anti-ship ballistic missile (ASBM). The DF-21D is based on a variant of the DF-21 (CSS-5) medium-range ballistic missile (MRBM) and gives the PLA the capability to attack large ships, including aircraft carriers, in the western Pacific Ocean. The DF-21D has a range exceeding 1,500 km and is armed with a maneuverable warhead. (p. 5-6)

The Second Artillery continues to modernize its nuclear forces by enhancing its silo-based intercontinental ballistic missiles (ICBMs) and adding more survivable mobile delivery systems. In recent years, the road-mobile, solid-propellant CSS-10 Mod 1 and CSS-10 Mod 2 (DF-31 and DF-31A) intercontinental-range ballistic missiles have entered service. The CSS-10 Mod 2, with a range in excess of 11,200 km, can reach most locations within the continental United States. China may also be developing a new road-mobile ICBM, possibly capable of carrying a multiple independently targetable re-entry vehicle (MIRV). (p. 5-6)

**Land-Based Platforms.** China's nuclear arsenal currently consists of approximately 50-75 ICBMs,

including the silo-based CSS-4 (DF-5); the solid-fueled, road-mobile CSS-10 Mods 1 and 2 (DF-31 and DF-31A); and the more limited range CSS-3 (DF-4). This force is complemented by liquid-fueled CSS-2 intermediate-range ballistic missiles and road-mobile, solid-fueled CSS-5 (DF-21) MRBMs for regional deterrence missions. By 2015, China's nuclear forces will include additional CSS-10 Mod 2 and enhanced CSS-4 ICBMs. (p. 31)

The 2014 DoD report updated these data by stating that:<sup>646</sup>

China's nuclear arsenal currently consists of the silo-based CSS-4 (DF-5); the solid-fueled, road-mobile CSS-10 Mod 1 and Mod 2 (DF-31 and DF-31A); and the more limited-range CSS-3 (DF-4). This force is complemented by road-mobile, solid-fueled CSS-5 (DF-21) MRBMs for regional deterrence missions. By 2015, China's nuclear forces will include additional CSS-10 Mod 2s.

**Sea-Based Platforms.** China continues to produce the JIN-class SSBN, with three already delivered and as many as two more in various stages of construction. The JIN-class SSBNs will eventually carry the JL-2 submarine-launched ballistic missile with an estimated range of 7,400 km. The JIN-class and the JL-2 will give the PLA Navy its first long-range, sea-based nuclear capability. After a round of successful testing in 2012, the JL-2 appears ready to reach initial operational capability in 2013. JIN-class SSBNs based at Hainan Island in the South China Sea would then be able to conduct nuclear deterrence patrols. (p. 31-32)

**...Future Efforts.** China is working on a range of technologies to attempt to counter U.S. and other countries' ballistic missile defense systems, including maneuverable reentry vehicles (MaRVs), MIRVs, decoys, chaff, jamming, thermal shielding, and anti-satellite (ASAT) weapons. China's official media also cite numerous Second Artillery training exercises featuring maneuver, camouflage, and launch operations under simulated combat conditions, which are intended to increase survivability. Together with the increased mobility and survivability of the new training enhancements strengthen China's nuclear force and enhance its strategic strike capabilities. Further increases in the number of mobile ICBMs and the beginning of SSBN deterrence patrols will force the PLA to implement more sophisticated command and control systems and processes that safeguard the integrity of nuclear release authority for a larger, more dispersed force. (p. 32)

Outside sources provide further insights into these developments. The IISS reported in 2013 that:<sup>647</sup>

In July 2012, unnamed US officials reportedly said that China had test-fired a DF-41 intercontinental ballistic missile, although little information was provided. The DF-41 would, if deployed, be the first land-based missile able to reach the entire continental United States. The July test was reported to include a multiple independently targetable re-entry vehicle (MIRV), though it is unclear whether MIRVed warheads have yet been deployed on China's current longest-range ICBM, the DF-31A. This continues to be produced, with satellite imagery from 2011 suggesting that the 809 Brigade in Datong was receiving DF-31s in place of DF-21s. Taiwan's 2010 report on Chinese military power claimed that the Second Artillery had also deployed a few new DF-16 MRBMs.

Within a month, China also conducted a successful test of the JL-2 ballistic missile. The JL-2 is the submarine-launched version of the DF-31 road-mobile ICBM, to be deployed on the Type-094 nuclear-ballistic-missile submarine. Successful development and deployment of the hitherto troubled JL-2 would give China a more secure second-strike deterrent, as the four Type-094 submarines currently in the water would then be able to provide continuous at-sea deterrence.

China's deployment anti-ship ballistic missile (ASBM) is another facet of China's growing ballistic missile based deterrent, as Andrew Erickson has explained:<sup>648</sup>

A number of sources agree with the US Department of Defense assessment that China has completed development of the DF-21D anti-ship ballistic missile (ASBM). Andrew Erickson, in his article titled "China Channels Billy Mitchell: Anti-Ship Ballistic Missiles Alters Region's Military Geography," states that, China's DF-21D anti-ship ballistic missile (ASBM) is no longer merely an aspiration. Beijing has successfully developed, partially tested and deployed in small numbers the world's first weapons system capable of targeting the last relatively uncontested U.S. airfield in the Asia-Pacific from long-range, land-based mobile launchers.

This airfield is a moving aircraft carrier strike group (CSG), which the Second Artillery, China's strategic missile force, now has the capability to at least attempt to disable with the DF-21D in the event of conflict. With the ASBM having progressed this far, and representing the vanguard of a broad range of potent asymmetric systems, Beijing probably expects to achieve a growing degree of deterrence with it.



**Figure 12.15: NASIC Estimate of the Regional Balance of ICBMs and SLBMs**

### ICBMs

MISSILE	NUMBER OF STAGES	WARHEADS PER MISSILE	PROPELLANT	DEPLOYMENT MODE	MAXIMUM RANGE (km)	NUMBER OF LAUNCHERS*
<b>Russia</b>						
SS-18 Mod 5	2 + PBV	10	Liquid	Silo	10,000+	About 50
SS-19 Mod 3	2 + PBV	6	Liquid	Silo	9,000+	About 50
SS-25	3 + PBV	1	Solid	Road-mobile	11,000	More than 150
SS-27 Mod 1	3 + PBV	1	Solid	Silo & road-mobile	11,000	About 80
SS-27 Mod-2	3 + PBV	Multiple	Solid	Silo & road-mobile	11,000	About 20
New ICBM	At least 2	Undetermined	Solid	Road-mobile	5,500+	Not yet deployed
<b>China</b>						
CSS-3	2	1	Liquid	Transportable	5,500+	10 to 15
CSS-4 Mod 1	2	1	Liquid	Silo	12,000+	About 20
CSS-10 Mod 1	3	1	Solid	Road-mobile	7,000+	5 to 10
CSS-10 Mod 2	3	1	Solid	Road-mobile	11,000+	More than 15
<b>North Korea</b>						
Taepo Dong-2	2 or 3	1	Liquid	Fixed	5,500+	Unknown**
Hwasong-13	Undetermined	Undetermined	Undetermined	Road-mobile	5,500+	Unknown
<b>India</b>						
Agni V	3	1	Solid	Undetermined	5,000+	Not yet deployed

### SLBMs

MISSILE	NUMBER OF STAGES	WARHEADS PER MISSILE	PROPELLANT	SUBMARINE CLASS	MAXIMUM RANGE (km)	NUMBER OF LAUNCHERS
<b>RUSSIA</b>						
SS-N-18	2 + PBV	3	Liquid	DELTA III	5,500+	96
SS-N-23	3 + PBV	4	Liquid	DELTA IV	8,000+	96
SS-NX-32 Bulava	3 + PBV	6	Solid	DOLGORUKIY (BOREY) TYPHOON	8,000+	16; Not yet deployed 20; Not yet deployed
<b>CHINA</b>						
CSS-NX-3/JL-1	2	1	Solid	XIA	1,700+	12; Not yet deployed
CSS-NX-14/JL-2	3	1	Solid	JIN	7,000+	12; Not yet deployed
<b>INDIA</b>						
K-15	2	1	Solid	ARIHART	700	12; Not yet deployed

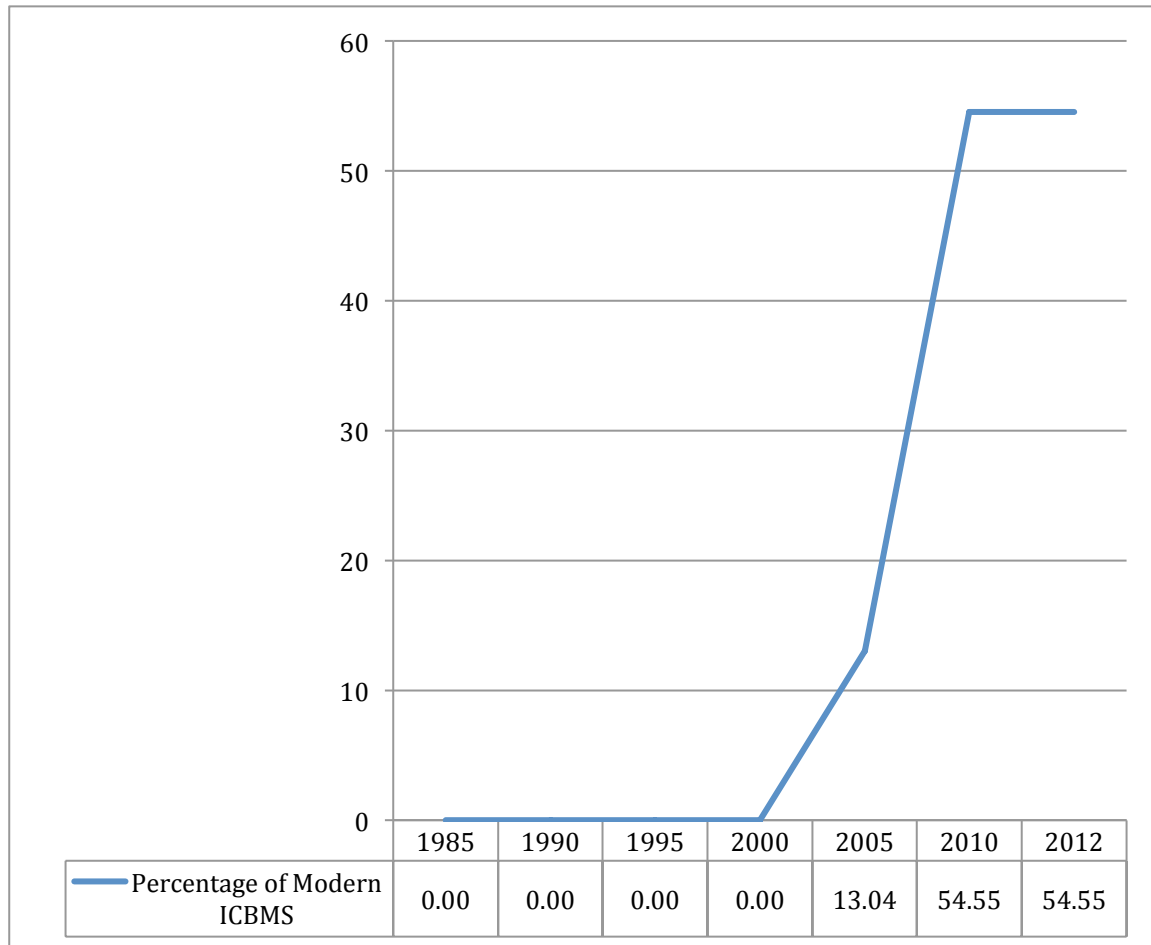
Note: All ranges are approximate.

\* The missile inventory may be much larger than the number of launchers; launchers can be reused to fire additional missiles.

\*\* Launches of the TD-2 space vehicle have been observed from both east and west coast facilities.

Source: Adapted from US National Air and Space Intelligence Center, Defense Intelligence Agency Missile and Space Intelligence Center and Office of Naval Intelligence, *Ballistic & Cruise Missile Threat*, NASIC, May 2013, 21.

**Figure 12.16: Percentage of Modern ICBMs in the PLARF's Arsenal, 1985-2012**



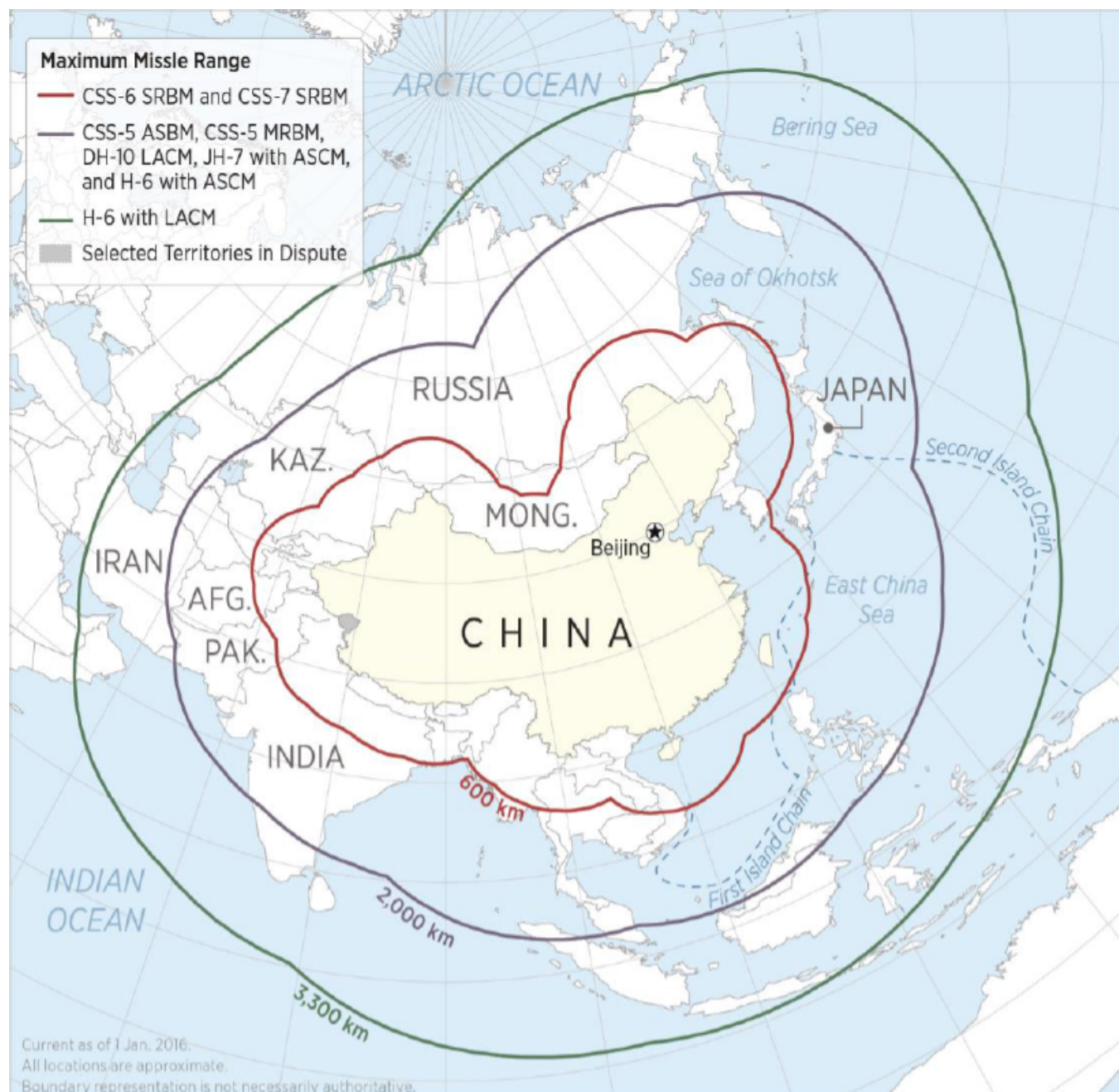
Source: *Military Power of the People's Republic of China 2005-2009*; *Military and Security Developments Involving the People's Republic of China 2009-2012*.

**Figure 12.17: The Expanding Range of China's Medium and Intercontinental Ballistic Missile Forces – Part I**



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2016, April 2016, 24.

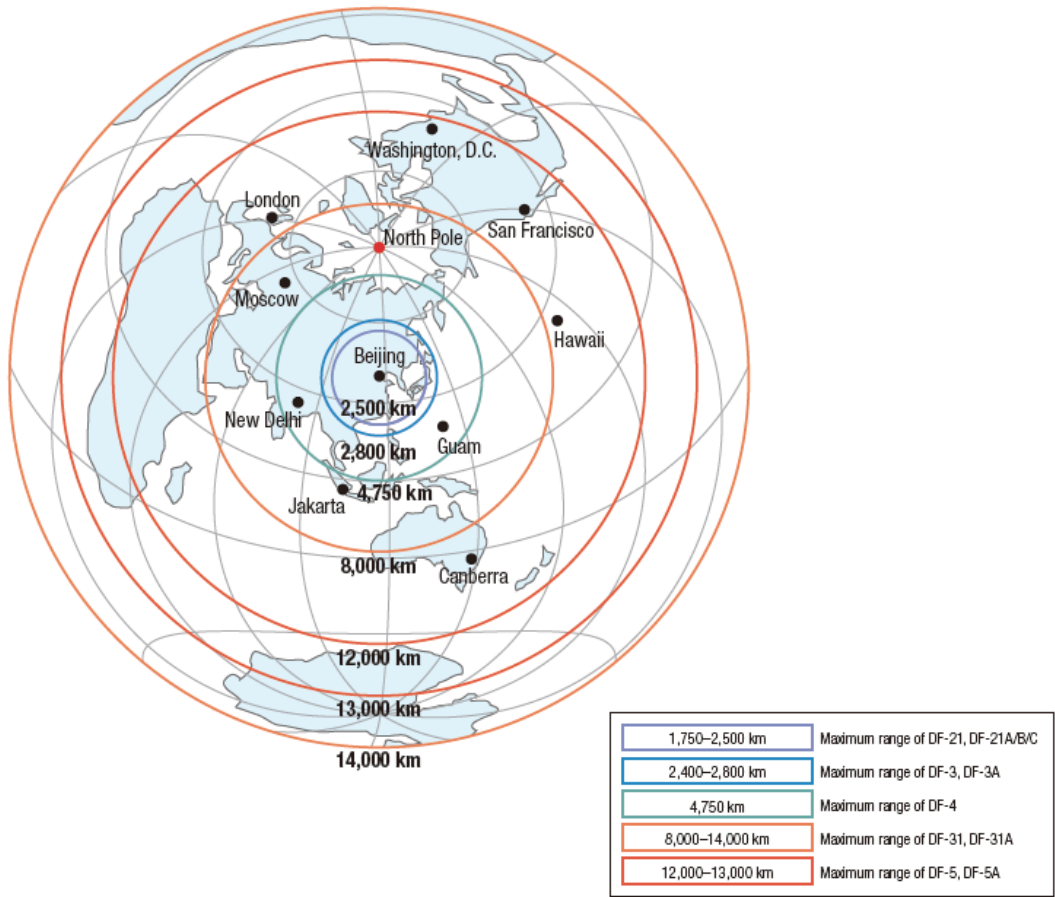
*Figure 12.17: China's Conventional Strike Capabilities – Part II*



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2016, April 2016, 23.

**Figure 12.18: The Expanding Range of China’s ICBM and Longer-Range Forces**

**Fig. I-1-3-2** Range of Ballistic Missiles from China (Beijing)



Note: The above image shows a simplified indication of the potential reach of each type of missile taking Beijing as a central point.

Source: Japanese Ministry of Defense, *Defense of Japan 2014*.



## Chinese Missile Defense Capabilities

There are other important aspects of China's missile and space programs. China has steadily shifted to an emphasis on missile defense capabilities. The 2010 Chinese defense white paper made an official statement that argued against international missile defense programs. The paper also included sections on the desire to prohibit biological and chemical weapons, prevent an arms race in outer space, promote military expenditure transparency, and work towards conventional arms control. In the section on non-proliferation, the PRC wrote:<sup>649</sup>

China maintains that the global missile defense program will be detrimental to international strategic balance and stability, will undermine international and regional security, and will have a negative impact on the process of nuclear disarmament. China holds that no state should deploy overseas missile defense systems that have strategic missile defense capabilities or potential, or engage in any such international collaboration.

The 2013 and 2015 white papers did mention missile defense once, but did not address the issue in much depth. In sharp contrast, however, the 2015 DoD report on *Military and Security Developments Involving the People's Republic of China* noted that:<sup>650</sup>

China has made efforts to go beyond defense from aircraft and cruise missiles to gain a BMD capability in order to provide further protection of China's mainland and strategic assets. China's existing long-range SAM inventory offers limited capability against ballistic missiles. New indigenous radars, the JL-1A and JY-27A, are designed to address the ballistic missile threat, with the JL-1A advertised as capable of precision tracking of multiple ballistic missiles.

China's SA-20 PMU2 SAMs, one of the most advanced SAM Russia offers for export, has the advertised capability to engage ballistic missiles with ranges of 1,000 km and speeds of 2,800 meters per second (m/s). China's domestic CSA-9 long-range SAM system is expected to have a limited capability to provide point defense against tactical ballistic missiles with ranges up to 500 km.

China is proceeding with the research and development of a missile defense umbrella consisting of kinetic energy intercept at exo-atmospheric altitudes (greater than 80 km), as well as intercepts of ballistic missiles and other aerospace vehicles within the upper atmosphere. In January 2010 and again in January 2013, China successfully intercepted a ballistic missile at mid-course, using a ground-based missile.

China tested an advanced missile defense system on January 11, 2010. The test, entitled the *Test of the Land-based Mid-Course Phase Anti-Ballistic Missile Interception Technology*, targeted a missile during the mid-course phase when it was exo-atmospheric. According to press reports, the US DoD stated, "We detected two geographically separated missile launch events with an exo-atmospheric collision also being observed by space-based sensors."<sup>651</sup>

Reportedly, China carried out a second land-based mid-course missile interception test on January 27, 2013 in the Xinjiang Uyghur Autonomous Region. Although no other information was given, the Chinese Defense Ministry remarked that the test was "defensive in nature" and appeared to be successful. In all likelihood, the system is a reconfigured DF-21C or DF-25 (KS/SC-19), both of which are two-stage medium-range (1500-1700 km) ballistic missiles capable of carrying a 600 kg payload – in this case, an exo-atmospheric kill vehicle. However, China likely remains far from an operational anti-missile shield.<sup>652</sup>

China is also working to increase its tactical ballistic missile defense capabilities – which add another level of deterrence and defense capabilities. China is beginning to produce its own variant of the S300 and recently has made a deal with Russia to procure the S-400 air defense system which will extend China's ballistic missile defense reach.<sup>653</sup>

## *Improved Personnel*

The doctrinal, operational, tactical, and technical requirements generated by the PLARF's modernization and development program have required a PLARF comprised of technically proficient officers and men with higher levels of human capital and academic achievement. This necessity has led to a shift in personnel policies toward greater formal military education of officers and men, greater recruitment of university graduates, and more intensive and realistic military training.

China has not neglected missile force training and readiness. The 2009 revision of the PLA's *Outline of Military Training and Evaluation* emphasized joint training, training in "complex electromagnetic environments," and the use of opposition forces to increase training realism;<sup>654</sup> the PLARF seeks to develop these training techniques so as to better conduct integrated joint operations under conditions of informatization.

It is impossible to discern how significant an impact these new training regulations have had on PLARF forces, but Chinese media reports corroborate the new emphasis on "realistic training."<sup>655</sup> These reports frequently describe training exercises along the lines of the 2009 Outline of Military Training and Education, discussed previously – one story in *Jiefangjun Huabao* described joint training at the brigade level.<sup>656</sup> Such efforts, if carried out on a sustained and well-resourced basis, form a significant means of augmenting PLARF combat skills.

The 2010 Chinese defense white paper asserted that one of the main drivers of greater military spending is greater investments in training and education. If accurate, such spending has led to specialized military education institutions such as the Non-Commissioned Officer (NCO) School of the Second Artillery Force, which has been reported by Chinese media to have trained several thousand NCOs in the last several years.<sup>657</sup> Officers have also enjoyed the benefits of improving military education, as Chinese media has reported that officer's colleges have begun developing warfighting simulators and other training and education equipment based on information-technology.<sup>658</sup>

The Chinese report on *The Diversified Employment of China's Armed Forces*, issued in 2013, explained the PLARF's combat readiness and training expectations as follows,<sup>659</sup>

The PLASAF keeps an appropriate level of readiness in peacetime. It pursues the principles of combining peacetime needs with wartime needs, maintaining vigilance all the time and being ready to fight. It has formed a complete system for combat readiness and set up an integrated, functional, agile and efficient operational duty system to ensure rapid and effective responses to war threats and emergencies.

If China comes under a nuclear threat, the nuclear missile force will act upon the orders of the CMC, go into a higher level of readiness, and get ready for a nuclear counterattack to deter the enemy from using nuclear weapons against China.

If China comes under a nuclear attack, the nuclear missile force of the PLASAF will use nuclear missiles to launch a resolute counterattack either independently or together with the nuclear forces of other services. The conventional missile force is able to shift instantly from peacetime to wartime readiness, and conduct conventional medium- and long-range precision strikes.

The Second Artillery Forces carry out confrontational training of reconnaissance vs. counter-reconnaissance, jamming vs. counter-jamming, and precision strikes vs. protection and counterattack, in complex battlefield environments. They are strengthening safety protection and operational skills training under nuclear, biological and chemical (NBC) threats. Units of different missile types are organized to conduct live-firing launching tasks annually.

This appears to be a continued priority for the PLARF. The Ministry of National Defense reported in 2015 that it had enhanced “on-base, simulated, web-based and realistic training, explores the characteristics and laws of training in complex electromagnetic environments and integrated training of missile bases...[and] has been made in building the ‘Informationized Blue Force’ and battle laboratories.”<sup>660</sup> They continue to report that a cadre of trainers has been composed of academics from the Chinese Academy of Engineering, as well as experienced officers and specialists.

The recruitment of qualified personnel with undergraduate or graduate academic degrees has become a major PLARF imperative. PLA media frequently cite some percentage of personnel in a given unit as undergraduate degree holders, emphasizing a self-reported increase in undergraduate degree holders. In one specific instance, it was claimed that a certain PLARF brigade’s officers were 85% undergraduate degree holders.<sup>661</sup>

The PRC Ministry of Defense website also discussed the PLARF’s operational capabilities and personnel training as follows in 2015:<sup>662</sup>

In terms of training, the Second Artillery Force takes specialized skills as the foundation, focuses on officers and core personnel, centers its attention on systems integration and aims at improving overall operational capabilities. It actively conducts specialized training, integrated training and operational training exercises.

Specialized training mainly involves the study of basic and specialized missile theories, and the training in operating skills of weapons and equipment. Integrated training mainly consists of whole-process coordinated training of all elements within a combat formation. Operational training exercises refer to comprehensive training and exercises by missile brigades and support units in conditions similar to actual combat.

The Second Artillery Force has adopted a rating system for unit training and an accreditation system for personnel at critical posts. It enhances on-base, simulated, web-based and realistic training, explores the characteristics and laws of training in complex electromagnetic environments and integrated training of missile bases, and is conducting R&D of a new generation of web-based simulated training systems. Significant progress has been made in building the "Informationized Blue Force" and battle laboratories.

The Second Artillery Force places personnel training in a strategic position, and gives it high priority. It is working to implement the Shenjian Project for Personnel Training, and create a three-tiered team of first-rate technical personnel. As a result, a contingent of talented people has taken shape, whose main body is composed of academicians of the Chinese Academy of Engineering, missile specialists, commanding officers, and skilled operators and technicians.



## CHAPTER 13: CHINESE SPACE STRATEGY AND DEVELOPMENTS

Competition in space is not a new phenomenon. The Space Race between the Soviet Union and United States was one of the defining aspects of the Cold War era. While astronauts are no longer national celebrities and media coverage has greatly diminished, competition in space remains fierce. The United States, China, Russia, Europe, and numerous others all seek to use outer space in a way that best forwards national interest.

China, in particular, has substantially increased its outer space efforts and capabilities in the post-Cold War era. China's 2015 Defense White Paper refers to space as the "commanding height in international strategic competition",<sup>663</sup> and its commitment to active programs further underlines this strategic development. China already possesses advanced space-based C4ISR capabilities, a growing fleet of modern launch vehicles, the BeiDou satellite navigation program comparable to U.S. GPS, an array of counterspace and ASAT weapons (kinetic-kill, directed-energy, co-orbital, and cyber), and an advanced manned space program.

Developing more advanced programs is a key aspect of China's military modernization efforts. Any assessment of China's goals and program in space must be considered within the broader framework of its other substantial military reforms which all represent a move towards fighting modern "informationized" wars. "Informatization" has been doctrinally enshrined by the PLA since 1993 and arose from PLA strategists after observing what they believed to be paradigm shifting success of U.S. forces during the 1991 Gulf War.<sup>664</sup>

Key aspects of informationized warfare like communications and technological dominance, long-range precision strikes, C4ISR, anti-access anti-denial (A2/AD), and joint force integration are impossible without substantial and varied space capabilities. Thus, China's stated goal of "'major progress' towards informatization by 2020"<sup>665</sup> is reliant on advancing its space capabilities. Consequently, Chinese involvement and subsequent competition in space is unlikely to slow as China moves forward.

Indeed, it has already become a major area of competition between China and the U.S. While outer space has many peaceful uses, the continued competition in space between the United States and China adds a new dimension to their de facto arms race. In fact, some high-level military officials on both sides have stated that the militarization of space is inevitable.<sup>666</sup>

It is also a competition with many uncertainties and risks of further escalation. The relationship between the Soviet Union and the United States during the Cold War Space Race may have been more unstable, but current competition between the U.S. and China has broader military and civil implications. Global space infrastructure has been consistently built up over a long period of time, and substantial destruction would not be quickly repaired. Both the civilian and military world rely substantially more on space assets than during the Cold War. The debris created by even minimal kinetic space conflict has the potential to be devastating—not only for military capabilities like ISR, missile guidance, and operational communication—but also for staples of modern daily life like telecommunications, television, weather tracking, the Internet, GPS, and scientific research.<sup>667</sup>

Additionally, the impact of space militarization and warfare remain a strategic question mark. While space competition is still often seen in terms of nuclear deterrence and strategic stability, space capabilities have gained such outsized importance to modern militaries, that a successful

first strike in space is likely to disproportionately favor the weaker party, particularly if it comes without warning. Furthermore, a first strike could severely inhibit the attacked party's ability to react to any form of asymmetric, conventional, or nuclear attack.

In the case of nuclear forces, deterrence is not the sole reason for the avoidance of nuclear warfighting, but it is a critical one. As long as a war in space can affect the outcome of a major nuclear exchange, and the space capabilities of each side do not have a matching level of deterrence, conflict becomes more likely. Moreover, the lack of an accepted code of international law regarding space conduct further fuels uncertainty for states involved in spacefaring.

As a result, finding ways to mitigate the advantages of a first strike in space and maintain the ability to respond have become key tenets of 21st century deterrence and strategic stability.<sup>668</sup> Many of the future aspects of space competition, conflict, and warfare remain uncertain. However, China has made developing an advanced space program a key priority and space capabilities are a key part of the strategy and function of all branches of the PLA. Consequently, analyzing the organization and capabilities of China's space program, and seeking to assess Chinese motivations and strategy, have become critical aspects to understanding and assessing China's military.

### *Chinese Space Strategy*

In November 2009, the current Vice Chairman of the CMC, General Xu Qiliang, said that space is the "new commanding height for international strategic competition...[and] means having control of the ground, oceans, and the electromagnetic space, which also means having the strategic initiative in one's hands."<sup>669</sup> Once again, China views the space program as paramount in fighting "informationized" wars.

"Informatization" has become somewhat of a catch-all term in Chinese discussions of modern warfare. It is clear, however, that China's defense strategists have drawn on the advanced American military battle management; intelligence, surveillance, and reconnaissance (ISR), stealth, and precision strike capabilities that emerged in the 1990's in the First Gulf War and in the conflict in the Balkans, to develop their own concepts and strategy.

While understanding "informatization" as a key organizing principle of the People's Liberation Army (PLA) is valuable, this makes a more targeted definition important. James Mulvenon provides the following explanation of what the Chinese mean when they talk about information warfare:<sup>670</sup>

Chinese writings clearly suggest that information warfare (IW) is a solely military subject, and as such, they draw inspiration primarily from U.S. military writings. The net result of this "borrowing" is that many PLA authors' definitions of IW and IW concepts sound eerily familiar. For our purposes, therefore, we shall use the definition of information warfare found in Joint Pub 3-13, *Joint Doctrine for Information Operations (IO)*:

Information operations conducted during time of crisis or conflict to achieve or promote specific objectives over a specific adversary or adversaries.

"Information operations" are defined in Joint Pub 3-13.1, *Joint Doctrine for Command and Control Warfare (C2W)* as:

actions taken to achieve information superiority by affecting adversary information, information-based processes, information systems, and computer-based networks, while defending one's own information, information-based processes, information systems, and computer-based networks.

More concretely, the Army in FM-100-6 *Information Operations* defines "information operations" as

continuous military operations within the military environment that enable, enhance, and protect the friendly force's ability to collect, process, and act on information to achieve an advantage across the full range of military operations; information operations include interacting with the global information environment and exploiting or denying an adversary's information and decision capabilities.

The goal of these operations is "information dominance," or

The degree of information superiority that allows the possessor to use information systems and capabilities to achieve an operational advantage in a conflict or to control the situation in operations short of war, while denying those capabilities to the adversary.

By introducing these definitions, I am not precluding that the Chinese may eventually develop an indigenous IW strategy, and there is limited evidence of movement in this direction. Instead, these U.S. definitions provide a baseline by which to judge PLA writings.

This belief that space is the new strategic high ground stems from China's "Space Dream" strategy as explained by President Xi Jinping, when he stated that, "the dream of space flight is an important part of the strong country dream [and] the space dream is an important component of realizing the Chinese people's mighty dream of national rejuvenation."<sup>671</sup> It has become a key element of the strategy that seeks to transform the Chinese military toward one of information superiority under the Local Wars concept.

The US-China Economic and Security Review Commission describes the growing importance of space-based programs in the PLA's strategy as follows:<sup>672</sup>

A robust, space-based C4ISR system is often described as a critical component of a future networked PLA. The necessity to develop space-based C4ISR systems is based on the requirement to develop power-projection and precision-strike capabilities. The development of long-range cruise missiles and anti-ship ballistic missiles for over-the-horizon attacks requires the ability to locate, track, and target enemy ships hundreds of kilometers away from China's shores, as well as the ability to coordinate these operations with units from multiple services. In doing so, remote sensing satellites can provide intelligence on the disposition of enemy forces and provide strategic intelligence before a conflict begins. Communication satellites can provide global connectivity and can facilitate communications between far-flung forces. Navigation and positioning satellites can provide critical information on location and can improve the accuracy of strikes.

In assessing China's space strategy, it is important to note that although various civilian entities are involved in China's the space program, policy is almost entirely controlled by the PLA. China is focusing on expanding its own space-based systems in ways that will enhance its deterrent, missile, and other military capabilities. The Party leadership has also emphasized such activities as long-range missiles and other aerospace programs in its military modernization push along with its support of a major modern space program.

The November 2015 US-China Economic and Security Review Commission report notes that:<sup>673</sup>

Under this nebulous framework, even China's ostensibly civilian projects, such as human spaceflight, directly support the development of PLA space, counterspace, and conventional capabilities. Moreover, although any country's satellites are capable of contributing to its military operations, the PLA during wartime would probably take direct command over all Chinese satellites.

Consequently, it is important that the decision making process regarding China's space program be assessed with the objectives of the PLA and CCP in mind.

## Value of Space Program for Global and Internal Legitimacy

A modern and expansive civil space program remains a totem of international prestige. In many ways the U.S. still draws upon its accomplishments during the Cold War competition in space. However, manned space travel has lost some of its appeal for the United States and Russia. This is reflected in the ongoing five-year U.S. gap in manned spaceflight following the retirement of the Space Shuttle and consistent NASA budget shortages.<sup>674</sup>

However, a manned space program remains a key goal for a rising power like China. On March 15, 2003, China became only the third country to independently launch a manned mission into space when its Shenzhou 5 successfully put taikonaut<sup>675</sup> Yang Liwei into orbit for over 20 hours.<sup>676</sup> China has since continued its manned space program and launched an additional nine taikonauts into space through its Shenzhou program.<sup>677</sup> China has traditionally relied on its manned Shenzhou spacecraft, capsule-based vehicles. It would also appear that China is in the test-flight stages of a new Shenlong space plane, a drone that is similar to, though less capable than, the U.S.' X-37B.<sup>678</sup>

Early in 2012 the PRC achieved its first manned space docking at its space lab Tiangong-1. On September 15, 2016 China successfully launched its second space lab, Tiangong-2, into orbit.<sup>679</sup> Tiangong-2 will operate until China can achieve its stated goal of building a 60-ton space station for future missions by the year 2020. In 2013, China conducted the first "soft landing" on the moon since 1976 when it landed the Yutu rover. Additionally, China has and plans to launch a Mars rover in 2020.<sup>680</sup>

A 2014 report by James A. Lewis of the CSIS notes the importance that China now places on the technological prowess of its space program for the purpose of international prestige.<sup>681</sup>

Manned spaceflight demonstrates to China's neighbors the seriousness of China's claim to regional leadership and makes the point that under the party's leadership, China has arrived as a world leader. The manned space capsule Shenzhou 6 carried seeds from Taiwan in a symbolic assertion of China's sovereignty over the island. China sees its space programs as a strategic activity to gain political and military advantage, but the primary purpose of China's manned space program is political. For China, it is especially important to show that it has reclaimed its place among the leading nations of the world. China's successes in space reinforce its claims to regional dominance by demonstrating that it is the most advanced among Asian nations, with technology and resources that others cannot match.

Furthermore, as with all things related to China, prestige for the state cannot be separated from prestige for the Chinese Communist Party (CCP). The Party views a successful space program as another way in which it can emphasize its legitimacy not only abroad but also domestically. Kevin Pollpeter notes in his March 2015 report that:<sup>682</sup>

The space program's effect on prestige is also directed inward. The Chinese Communist Party (CCP) is now communist in name only, and its continued legitimacy is predicated on delivering economic and nationalistic benefits in an informal social contract with its citizens: the CCP agrees to increase the standard of living and develop China into an internationally respected country, and the people agree not to rebel. By developing a robust space program and participating in high-profile activities such as human space flight and lunar exploration, the CCP can demonstrate that it is the best provider of material benefits to the Chinese people and the best organization to propel China to its rightful place in world affairs.

James A. Lewis further states that:<sup>683</sup>

The manned space program also serves an important domestic political purpose by enhancing the legitimacy of the Communist Party.

China's leaders need and use manned spaceflight in a way that other nations do not, to reinforce the political legitimacy of the part and show the Chinese people the progress the party is making in restoring China's global position. This ensure that China's space program has greater political support by national leaders than is the case in other countries. President Xi's attention to and support of the Chinese manned program is unlikely to diminish because it forms a useful counternarrative for the image of the party, which has been injured by widespread corruption and public policy failures in environment, urban planning, and transportation.

Utilizing space — or any technological achievement — for international prestige is far from unique to China. Indeed, the U.S.-Soviet Union Space Race was tied closely to the broader race for prestige and influence that shaped the Cold War. However, the fashion in which the CCP now relies on technology and modernization for both strategic influence and domestic legitimacy has made it more important to China than other spacefaring nations like the United States, Japan or India.

### **Regional Power Projection**

Space also plays an important role in Chinese regional power projection, and Chinese power projection would be severely limited without the advances in its space program. Walter C. Ladwig of King's College London identifies nine elements of national power projection, splitting them between soft and hard power. On the soft power side, he includes securing sea lanes of communication, non-combatant evacuation operations, humanitarian relief, and peacekeeping. For hard power projection Ladwig adds showing the flag, compellence and deterrence, punishment, armed intervention, and conquest.<sup>684</sup>

While these are not all perfectly applicable to China, many fit well and are augmented by China's strong space capabilities. In terms of soft power, China has utilized its space-based capabilities often to project power. China has repeatedly deployed its various satellites to handle evacuations and disaster and humanitarian relief. The November 2015 US-China Economic and Security Review Commission report notes:<sup>685</sup>

According to Beijing, the Gaofen-1 “has been used in land resource investigation, mineral resource management, atmospheric and water environment quality monitoring, and natural disaster emergency response and monitoring,” and its imagery has supported “tens of national ministries and agencies, local governments, research institutions, universities, enterprises and organizations in China.” China also employed the Gaofen-1 to assist in the search for missing Malaysian airliner MH370 in 2014, demonstrating its ability to conduct broad maritime surveillance that could be useful for the PLA.

Furthermore, China has worked hard to secure sea lanes of communications not only in its backyard but abroad—as exemplified by its involvement in counter-piracy efforts in the Gulf of Aden. Monitoring and coordinating maritime operations is increasingly reliant on space-based C4ISR. In the contested areas of South and East China Seas, Beijing has greatly increased satellite involvement.

Kevin Pollpeter notes:<sup>686</sup>

“Although Haiyang satellites are ostensibly used to monitor the ocean environment, a Chinese official has stated that the satellites can be used to monitor the disputed Senkaku/Diaoyu islands and Scarborough Shoal/Huangyan Island.”

China's increased use of space-based capabilities on disputed maritime territories is an exhibition of its use of hard power in showing the flag. The technologically advanced PLAN continues to sail through Japanese waters near the Senkaku islands and blockade the Philippines from Scarborough Shoal, with the goal of projecting Chinese power.<sup>687</sup>

China has also used its array of space-based C4ISR capabilities to support its maritime militia made up of fisherman. China relies on this maritime militia to aggressively assert and protect its maritime claims. Simon Denyer notes an example of the space-dependent technology that the Chinese government has provided this militia in an April 2016 *Washington Post* article:<sup>688</sup>

Here, in the fishing port of Tanmen in the southern island of Hainan, 50-year-old captain Chen Yuguo was in the wheelhouse of his trawler last week, carrying out minor repairs after a six-week fishing trip to the disputed Spratly Islands.

A portrait of “Comrade” Mao Zedong hung in a place of honor behind him, alongside an expensive satellite navigation system supplied by the Chinese government. Chen said catches are much better in the Spratlys than in China’s depleted inshore waters, but the captain said he is also fulfilling his patriotic duty.

“It is our water,” he said, “but if we don’t fish there, how can we claim it is our territory?”

... The government is also pushing the fishermen further from shore. It provides fuel subsidies, with higher rates for bigger boats and journeys to the Spratlys. The Hainan government heavily subsidizes the construction of larger, steel-hulled trawlers, and an expensive satellite system was provided virtually free of charge to about 50,000 vessels.

China also relies heavily on space-based capabilities for both its nuclear and conventional missile targeting and compellence and deterrence. China has the world’s widest array of conventional missiles and a growing nuclear arsenal—including the recent MIRVing of its DF-5B ICBM. China sees its missile capability as a key for deterrence and thus for power projection.

At the tactical and local levels, space provides critical support to China’s ability to use Ladwig’s final three hard power elements of power projection—punishment, armed intervention, and conquest. For China, this means successfully being able to wage “informationized” war in the form of advance battle management and IS&R systems in joint war farce ranging from close-in battle to deep strikes and large-scale maneuver warfare.

### **Anti-Access/Area Denial (A2/AD)**

Implementing an anti-access (A2)/area-denial (AD) strategy is another key aspect of China’s focus on the “informationization” of warfare, and expanding its influence and warfighting capability in the Pacific and on regional level. While the Chinese do not refer such military capabilities as A2/AD, it is clear that this is a strategy to which their efforts are directed. A2/AD is essentially conventional counterforce targeting combined with restricting enemy access to a certain strategic location, thus ensuring that the opposition must engage from a further distance than optimal.

China’s A2/AD programs rely on a mix of space-based systems including C4ISR and SATNAV (BeiDou) capabilities. China is relying on land and sea launch capabilities as well as sea-based systems that utilize “Long View” space support ships to perform tasks like monitoring and tracking space vehicles – such as spacecraft, missiles, and rockets – while also coordinating and communicating with ground-based assets. This system can increase space operations and situational awareness while also providing potential military applications.

China’s focus on A2/AD stems from the internal assessment that their mostly likely warfighting scenario would center on Taiwan or their various maritime territorial claims. Given the potential for U.S. intervention—the only military force capable of matching China—the PLA believes it is of paramount importance to be able to deny and restrict US access to the battlefield. While the United States does have a substantial presence in the Asia-Pacific—in Japan, South Korea, Guam, amongst others—it is feasible that the China could effectively implement A2/AD. Especially considering the proximity of Taiwan and the various claimed islands to China’s coastline.

Yet, actual A2/AD operations are extremely complicated. They require an advanced infrastructure across space, land, and sea, paired with either extensive large-scale combat experience or very demanding and realistic large-scale exercises. In assessing China's capabilities for A2/AD warfare, the 2016 edition of the U.S. Department of Defense report on Chinese military power addresses eight different aspects: information operations, cyber operations, long-range precision strike, ballistic missile defense (BMD), surface and undersea operations, space and counterspace, Integrated Air Defense System (IADS), and air operations.<sup>689</sup>

Nearly all of these are reliant on space capabilities in some fashion. As largely a counterforce strategy, A2/AD relies substantially on precise tracking and intelligence information. China needs to be able to locate and target, at long ranges, enemy aircraft carriers, ships, planes, submarines, and missiles all throughout the Pacific Ocean. This cannot be done without space-based assets. Both missile targeting and missile defense rely substantially on information only space satellites can provide.

One example of the importance of space for the success of China's A2/AD strategy is the land-based DF-21D anti-ship ballistic missile (ASBM). The DF-21D is the first anti-ship missile of its kind and presents a real threat United States naval capabilities in the Pacific. Andrew S. Erickson notes:<sup>690</sup>

The ASBM poses a direct threat to the foundations of U.S. power projection in the Asia-Pacific, potentially undermining U.S. influence there.

While U.S. airbases around China already are vulnerable to Chinese ballistic and cruise missiles, the ASBM targets the last relatively uncontested airfield without requiring China to develop the naval resources necessary to challenge the U.S. Navy directly at sea. For the first time since the 1920s, the United States faces a direct threat to a platform that has represented the core of its naval power projection: the aircraft carrier strike group. U.S. policymakers must face the possibility that Beijing might decide to use ASBMs in the event of conflict, and that the PLA might be able to strike and disable one or more aircraft carriers if countermeasures proved inadequate.

While the DF-21D offers China an unprecedented boost in implementing A2/AD, Erickson warns that despite numerous successful tests of the "hardware" the "software" C4ISR component is not yet reliable.

Other limits to China's space-based capability are highlighted in by a July 2016 report from the RAND Corporation that wargames a potential China-U.S. conflict. In putting together potential war scenarios, RAND considers what the conflict would look like in both 2015 and 2025. The conclusion is that China needs time to focus on the kind of substantial technological advancements that could make a war in 2025 very different conflict from a conflict in 2015. RAND notes:<sup>691</sup>

The current rate of advances in military technology, especially in Chinese A2AD and in cyberwar and ASAT capabilities of both sides, implies a potential for major change in the decade to come, which dictates examining 2025 cases distinct from 2015 cases.

As of 2015, U.S. losses of surface naval and air forces, including disabled aircraft carriers and regional air bases, could be significant, but Chinese losses, including to homeland-based A2AD systems, would be much greater. Within days, it would be apparent to both sides that the early gap in losses favoring the United States would widen if fighting continued. By 2025, though, U.S. losses would increase because of enhanced Chinese A2AD. This, in turn, could limit Chinese losses, though these would still be greater than U.S. ones. It could be unclear then whether continued fighting would result in victory for either side.

ASAT capabilities are critical because the denial of information to the opponent is another key aspect of China's A2/AD strategy. If China is to counter the current dominance of the United States in space-based C4ISR, it must focus intently on ASAT capabilities to insure battlefield

information dominance. A major future war in the Asia-Pacific might well involve Chinese ASAT attacks on US space capabilities through kinetic or cyberattacks, and avoiding this is equally critical to any US effort to implement effective A2/AD.

### **Anti-Access/Area Denial Sea-based Space Programs**

In a conflict, ship-based C4ISR capabilities could have advantages over ground-based installations. Again, Andrew S. Erickson provides a history and more in-depth description of the Chinese program. It began in 1965 with Premier Zhou Enlai and was further developed in the 1970s under Project 718. In order to support Chinese ICBM sea tests, the Yuanwang program was initiated, though it was delayed by subsequent political events. It was jointly designed and developed by the Seventh Academy of the Sixth Ministry of Machine Building, the Seventh Ministry of Machine Building, and the Commission of Science and Technology for National Defense's concept-study team.<sup>692</sup>

Design and development of the Yuanwang started in 1974, with construction from 1975 and the first ships ready for trials in the late 1970s. Though six were originally built, only three are in operation today. It appears that the Yuanwang-class ship was first used in 1980 to retrieve the instrument package from China's first successful DF-5/CSS-4 ICBM test – showing that the ships were able to successfully track missiles from the sea. The ships were further deployed in support of civilian and military space launches and tracking of space operations, including communications satellites, ballistic missile tests, and manned spacecraft (the Shenzhou). The fleet complements the PRC's two Tianlian data-relay satellites and many ground stations, facilitating communication between satellites and these stations.<sup>693</sup>

The Yuanwang fleet was technologically upgraded starting in the 1980s; for example, the ships were initially able to track almost 25,000 miles above Earth, later increasing to almost 250,000 miles. Better radars improved the communication and tracking systems; most of the ships in the fleet have C- and S-band monopulse tracking radar, velocimetry systems, cinetheodolite laser ranging and tracking systems, computers, and navigation and positioning approaches. A variety of communications systems can secure data transfer, and the ships can operate in any maritime environment except polar areas. The ships could be used to detect and track foreign satellites and provide support to any PRC attempt to threaten them.<sup>694</sup>

While a ship-based tracking system has advantages such as flexibility, there are also disadvantages – it is expensive to operate and maintain, and during longer missions the lack of necessary engineers and equipment could make repairs difficult. Deploying such critical systems overseas makes them vulnerable targets, and any signals interference – or PRC supporting vessels – could affect their operation. Their sea-based nature also makes advanced communications connectivity difficult, especially during bad weather. There are still technological issues, such as calibration and stabilization that frustrate the ships' operations.<sup>695</sup>

As of mid-2008, the fleet had “completed 68 maritime space-tracking missions, sailed more than 1.4 million nautical miles safely, and performed more than 7,600 days of operations at sea.... During 2011-12, Yuanwang ships 3, 5, and 6 completed a cumulative 120,000-nautical-mile, 539-day trip to provide space-tracking and control support for the docking of the Tiangong-1 space-lab module and Shenzhou-8 spacecraft.” There have also been reports that a seventh ship was under construction; in 2006 the chief engineer of Yuanwang 6 noted that another boat was in the pre-research stages and could potentially be used in deep-space exploration missions. There has also



been significant research on ship-based multi-target simulators to track and control satellite launches or missiles, which the PLA sees as a key capability.

The Yuanwang could also provide support to PRC development of ground-based laser and kinetic anti-satellite capabilities. Overall, Andrew S. Erickson notes:<sup>696</sup>

In reapplying indispensable positioning information and controlling space assets overseas, the *Yuanwang* fleet represents a vital node in China's aerospace infrastructure. The construction and proliferation of these ships over the past four decades underscores their importance and utility to the country's space and military operations. Space-tracking vessels have successfully participated in full-range ICBM tests, submarine-to-shore guided-missile underwater-launch tests, communications-satellite launches, manned and unmanned space-vehicle launches, and an Antarctic visit. They have played a significant role in the development and testing of technologies and weapons.... Chinese research literature also points to a larger role for space TT&C ships as the nation's space operations continue to expand.

### **Anti-Access/Area Denial Land-based Space Programs**

China also has a broad range of land-based stations that enhance its space warfare capabilities in ways that can threaten or attack US power projection capabilities. A 2012 report notes that:<sup>697</sup>

China has three satellite launch centers and stations: Jiuquan (also known as Base 20 and Dongfeng Space City), Xichang (Base 27), and Taiyuan (Base 25). The country is currently constructing a station in Wenchang (also known as Wenchang Space City and Wenchang Satellite Launch Center), which should be operational in 2013. Additionally, it has two control facilities: An Aerospace Command and Control Center in Xi'an (also known as Base 26). The Aerospace Telemetry Oceanic Ship Base is a crucial ground station, as it tracks *Yuanwang* data on both commercial satellites and spacecraft. Established in 1978 in Jiangyin, Jiangsu Province, the base sends the ships it operates primarily to the Pacific and Indian Oceans. China operates three integrated land-based space-monitoring and control network stations in Kashi, Jiamusi, and Sanya....

China has overseas tracking stations in Karachi, Pakistan; Malindi, Kenya; and Swakopmund, Namibia. The Malindi station, in an Indian Ocean coastal town, became operational in July 2005 to support the *Shenzhou 6* mission. In Swakopmund, the station works in conjunction with *Yuanwang 3* to provide telemetry, tracking and command (TT&C) support during *Shenzhou* spacecraft landings. China also had a ground station in Tarawa, Kiribati; but it was dismantled in 2003 after Kiribati recognized Taiwan. Beijing plans to construct three ground-control stations in South America by 2016 for deep-space network support. Additionally, China reportedly shares space-tracking facilities with France, Sweden, and Australia.

### ***Space Capabilities and Developments***

China's growing space capabilities translate into military capabilities that affect all aspects of conventional and nuclear targeting, ground-air-sea operations, precision conventional strike capacities, and missile defense. China is also using its intelligence collection efforts to improve technological capacity.

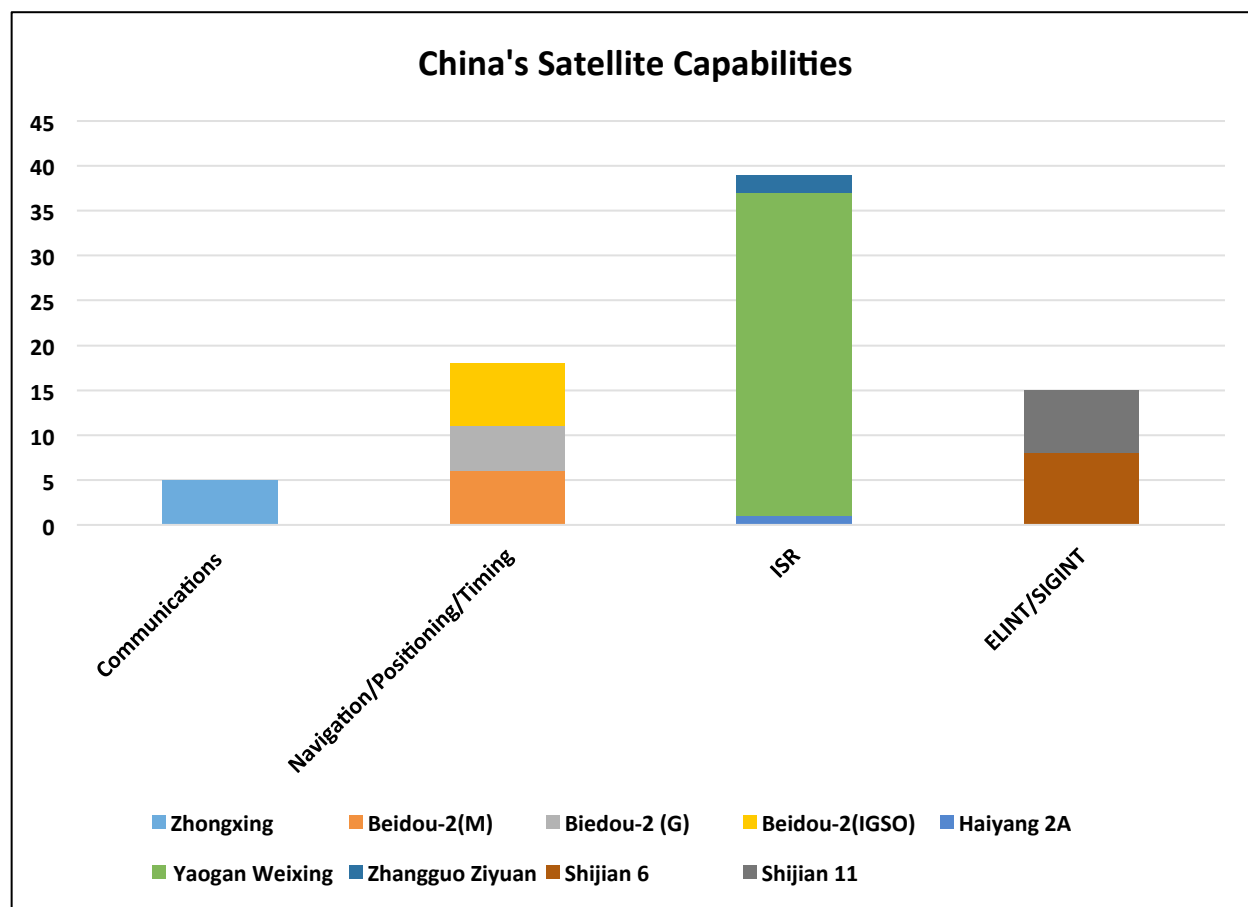
Chinese companies are also looking at increasing domestic development and production through the acquisition of parts manufacturers, leasing businesses, cargo airlines, materials producers, and airport operators. However, many of these Chinese companies that are pursuing joint ventures and technical cooperation agreements alongside acquisitions have deep ties to the military, raising issues for American regulators:<sup>698</sup>

The main contractor for the country's air force, the state-owned China Aviation Industry Corporation, known as AVIC, has set up a private equity fund to purchase companies with so-called dual-use technology that has civilian and military applications, with the goal of investing as much as \$3 billion. In 2010, AVIC acquired the overseas licensing rights for small aircraft made by Epic Aircraft of Bend, Ore., using lightweight yet strong carbon-fiber composites — the same material used for high-performance fighter jets.

Provincial and local government agencies in Shaanxi Province, a hub of Chinese military aircraft testing and production, have set up another fund of similar size for acquisitions. Last month, a consortium of Chinese investors, including the Shaanxi fund, struck a \$4.23 billion deal with the American International Group to buy 80 percent of the International Lease Finance Corporation, which owns the world's second-largest passenger jet fleet.

Indeed, even China's ostensibly peaceful space developments like the BeiDou SATNAV system, manned space missions, and launch vehicles should be viewed, at minimum, as dual-use capabilities that the PLA will utilize if needed.

**Figure 13.1: China's Active Satellite Capability**



Source: Source: IISS *Military Balance*, 2016. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

### Space-based C4ISR

Chinese military journals, defense white papers, and scholarly articles all focus on the concept of “information dominance” on the battlefield.<sup>699</sup> In order to achieve this goal, China has invested substantial time and resources into developing an advanced C4ISR capability on the ground and in the space. **Figure 13.1** depicts that the majority of China's satellites are related to ISR. To achieve a C4ISR system truly capable of achieving information dominance, a vast space-based component is a necessity. The 2016 DoD report on China notes China's deep commitment to C4ISR development:<sup>700</sup>

The PLA views technological improvements to C4I systems as essential to improve the speed and effectiveness of decision-making while providing secure and reliable communications to fixed and mobile command posts. The PLA is fielding advanced automated command systems like the Integrated Command Platform (ICP) to units at lower echelons across the force. The adoption of the ICP enables multi-service communications necessary for joint operations. These C4I advancements are expected to shorten the command process. The new technologies introduced into the PLA enable information-sharing—intelligence, battlefield information, logistical information, and weather reports—on robust and redundant communications networks, to improve commanders' situational awareness. In particular, the transmission of ISR data in near real-time to commanders in the field could facilitate the commanders' decision-making processes and make operations more efficient.

These technical improvements have greatly enhanced the PLA's flexibility and responsiveness. "Informationized" operations no longer require in-person meetings for command decision-making or labor-intensive processes for execution. Commanders can issue orders to multiple units at the same time while on the move, and units can rapidly adjust their actions through the use of digital databases and command automation tools. The PLA also seeks to improve its C4I capabilities by reforming its joint command institutions at the national and regional levels.

The 2015 DoD report on Chinese military power provides further details about China's C4ISR developments.<sup>701</sup>

China possesses the most rapidly maturing space program in the world and is using its on-orbit and ground-based assets to support its national civil, economic, political, and military goals and objectives. China has invested in advanced space capabilities, with particular emphasis on satellite communication (SATCOM), intelligence, surveillance, and reconnaissance (ISR), satellite navigation (SATNAV), and meteorology, as well as manned, unmanned, and interplanetary space exploration. In addition to its on-orbit assets, China's space program has built a vast ground infrastructure supporting spacecraft and space launch vehicle (SLV) manufacture, launch, C2, and data downlink.

By the end of October 2014, China had launched 16 spacecraft, either domestically or via a commercial space launch provider. These spacecraft mostly expanded China's SATCOM and ISR capabilities, while a few others tested new space technologies. Noteworthy 2014 accomplishments for China's space program include:

**First Sub-Meter Resolution Imager:** Following its launch in August, the Gaofen-2 became China's first satellite capable of sub-meter resolution imaging. China reportedly plans to use the satellite for a variety of purposes, including the sale of commercial imagery.

**Lunar Sample-Return Technology Test:** In late October, China launched the Chang'e-5 test spacecraft. This mission will test technologies related to retrieving and returning a lunar sample to Earth. China plans to launch the actual Chang'e-5 Lunar Sample Return mission in 2017.

**Fourth Space Launch Center Complete:** China completed construction of the Wenchang Space Launch Center (SLC) on Hainan Island in 2014 and plans to begin launching its next-generation Long March-5 and Long March-7 SLVs from the facility no later than 2016.

The practical implications are massive for China's development of C4ISR capabilities. Nearly all of China's strategic goals and military plans rely on information dominance, or at least denying the opposition information dominance. As previously noted, China believes success in a Taiwan Strait crisis or war with the United States in the Pacific will rely on the ability to implement an anti-access anti-denial (A2/AD) strategy. The key components of A2/AD—long-range precision strikes, theater ballistic missile defense, information dominance, and conventional counterforce tracking—are impossible without extremely advanced C4ISR.

Andrew S. Erickson notes in his report assessing China's DF-21D anti-ship ballistic missile—which is seen as a game changer for China in being able to implement a successful A2/AD strategy -- that:<sup>702</sup>

The supporting command, control, communications, computers, intelligence, surveillance and reconnaissance (C4ISR) technologies probably still lag behind the requirement to identify and track a U.S. aircraft carrier in real time under wartime conditions. Improving C4ISR capabilities, however, is a high priority in China's military modernization program. U.S. countermeasures are another matter entirely: there is every reason to believe that they are already formidable.

Furthermore, advanced C4ISR capabilities could lead China to changing its nuclear posture for no first use to launch on warning. Plus, advanced intelligence capabilities are important for China to monitor and protect its increasingly threatened maritime claims in the South and East China seas.

The November 2015 US-China Economic and Security Review Commission provides detailed insight into the space-based infrastructure that China is developing to establish an advanced C4ISR capability.<sup>703</sup>

China is fielding sophisticated satellites that feature electro-optical (EO), synthetic aperture radar (SAR), and electronic reconnaissance (ELINT) sensors. EO sensors passively detect light images of maritime and ground-based targets. Although EO sensors can achieve the highest resolution of these types, they are adversely affected by poor weather conditions and cannot image at night. SAR sensors use a microwave transmission to create images of maritime and ground-based targets. They tend to have lower resolution than EO sensors but can image during night or day and in all weather conditions. ELINT sensors detect electronic signal emissions and then determine emitter locations. Combining these varying capabilities is crucial for locating and tracking a moving target. A study by authors affiliated with the PLA Navy Aerospace Engineering Academy illustrates the importance of integrating the information obtained from ISR satellites for long-range antiship ballistic missile (ASBM) strikes:

*During the process of planning [to use] the firepower of an ASBM, [there is a need] for obtaining reliable target intelligence information for guiding the missile attack. This could be achieved by integrating EO imaging satellites, SAR imaging satellites, ELINT satellites, naval ocean surveillance satellites, mapping resource satellites, and highly accurate commercial remote sensing satellite imagery, which could be purchased on the international market. Through the integration of the data obtained via a number of different satellites, and with the addition of processing and data fusion, [one could] guarantee missile guidance requirements for all types of target information for a long range ASBM strike.*

China's major military-relevant ISR satellites are the Yaogan, Shijian, Gaofen, and Haiyang, each of which is examined in detail in the following paragraphs. China also has a large number of imaging and remote sensing satellites that are owned and operated by civilian or commercial entities. Given the PLA's central role in the development, launch, and operations of all of China's satellites, these civilian and commercial satellites likely contribute to the PLA's C4ISR efforts whenever it is technically and logistically feasible for them to be so utilized, and they would probably be directly subordinate to the PLA during a crisis or conflict.

#### *Yaogan Satellites*

The Yaogan series of satellites, the first of which was launched in 2006, serves as the core component of China's maritime ISR architecture. Chinese state-run press claims the satellites are used to conduct scientific experiments and carry out land surveys, among other functions. Because the series is owned and operated by the PLA, however, it likely is used primarily for broad area maritime surveillance in support of the PLA's efforts to detect, track, and target foreign ships, such as U.S. carrier strike groups. China to date has launched 37 Yaogan satellites, including EO, SAR, and ELINT variants.

#### *Shijian Satellites*

China's Shijian series of satellites, the first of which was launched in 1971, is owned and operated by China's Academy of Space Technology. The Shijian satellites have a variety of configurations and missions. Although some have been used for strictly civilian purposes, such as crop breeding, many appear to be military ISR satellites based on their suspected payloads, their orbital characteristics, and the secrecy surrounding their launches. Some Shijian satellites likely feature ELINT sensors used by the PLA for broad area maritime surveillance. Others probably are equipped with infrared sensors to detect ballistic missile

launches in support of a future early warning system.<sup>127</sup> According to Mr. Pollpeter, the development of such a system could indicate a change in China's nuclear posture:

*The deployment of a space-based ballistic missile early warning system may also signal a change in China's nuclear doctrine from "no first use" to "launch on warning." China's current nuclear force doctrine relies on retaliating only after a nuclear first strike from an opponent. A "launch on warning" system would make China's nuclear force more survivable since China would have warning that an attack is imminent, but would also present the possibility for false warnings, which could be catastrophically destabilizing during a conventional conflict.<sup>1</sup>*

#### *Gaofen Satellites*

The Gaofen series of EO/SAR satellites, the first of which was launched in 2013, features China's first high-definition satellite and first satellite capable of sub-meter resolution; the series also incorporates several design innovations. According to Beijing, the Gaofen-1 "has been used in land resource investigation, mineral resource management, atmospheric and water environment quality monitoring, and natural disaster emergency response and monitoring," and its imagery has supported "tens of national ministries and agencies, local governments, research institutions, universities, enterprises and organizations in China." China also employed the Gaofen-1 to assist in the search for missing Malaysian airliner MH370 in 2014, demonstrating its ability to conduct broad maritime surveillance that could be useful for the PLA. China launched the second Gaofen in 2014 and two more in 2015, and is expected to launch as many as four more by 2016.

#### *Haiyang Satellites*

The Haiyang series of satellites, the first of which was launched in 2002, is owned and operated by the State Oceanic Administration. The series primarily supports China's civilian and scientific organizations involved in monitoring the characteristics of the ocean environment, including pollution, topography, wind fields, surface temperatures, and currents. The fact that the State Oceanographic Administration oversees China's maritime law enforcement organizations, however, suggests these satellites also play a role in monitoring and enforcing China's maritime claims in the East and South China seas. Indeed, in 2012 a Chinese official said future Haiyang satellites will be used to monitor the disputed Senkaku Islands and Scarborough Reef. To date, China has launched three Haiyang satellites (two of which are operational) and plans to launch five more by 2020.

### **BeiDou Navigation Satellite System**

The BeiDou satellite positioning, navigation, and timing system has been in development and regional use since 2000, and is meant to be China's alternative to dependence on the U.S. government owned Global Positioning System (GPS) technology. The second generation version has been operational in the region since 2012 and is planned to be available globally by 2020. The system will "enable subscribers outside of China to purchase receivers and services that give civilian and military applications greater redundancy and independence in a conflict scenario that employs space assets."<sup>704</sup>

The BeiDou system is an example of the overlapping military-civilian nature of China's space programs. On one hand, it is an impressive technological feat with innumerable potential commercial purposes. On the other, it is a recognition that if China were to be engaged in a war it is likely to be with Western countries or Western-backed states in the region. Consequently, it is necessary that China have an alternative to U.S. government operated GPS. Currently, GPS holds a 95% market share in China.<sup>705</sup>

The 2015 DoD report continued to explain space launch trends and provided a graph depicting the new satellites launched each year since 2010, seen in **Figure 13.3**:<sup>706</sup>

Over the last five years, the number of Chinese space launches and satellites placed on orbit has remained relatively consistent, with China typically launching 15-20 SLVs, and placing 17-25 satellites on orbit each year (See Figure 1). Two noteworthy trends in China's space launches since 2010 have been the increase in remote sensing/earth resource satellites and the decline in launches of navigation satellites.

Since 2010, the number of Chinese remote sensing and earth resources satellites launched as a percentage of total launches has increased. Satellites in this category accounted for more than one half of the satellites China launched during the last two years, suggesting China places a great deal of priority on launch of its remote sensing satellites.

China launched 13 Beidou navigation satellites between 2010 and 2012, but did not launch any in 2013 or 2014. Although this may seem unusual, this drop-off of navigation satellite launches was expected. By the end of 2012, China had completed launches of the “regional phase” of its Beidou-2 satellite navigation project and reportedly began testing of the system in 2013. According to China’s Satellite Navigation Office, China will resume launching navigation satellites for its worldwide satellite navigation constellation in 2015 and hopes to complete it as early as 2017.

Kevin Pollpeter adds in a March 2015 report that BeiDou is being implemented in a three-part process and **Figure 13.2** depicts BeiDou satellite launches:<sup>707</sup>

Beidou is China’s satellite navigation system and is intended to reduce China’s reliance on the U.S. Global Positioning System (GPS). Similar to the human spaceflight, lunar exploration, and earth remote sensing programs, Beidou is one of China’s 16 mega-projects under the Medium and Long-term Plan for Science and Technology Development. China is spending significant sums on Beidou and plans to spend between \$6 billion to \$8 billion on the development of Beidou technologies to 2020. Like GPS, Beidou is fundamentally a military-run program with civilian applications. Beidou’s architecture, however, differs substantially from GPS in terms of technology, number of satellites, and performance.

Like other programs, China’s Beidou navigation satellite program has followed a three-step development plan. This plan has produced two generations of the system (Table 8). In Step 1, the program launched an experimental regional system, Beidou-1, in 2000 that became operational in 2003. Beidou-1 uses an active system called radio determination satellite service (RDSS). This system comprised two satellites in geostationary orbit, a backup satellite, at least one ground station, and customer receiver/transmitters that communicated with each other. These receivers both pick up the satellite signal and send a signal back to the satellites, which then forward it to the ground station. The ground station then calculates the position of the receiver and communicates this data to the receiver. Beidou-1 could achieve accuracies of up to 20 meters. It also supports a short message service for messages of up to 120 characters.

In Step 2, development of the more advanced Beidou-2 system was initiated in 2007 and began operating on a regional basis in 2012. Beidou currently provides regional coverage with 16 satellites using the same active system used by Beidou-1. This system uses an open code that provides accuracies of 10 meters or better, depending on the location, and a restricted military service that could provide better accuracies. GPS, on the other hand, uses as few as 24 satellites to provide positioning accuracies of just several meters. Chinese officials, however, claim that with the optimized positioning of Beidou satellites over China and the construction of thousands of differential ground stations, Beidou’s accuracy will be boosted to one meter and possibly even centimeters. This is in comparison to a GPS accuracy of three to five meters in China. Currently, maritime users can receive accuracies of three centimeters, and with the introduction of a recently developed Beidou receiver chip, other users can receive accuracies of 2.5 meters.

In Step 3, Beidou-2 will expand to provide a global service by 2020, with 35 satellites using a passive system similar to the one used by GPS. Like its predecessor, Beidou-2 also provides a short message service that allows communication between Beidou receivers.

The November 2015 report by the US-China Economic and Security Review Commission adds depth on both the historical impetus for BeiDou and the PLA’s early utilization of the system:<sup>708</sup>

Although Beidou has a wide and growing range of civilian applications that will benefit China’s economic development, China developed its indigenous PNT system primarily for military purposes. Prior to the deployment of Beidou, most PLA units used GPS for positioning and maneuver and most PLA precision weapon systems used GPS for guidance. The PLA has considered this dependence on a foreign PNT system to be a strategic vulnerability since at least the mid-1980s. These fears were exacerbated during the 1995–1996 Taiwan Strait Crisis. According to a retired PLA general, the PLA concluded that an unexpected disruption to GPS caused the PLA to lose track of some of the ballistic missiles it fired into the Taiwan Strait during the crisis. He then said that “it was a great shame for the PLA . . . an unforgettable humiliation.

That's how we made up our mind to develop our own global [satellite] navigation and positioning system, no matter how huge the cost. Beidou is a must for us. We learned it the hard way.''

The PLA in the early 2000s began to gradually incorporate Beidou into its ground, air, and naval forces, and by the late 2000s tracking, and secure communications. Public information about China's incorporation of Beidou into its weapons systems is scarce, but China almost certainly is equipping its ballistic and cruise missiles to operate with both GPS and Beidou. If this is true, PLA operators could switch to Beidou to guide a missile to its target if GPS were (1) denied by the United States during a conflict or (2) deemed unusable by PLA commanders due to operational security concerns. Additionally, the availability of Beidou would allow China to attack an adversary's access to GPS without disrupting the PLA's own capabilities.

The 2016 DoD report on Chinese military power notes more recent BeiDou launches and ongoing work before the systems' targeted completion in 2020:<sup>709</sup>

China's Beidou SATNAV constellation began the next step of its construction in 2015 with the launch of the Beidou II-S, an inclined geosynchronous orbit (IGSO) satellite, on March 30. In 2015, China launched two more medium Earth orbit satellites and two more IGSO satellite. This phase of the project plans to extend the Beidou network beyond its current regional focus to provide global coverage by 2020.

**Figure 13.2: China's BeiDou Satellite Launches**

Spacecraft	Launch Year	Comments
Beidou-1A	2000	NA
Beidou-1B	2000	NA
Beidou-1C	2003	NA
Beidou-1D	2007	NA
Beidou-2 Compass-M1	2007	Test satellite/Atomic clock malfunction
Beidou-2 Compass-G2	2009	Drifting
Beidou-2 Compass-G1	2010	GEO
Beidou-2 Compass-G3	2010	GEO
Beidou-2 Compass-IGSO1	2010	Inclined GEO
Beidou-2 Compass-G4	2010	GEO
Beidou-2 Compass-IGSO2	2010	Inclined GEO
Beidou-2 Compass-IGSO3	2011	Inclined GEO
Beidou-2 Compass-IGSO4	2011	Inclined GEO
Beidou-2 Compass-IGSO5	2011	Inclined GEO
Beidou-2 Compass-G5	2012	GEO
Beidou-2 Compass-M3	2012	MEO
Beidou-2 Compass-M4	2012	MEO
Beidou-2 Compass-M5	2012	MEO
Beidou-2 Compass-M6	2012	MEO
Beidou-2 Compass-G6	2012	GEO

Source: Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States*, US-China Economic and Security Review Commission, March 2, 2015, p.74.

Note: Figure 13.2 does not include the BeiDou satellite launches that occurred in 2015.



## Manned Spaceflight

In 2003, China established itself as the third country to independently launch a human into space with Shenzhou 5 and astronaut Yang Liwei. China has subsequently launched four more manned missions and established one of the world's most advanced space programs. The 2016 China IHS report provides detail into the military aspects of China's manned space program.<sup>710</sup>

The Shenzhou spacecraft, including the autonomous orbital modules, were controlled from the Beijing Aerospace Command and Control Centre, which received an enormous amount of mission operation data from the long-duration modules, and the Xian Satellite Control Centre at Weinan, which also received data from them. The tracking stations at Qingdao, Xiamen, and Kashi also tracked the modules. The Kashi station, because of its extreme western location, has played an especially important role in tracking and supporting the Shenzhou vehicles. The SIGINT complex at Kashi would have been the first recipient of any ELINT mission data collected by the Shenzhou orbital modules, both to clear the tape recordings and to process the data for any time-urgent intelligence.

In September 2008, Shenzhou-7 featured a three-man crew and China's first spacewalk. It also reaffirmed China's willingness to combine civilian and military functions, including possible defensive and offensive space combat missions. According to the US Strategic Command the Shenzhou-7 spacecraft passed to a point about 45 km from the ISS on 27 September 2009. While Washington, Moscow, and Beijing did not comment on this close pass, it suggested China was testing space docking or "co-orbital" ASAT intercept capabilities. The same mission featured a launch and rendezvous with an autonomous microsatellite.

China will launch its next manned space mission in October 2016. The Shenzhou 11 will launch two astronauts into space with the mission to dock with the Tiangong-2 space lab.<sup>711</sup>

Furthermore, China's Shenzhou space crafts have been equipped with substantial ELINT, surveillance, and long-range observation technology.<sup>712</sup>

## Launch Vehicles

China has and continues to develop a wide array of launch vehicles for its space program. Further underlining the connection between the PLA and the space program is the fact that China's early space launch vehicles were developed using the technology from its DF-4 and DF-5 ICBMs. The 2015 DoD report on China described additional space capabilities that China could use for military application.<sup>713</sup>

China boasts the most dynamic space program in the world today, supported by a robust capacity for space-lift. China's space-lift infrastructure, including space-launch centers and space-launch vehicles (SLV), affords China tremendous flexibility in current as well as future space mission planning. China currently operates eight specialized SLVs with lift capacities ranging from light to medium-heavy lift and the capability to deploy satellites at altitudes ranging from low earth orbit (LEO) to geosynchronous orbit (GEO) in support of its national goals and objectives.

*Long March-2C and -2D:* The LM-2C and LM-2D SLVs provide China light-lift capability into LEO, including sun synchronous orbits (SSO) favored by intelligence, surveillance, and reconnaissance (ISR) satellites.

*Long March-4B and -4C:* The LM-4B and LM-4C provide China a medium-lift capability into LEO, including SSO. These are the largest SLVs China regularly employs on LEO missions.

*Long March-2F:* The LM-2F provides China a heavy-lift capability into LEO. China has only employed the LM-2F for launches associated with its manned space program, including the launch of its Shenzhou and Tiangong spacecraft.

*Long March-3A, -3B, and -3C:* The LM-3-series SLVs provide China a capability to launch medium, intermediate, and heavy satellites on missions into GEO. Two (LM-3C) or four (LM-3B) modular strap-on boosters may be added to a common core, as necessary.

Three launch centers, located at high and low latitudes and accompanied by mostly unobstructed launch corridors, afford China ease of access to a full range of orbital inclinations.

*Jiuquan Satellite Launch Center (JSLC)*: Located in the desert of northwest Gansu Province, the JSLC is the only launch complex currently supporting China's manned space program.

*Taiyuan Satellite Launch Center (TSLC)*: Located in northern Shanxi Province, the TSLC may support launches into various LEO orbits.

*Xichang Satellite Launch Center (XSLC)*: Located in southwest Sichuan province, the XSLC is the only Chinese launch complex currently supporting missions to GEO.

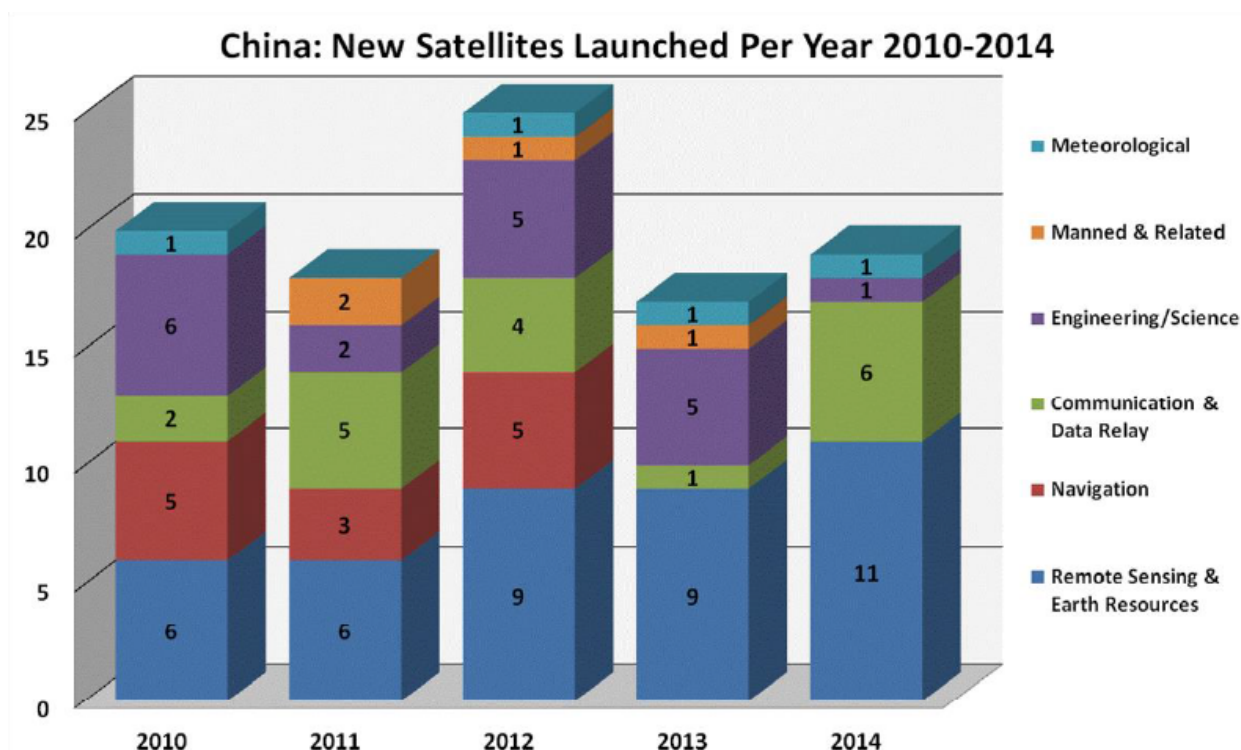
China recently completed construction of its fourth and largest spaceport on Hainan Island, located off China's southern coast. Named Wenchang Satellite Launch Center, it will launch China's newly developed LM-5 SLV, a heavy-lift SLV that will more than double China's current lift capacity on LEO and GEO missions. The new SLV and launch center are essential to China's national goals of constructing a space station by 2022 and engaging in manned lunar exploration. The first flight of the LM-5 could occur as early as 2015.

The 2016 Department of Defense reported noted that China had developed two new launch vehicles:<sup>714</sup>

September 2015 saw the successful debut of both the Long March (LM)-6 and the LM-11 "next generation" SLVs. The LM-6 is a small liquid-fueled SLV designed to carry up to 1000 kg into low Earth orbit (LEO), and the LM-11 is described as a "quick response" SLV designed to launch a small payload into LEO on short notice in the event of an emergency.

Additionally, China plans to launch its heavy-lift Long March-5 (LM-5) rocket at some point in Fall 2016.<sup>715</sup> The Long March-5 will offer China heavy-lift capabilities to launch large satellites, its future space station, and potentially undertake deep space exploration. The LM-5 is projected to be able to carry a payload of 25,000 kg to low-earth orbit (LEO).<sup>716</sup> This compares relatively similarly to United Launch Alliance's Delta IV Heavy—the main heavy launch vehicle of the U.S. military—which can carry 28,370 kg to LEO.<sup>717</sup>

**Figure 13.3: DoD Assessment of Chinese Space Launch Trends**



Source: DoD Annual Report to Congress: Military and Security Developments Involving the People's Republic of China, April 2015.

### ***Chinese Counterspace and ASAT Capabilities***

As important as it is for China to possess C4ISR, SATNAV, and SATCOM capabilities, the Chinese believe it is equally important to deny their opponents those capabilities in a combat situation. This is of paramount importance for garnering “information superiority”. China is developing counterspace capabilities that affect the country’s entire spectrum of warfighting capacities, from the tactical to the strategic levels. Both China and Russia “continue developing systems and technologies that can interfere with or disable vital U.S. space-based navigation, communication, and intelligence collection satellites.”<sup>718</sup> In the case of China, these capabilities are broad and growing, they include “direct-ascent antisatellite missiles, co-orbital antisatellite systems, computer network operations, ground based satellite jammers, and directed energy weapons.”<sup>719</sup>

DIA Director James Clapper stated in 2015 testimony to the Senate that:<sup>720</sup>

Threats to US space systems and services will increase during 2015 and beyond as potential adversaries pursue disruptive and destructive counterspace capabilities. Chinese and Russian military leaders understand the unique information advantages afforded by space systems and services and are developing capabilities to deny access in a conflict. Chinese military writings highlight the need to interfere with, damage, and destroy reconnaissance, navigation, and communication satellites. China has satellite jamming capabilities and is pursuing antisatellite systems. Russia’s 2010 Military Doctrine emphasizes space defense as a vital component of its national defense. Russian leaders openly assert that the Russian armed forces have antisatellite weapons and conduct antisatellite research. Russia has satellite jammers and is pursuing antisatellite systems.

### Direct-Ascent ASATs

As has been touched upon earlier, China has tested anti-satellite (ASAT) weapons that could have a massive impact on US battle management and ISR systems, and may have some capability to use EMP weapons. A summary of China's direct-ascent ASAT tests can be seen in **Figure 13.4**. A 2013 editorial in the state-run Global Times stated, "it is necessary for China to have the ability to strike US satellites. This deterrent can provide strategic protection to Chinese satellites and the whole country's national security."<sup>721</sup>

Direct-ascent ASAT weapons are the most developed and regularly tested fixture of China's counterspace capabilities. The technology is similar to that of ballistic missile defense (BMD) and similarly direct-ascent weapons rely on kinetic-kill to destroy the targeted satellite.

The 2016 report from IHS on China's military capabilities goes in depth regarding Chinese direct-ascent ASATs:<sup>722</sup>

On 11 January 2007, China used a direct-ascent ASAT interceptor to destroy a Chinese FY-1C weather satellite operating in a polar orbit over 500 miles (800 km) above the earth. Later identified by Pentagon officials with the designator SC-19, this ASAT is derived from the DF-21-based KT-1 SLV. The fourth stage contains a new interceptor that probably uses a combination of infrared and radar sensors to complete its interception. The 11 January test was later revealed to be China's third attempt to destroy the same FY-1C satellite with a SC-1 ASAT. The first attempt may have occurred in late 2005. US officials have noted that these tests utilized a mobile launch platform, which displayed a "worrisome level of flexibility".

Statements by US officials indicate that China may now be building a stockpile of SC-19 interceptors even as it continues to improve and refine this system. It is one component of a multi-dimensional programme to limit or prevent the use of space-based assets by potential adversaries during a time of conflict. Given the precedent of the KT-1, it is possible now that the planned larger KT-2 and KT-2A mobile solid-fuel SLVs may be developed into ASATs that can reach much higher orbits, threatening US navigation and high-level surveillance satellites. At the 2006 Zhuhai Airshow, CASC also revealed an air-launched SLV for LEO launches, similar in size and function to the US Orbital Corporation Pegasus. It was shown being launched from an H-6 bomber, but other aircraft might also serve as launch platforms. With additional boosters such a vehicle could be developed into an ASAT for higher polar orbits but with the added tactical flexibility of its air-launched platform.

The November 2015 US-China Economic and Security Review Commission report adds further detail on how direct-ascent ASAT technology functions:<sup>723</sup>

Direct-ascent antisatellite missiles are designed to disable or destroy a satellite or spacecraft using one of several possible kill mechanisms, such as a kinetic kill vehicle. The missiles typically are launched against preselected targets, as they must either wait for the target satellite to pass overhead within a certain distance from the launch site, or target a stationary satellite within range of the launch site. Unlike co-orbital antisatellite systems (discussed later in this section), direct-ascent antisatellite missiles do not establish a persistent presence in space, enter into long-term orbits, or loiter to await commands to engage a target.

Compared to other types of counterspace weapons that temporarily disable or disarm satellites, direct-ascent ASATs are destructive in ways that go beyond their military target. This was highlighted by China's 2007 kinetic-kill ASAT test that destroyed an inactive Chinese Fengyun weather satellite, which was widely derided by the international community.

Michael Krepon noted the dangers of kinetic-kill counterspace weapons in a September 2013 report:<sup>724</sup>

A kinetic-energy ASAT test conducted in 2007 by the People's Liberation Army (PLA) ended complacency over the hazards of space debris. This ASAT test produced more latent capabilities to engage in space warfare have grown, and have become more prominent than 3,000 pieces of debris large enough to track, and

tens of thousands of smaller pieces, endangering human spaceflight and hundreds of satellites, without regard for ownership and nationality... As a result of these tests, as well as other significant debris-causing events, recognition of the potential environmental consequences of space warfare is unquestionably greater now than during the Cold War. Reaction to the PLA's 2007 ASAT did not spark mass protests, unlike the case of atmospheric testing. This ASAT test did, however, alarm space operators to such an extent that an international norm against further tests of this kind might take hold.

Thus, it seems likely if kinetic-kill counterspace weapons were deployed in a warfare situation that the collateral damage to both commercial and military satellite infrastructures would be catastrophic. The 2007 test incident also revealed some of diplomatic issues involved. Jeffrey Lewis noted that, "Chinese policymakers appear to have been genuinely surprised at the reaction to international outrage prompted by their 2007 ASAT test".<sup>725</sup>

The DoD's 2016 report elaborated on China's direct-ascent ASAT capabilities while noting the way in which China had continued to test without causing space debris.<sup>726</sup>

China is also developing anti-satellite capabilities and has probably made progress on the antisatellite missile system it tested in July 2014. China is employing more sophisticated satellite operations and is probably testing dual-use technologies in space that could be applied to counterspace missions.

In the summer of 2014, China conducted a space launch that had a similar profile to the January 2007 test. In 2013, China launched an object into space on a ballistic trajectory with a peak altitude above 30,000 km, which could have been a test of technologies with a counterspace mission in geosynchronous orbit.

Although Chinese defense academics often publish on counterspace threat technologies, no additional antisatellite programs have been publicly acknowledged. PLA writings emphasize the necessity of "destroying, damaging, and interfering with the enemy's reconnaissance...and communications satellites," suggesting that such systems, as well as navigation and early warning satellites, could be among the targets of attacks designed to "blind and deafen the enemy."

It is far from clear, however, that the destructive impacts of using ASAT would deter China in any serious warfighting contingency. The other risks and cost of such a war would make winning paramount, and it is unclear how a U.S. or other response would play out in deterrence terms. The cost of escalating to nuclear conflict would involve risks so serious that the ASAT war would not trigger such escalation. The ability to use precision conventional weapons to target critical land-based targets and infrastructure would be a potential way to escalate without using ASATs, but like other aspects of deterrence in space, it remains a concept that have never been tried, and where establishing some stable level of intra-conflict deterrence would have to take place under some of the worst possible conditions.

**Figure 13.4 China's Direct-Ascent ASAT Tests**

**Table 1: Summary of Direct-Ascent Antisatellite Tests**

Date	Orbital Debris	Missile	Notes
July 2005	No	SC-19	Rocket test
February 2006	No	SC-19	Failed intercept and destruction of an orbital target
January 2007	Yes	SC-19	Successful intercept and destruction of an orbital target
January 2010	No	SC-19	Successful intercept and destruction of a suborbital target
January 2013	No	SC-19	Successful intercept and destruction of a suborbital target
May 2013	No	DN-2	Rocket test
July 2014	No	SC-19	Successful intercept and destruction of a suborbital target

Source: "China's Space and Counterspace Programs", 2015 Report to Congress, US-China Economic and Security Review Commission, November 2015, p. 294, [http://origin.www.uscc.gov/sites/default/files/annual\\_reports/2015%20Annual%20Report%20to%20Congress.PDF](http://origin.www.uscc.gov/sites/default/files/annual_reports/2015%20Annual%20Report%20to%20Congress.PDF)

### Co-orbital Anti-satellite Weapons

These same considerations apply to other counterspace weapons. One such technology that China has put substantial effort into are co-orbital anti-satellite platforms. These are essentially armed satellites with an attack device that can be used against an enemy satellite. Co-orbital ASAT weapons behave like a regular satellite in orbit until a decision is made to deploy them against a target.

The US-China Economic and Security Review Commission report from November 2015 states:<sup>727</sup>

China's recent space activities indicate that it is developing co-orbital antisatellite systems to target U.S. space assets. These systems consist of a satellite armed with a weapon such as an explosive charge, fragmentation device, kinetic energy weapon, laser, radio frequency weapon, jammer, or robotic arm. Once a co-orbital satellite is close enough to a target satellite, the co-orbital satellite can deploy its weapon to interfere with, disable, or destroy the target satellite. Co-orbital satellites also may intentionally crash into the target satellite.

Since 2008, China has tested increasingly complex space proximity capabilities. Although these capabilities have legitimate applications for China's manned space program, the dual-use nature of the technology and China's secrecy surrounding the tests suggest China also is using the tests to develop co-orbital counterspace technologies.

- During a manned space mission in September 2008, China's Shenzhou 7 spacecraft deployed the BX-1, a miniature imaging satellite, which then positioned itself into an orbit around the spacecraft. The activities of the BX-1 may have been designed to test a dual-use on-orbit inspection capability for future inspector satellites. In addition to aiding China with maintenance of its satellites, inspector satellites could approach U.S. satellites in orbit to collect detailed images and intelligence on them.

Moreover, at one point the BX-1 passed within 45 kilometers of the International Space Station, apparently without prior notification, suggesting it may have been simulating a co-orbital antisatellite attack.

- In June 2010, China launched the SJ-12 satellite. Over the next two months, the satellite conducted a series of maneuvers and came within proximity of the SJ-6F, an older Chinese satellite that was placed into orbit in 2008. The activities of the SJ-12 may have been designed to test a co-orbital antisatellite capability, such as on-orbit jamming. Moreover, during its maneuvers, the SJ-12 apparently bumped the SJ-6F, causing it to drift slightly from its orbital regime. This activity suggests China also could have used the test to demonstrate the ability to move a target satellite out of its intended position by hitting it or attaching to it.
- In July 2013, China launched a rocket carrying the CX-3, SY-7, and SJ-15 satellites, one of which was equipped with a robotic arm for grabbing or capturing items in space. Once all three were in orbit, the satellite with the robotic arm grappled one of the other satellites, which was acting as a target satellite. The satellite with the robotic arm then changed orbits and came within proximity of a separate satellite, the SJ-7, an older Chinese satellite that was orbited in 2005. Robotic arms can be used for civilian missions such as satellite repair, space station construction, and orbital debris removal; they also can attach to a target satellite to perform various antisatellite missions.

Compared to kinetic-kill ASAT weapons, there are substantial benefits to the deployment of co-orbital ASATs. Operational use is much less likely to engender uncontrolled escalation, debris is non-existent or minimal, and they can easily pass as dual-use vehicles.

The 2016 IHS report on China notes:<sup>728</sup>

China may also be developing co-orbital weapons. These "assassin" satellites would reside in orbit awaiting orders to attack other satellites. International oversight regarding the weaponization of space is currently weak, with the Outer Space Treaty primarily focusing on the basing of nuclear weapons, or other forms of weapons of mass destruction, in space. In a 21 November 2009 report on PLAAF strategy development, Chinese academic Jiang Feng, of the China Strategy Institute, told Hong Kong newspaper *Wen Wei Po* that the PLAAF was developing "assassin satellites, laser interceptor satellites ...[and]... a new model orbital bomber".

A dual use co-orbital "assassin" or repair satellite was tested during the last week of September 2013. Following its launch on 20 July 2013, a satellite equipped with a space robotic arm – either the Shiyan-7 (SY-7: Experiment-7) or the SJ-15 maneuvered close to a third payload, the Chuangxin-3 (CX-3: Innovation-3), and then to a separate satellite, the Shijian-7. The robot-arm equipped satellite probably made contact with one of the target satellites, demonstrating its "dual use" potential; the ability to maneuver and contact a satellite could be used to damage critical components.

## Directed-Energy Weapons

Directed-energy weapons are an additional non-kinetic counterspace weapon that the Chinese have developed. Generally, directed-energy weapons possess only the capability to temporarily disable or disarm a target satellite. As a category, directed-energy weapons encompass capabilities like lasers, radio frequency, microwave, and particle-beam. The Pentagon notes that the Chinese see many of these capabilities as key to electronic warfare on the ground in a conflict with the United States.<sup>729</sup> Consequently, they have also sought to utilize them in their counterspace capabilities—particularly against U.S. GPS.

Kevin Pollpeter's March 2015 report on China's space program notes:<sup>730</sup>

China is also developing directed-energy weapons such as lasers, high-powered microwave, and particle beam weapons for ASAT missions. The Defense Department concluded in 2006 that China had "at least one...ground-based laser designed to damage or blind imaging satellites." Lasers at higher power levels can permanently damage satellites and at lower power levels can temporarily blind the imagers of a remote

sensing satellite. Lasers can be based on the ground, on aircraft, on ships, or in space. In 2006 it was reported that China had fired a laser at a U.S. satellite. According to U.S. officials, the intent of the lasing is unknown and did not damage the satellite, suggesting that China could have been determining the range of the satellite rather than trying to interfere with its function.

China is also researching radio frequency (RF) weapons that could be used against satellites. Radio frequency weapons using high power microwaves can be ground-based, space-based, or employed on missiles to temporarily or permanently disable electronic components through either overheating or short circuiting. RF weapons are thus useful in achieving a wide spectrum of effects against satellites in all orbits. RF weapons employed on satellites may be detected since the satellite would need to be close to the target satellite for the weapon to be effective. A satellite armed with an RF weapon on a crossing orbit with the target satellite, however, may not be recognized as a threat. RF weapons launched on rockets could detonate near the target satellites and thus may not be detected. Because RF weapons affect the electronics of satellites, evaluating the success of an attack may be difficult since no debris would be produced.

### Cyber ASAT Capabilities

There has been substantial focus on China's cyber capabilities in both government and public circles. Numerous attacks emanating from China have led to the intellectual property of American companies, government, and people being compromised. Kevin Pollpeter notes that China's space capabilities may have developed substantially as a result of cyberattacks, "In 2014, the network security firm CrowdStrike released a report detailing cyber activities against U.S. and European aerospace companies since 2007."<sup>731</sup>

In April 2016, the Pentagon acknowledged that the Chinese view advanced cyberattack capabilities as key to informationized war and implementing an effective A2AD strategy. Considering the importance of space capabilities for both those strategies it is unsurprising that China has focused on developing cyberattack capabilities for satellites. Cyber ASAT also offers the plausible deniability that Beijing has been shown to favor in numerous instances like its deployment of a maritime militia made up of fisherman in the South China Sea.

The US-China Economic and Security Review Commission report notes regarding China's cyber capabilities in outer space:<sup>732</sup>

Chinese military doctrine and the integration of computer network operations, electronic warfare, and counterspace reflected in certain Chinese military organizations and research programs indicate the PLA during a conflict would attempt to conduct computer network attacks against U.S. satellites and the ground-based facilities that interact with U.S. satellites. According to one Chinese author:

*A military satellite cannot connect with the Internet. Therefore, some people think "hackers" cannot attack a satellite's command and control [system]. But in actuality, the microwave antenna of the satellite control is open, so one can intercept satellite information through technological means and seize the satellite's command and control [system]. Using this as a springboard to invade the enemy's independent network systems is entirely possible.*

If executed successfully, such attacks could significantly threaten U.S. information superiority, particularly if they are conducted against satellites with sensitive military and intelligence functions. For example, access to a satellite's controls could allow an attacker to damage or destroy the satellite; deny, degrade, or manipulate its transmissions; or access its capabilities or the information, such as imagery, that can be gained through its sensors.

Chinese hackers likely have been responsible for several computer network operations against U.S. space assets, though the U.S. government has not publicly attributed any of them to China. If responsible, China likely used these intrusions to demonstrate and test its ability to conduct future computer network attacks and to perform network surveillance.



- In October 2007 and July 2008, cyber actors attacked the Landsat-7, a remote sensing satellite operated by the U.S. Geological Survey, resulting in 12 or more minutes of interference on each occasion. The attackers did not achieve the ability to command the satellite.<sup>107</sup>
- In June and October 2008, cyber actors attacked the Terra Earth Observation System satellite, a remote sensing satellite operated by NASA, resulting in two or more minutes of interference on the first occasion and nine or more minutes of interference on the second occasion. In both cases, the responsible parties achieved all steps required to command the satellite but did not issue commands.
- In September 2014, cyber actors hacked into the National Oceanographic and Atmospheric Administration's (NOAA) satellite information and weather service systems, which are used by the U.S. military and a host of U.S. government agencies. NOAA stopped the transmission of satellite images to the National Weather Service for two days while it responded to the intrusion and "sealed off data vital to disaster planning, aviation, shipping, and scores of other crucial uses," according to a U.S. media report citing a discussion with NOAA officials. The U.S. government has not publicly attributed the attack to any country or actors; however, then Congressman Frank Wolf stated, "NOAA told me it was a hack and it was China."

### ***U.S. Space Capabilities and Response to China***

The United States has long been dominant in space and that remains the case (**Figure 13.5**). In many ways, China's pursuit of advanced capabilities is an attempt to replicate the space infrastructure the United States has already built. Still, the U.S. space preponderance and technological advantage has led to a massive reliance by the U.S. military on its space-based capabilities. Consequently, China sees this reliance as a weakness on the part of the United States.

Considering the possible advantage that the first-strike party has in space warfare, China's growing ASAT capabilities are of deep concern to Washington. The United States has consistently reacted harshly to China's ASAT tests. In 2007 following China's kinetic ASAT test, Gordon Johndroe, the National Security Council's (NSC) chief spokesman said in a statement:<sup>733</sup>

The United States believes China's development and testing of such weapons is inconsistent with the spirit of cooperation that both countries aspire to in the civil space area. We and other countries have expressed our concern regarding this action to the Chinese.

Even as China moved away from kinetic tests in outer space, the United States remained concerned with their tests. In 2014 following China's nonorbital ASAT test, Frank Rose, the U.S. Deputy Assistant Secretary of State for Space and Defense Policy, commented:<sup>734</sup>

Despite China's claims that this was not an ASAT test; let me assure you the United States has high confidence in its assessment, that the event was indeed an ASAT test. ASAT weapons directly threaten individual satellites and the strategic and tactical information they provide, and their use could be escalatory in a crisis. They also present a threat to key assets used in arms control monitoring, command and control and attack warning. The destructive nature of debris-generating weapons has decades-long consequences as well: they can increase the potential for further collisions in the future, which only create more debris.

In 2008, the United States conducted its own ASAT test, and shot down one of its own satellites, while making sure to minimize debris. The test was largely seen as a reaction to the Chinese test the year before and as signaling from the U.S. military. The Department of Defense release following the test stated that:<sup>735</sup>

A network of land-, air-, sea- and space-based sensors confirms that the U.S. military intercepted a non-functioning National Reconnaissance Office satellite which was in its final orbits before entering the earth's atmosphere, defense officials announced in a press release. (Video)

At approximately 10:26 p.m. EST today, a U.S. Navy AEGIS warship, the USS Lake Erie (CG-70), fired a single modified tactical Standard Missile-3 (SM-3) hitting the satellite approximately 153 miles (133 nautical

miles) over the Pacific Ocean as it traveled in space at more than 17,000 mph. USS Decatur (DDG-73) and USS Russell (DDG-59) were also part of the task force.

The objective was to rupture the fuel tank to dissipate the approximately 1,000 pounds (453 kg) of hydrazine, a hazardous fuel which could pose a danger to people on earth, before it entered into earth's atmosphere. Confirmation that the fuel tank has been fragmented should be available within 24 hours.

Due to the relatively low altitude of the satellite at the time of the engagement, debris will begin to re-enter the earth's atmosphere immediately. Nearly all of the debris will burn up on reentry within 24-48 hours and the remaining debris should re-enter within 40 days.

The Department of Defense continues to invest heavily in space and space-based systems as well, with \$7.1 billion requested in the FY 2017 defense budget.<sup>736</sup> Noticeably, the DoD requested for \$108 million for the Joint Interagency Combined Space Operations Center (JICSpOC) to be built in Colorado.<sup>737</sup> The JICSpOC combines the STRATCOM, Air Force Space Command, and the space intelligence community like the National Reconnaissance Organization (NRO) under one roof with the goal of better coordination.<sup>738</sup> The JICSpOC is expected to do work regarding war planning for space. Announced in September 2015, the DoD described the JICSpOC:<sup>739</sup>

The center will have the capability to develop, test, validate and integrate new space system tactics, techniques and procedures in support of both DoD and Intelligence Community space operations.

The increasing threats to space capabilities necessitates better operational integration of these two space communities, as well as civil, commercial, allied and international partners. The JICSpOC experimentation and test effort will boost the ability to detect, characterize, and attribute irresponsible or threatening space activity in a timely manner.

Ultimately, the output of the JICSpOC will enhance U.S. space operations, contribute to operational command and control within the DoD, and improve the nation's ability to protect and defend critical national space infrastructure in an increasingly contested space environment.

The United States does face a potential disadvantage in countering China's space capabilities. While the United States puts great value on maintaining space dominance, the weaker party may still gain an advantage in launching an ASAT attack. As noted earlier, conventional deterrence has not yet been fully adapted to deal with space warfare, and this is not to the advantage of the United States as the most dominant spacefaring nation. Additionally, there have been no major open source innovations announced regarding ways that space assets can be protected.

### ***Figure 13.5: U.S.-China Space Launches***

**Table 2: Chinese versus U.S. Space Launches, 2010–2014**

	<b><i>2010</i></b>	<b><i>2011</i></b>	<b><i>2012</i></b>	<b><i>2013</i></b>	<b><i>2014</i></b>
<b>Chinese Launches (Satellites Deployed)</b>	<b>15 (20)</b>	<b>19 (18)</b>	<b>19 (25)</b>	<b>14 (17)</b>	<b>16 (19)</b>
<b>U.S. Launches (Satellites Deployed)</b>	<b>15 (41)</b>	<b>19 (39)</b>	<b>16 (35)</b>	<b>20 (85)</b>	<b>23 (110)</b>

Source: "China's Space and Counterspace Programs", 2015 Report to Congress, US-China Economic and Security Review Commission, November 2015, p. 294, [http://origin.www.uscc.gov/sites/default/files/annual\\_reports/2015%20Annual%20Report%20to%20Congress.PDF](http://origin.www.uscc.gov/sites/default/files/annual_reports/2015%20Annual%20Report%20to%20Congress.PDF)

**Figure 13.6: U.S. Satellites by Classification**

**Table 16.** U.S. satellites by class and orbit

	Orbit				
Satellite class	LEO	MEO	GEO	Elliptical	Total
Commercial	95	0	112	3	210
Military	62	32	51	7	152
Government	103	0	13	4	120
Civil	19	0	1	0	20
<b>Total</b>	<b>279</b>	<b>32</b>	<b>177</b>	<b>14</b>	<b>502</b>

Source: Kevin Pollpeter, *China Dream, Space Dream: China's Progress in Space Technologies and Implications for the United States*, US-China Economic and Security Review Commission, March 2, 2015, p.74.

## CHAPTER 14: CHINA'S NUCLEAR FORCES AND WEAPONS OF MASS DESTRUCTION

There is no way to assess the exact probability that China or the United States will ever make threats to use nuclear weapons in a regional conflict or escalate to their actual use, but even the probability they would make explicit threats seems extremely low. This does not mean, however, that the strength and capability of China's nuclear weapons will not play a steadily greater role in giving it strategic leverage and defining its role as a world power.

In the case of China and the United States, each side's nuclear weapons already have an important deterrent impact in restraining the other's behavior without overt threats, and continued nuclear modernization and the relative size of each side's force sends all the signals China or the U.S. needs as to the other side's power. Both nations must also take account of the fact that even openly raising the very possibility of an actual nuclear exchange would threaten the stability of Asia, the global economy, and the U.S. and Chinese economies in ways in which the end result could not be calculated.

As for actual nuclear war fighting, China and the United States have every reason to calculate that moving beyond the tacit threat already posed by the existence of the other's nuclear forces to actual nuclear exchanges at any level would almost certainly be so destructive and far costlier to both sides than any strategic or military gains could ever be worth.

At the same time, history is a grim warning that deterrence sometimes fails, and escalation occurs in ways that are never properly planned or controlled. Moreover, despite China's declared strategy of limited deterrence, China must look beyond the U.S. nuclear stance to the fact that North Korea, Russia, India and Pakistan have nuclear weapons and the possibility that the ROK or Japan might eventually develop nuclear weapons.

China must also recognize that Russia and other powers will inevitably use China's nuclear forces as a key metric in judging its status. Regardless of the rhetoric of restraint that China uses in discussing nuclear weapons, they remain important tools in shaping its influence and perceptions of its power throughout the world.

### *Chinese Military Nuclear Strategy*

China has long been cautious in openly discussing nuclear weapons, and its statements have evolved as it has emerged as major global power. In the period before China had nuclear weapons, Mao derided them as "paper tigers," and China never emphasized their importance while Mao was alive and its forces were limited and weak.<sup>740</sup>

Since the Mao era, Chinese official documents have so far treated nuclear weapons as important but ultimately of limited use. This philosophy is reflected in Chinese military doctrine – *The Science of Military Strategy* (2013 edition) – and the force structure changes in the PLA Rocket Force. Conventional missiles make up the bulk of China's ballistic missile forces and have grown dramatically faster than China's nuclear forces.

Nevertheless, China's nuclear weapons play a key role in shaping its overall military capabilities and strategy. China is in a heavily nuclearized part of the world, with three neighboring countries

that have nuclear arsenals that number thousands of warheads. Deterring nuclear attack and coercion under threat of nuclear attack may still be the primary goal of China's nuclear forces, but China's steadily improving strategic nuclear delivery capabilities, and ability to use nuclear weapons on a theater basis speaks for itself. Other nations react at least as much to China's actual nuclear warfighting capability as to what it says about its nuclear forces.

China has also continued to modernize its nuclear forces while only providing limited transparency as to their size and modernization. As a result, the potential differences between the way China is characterizing the trends in its nuclear forces and the doctrine they will operate under, and their actual current and future size and capability has been the subject of growing discussion.

Some sources characterize China's nuclear forces as small and operating under the concept of minimum deterrence, similar to France and Great Britain. A report by the Union of Concerned Scientists issued in 2015, analyzed the 2013 edition of *The Science of Military Strategy* regarding China's guidance on the limited role of nuclear weapons in its military strategy and stated that:<sup>741</sup>

Their sole purpose is to deter other nuclear-armed states from using or threatening to use nuclear weapons against China. In the words of the authors [of *The Science of Military Strategy*]:

*As it has been for a long time, the objective of China's development and utilization of nuclear weapons is concentrated on preventing enemy nations from using or threatening to use nuclear weapons against us.*

According to the report by the Union of Concerned Scientists, Chinese strategy continues to reaffirm China's "no first use" (NFU) policy regarding the employment of their nuclear weapons by specifically stating, that:<sup>742</sup>

1. China will not use nuclear weapons to attack or threaten non-nuclear states;
2. China will not use nuclear weapons to respond to conventional attacks; and
3. China will use nuclear weapons only after it has confirmed an incoming nuclear attack.

The report continues to explain the three aspects of Chinese nuclear deterrence policy by citing *The Science of Military Strategy*.<sup>743</sup>

**The directed nature of the target of deterrence.** From the first day China possessed nuclear weapons it openly declared and committed not to use nuclear weapons, or threaten to use nuclear weapons, against non-nuclear weapons states or regions. This restricted the use of our country's nuclear weapons, and the target of nuclear deterrence, to nuclear-armed states. China's nuclear deterrent is only directed at nuclear weapons states; it is only in effect against nuclear-armed states.

**The limited objective of deterrence.** China's nuclear deterrent will not be used to deter nonnuclear hostile military activity and its effect in other non-nuclear military also is not evident. Strictly limiting the scope of the effect of nuclear deterrence to the hostile nuclear activities of nuclear-armed states makes the objective and the scope of the effect of China's nuclear deterrent progressively more focused

**The defensive nature of the method of deterrence.** China upholds a policy of no first use of nuclear weapons, only using nuclear weapons in self-defense after an enemy country uses nuclear weapons against us. Chinese nuclear deterrence is built on the foundation of effective retaliation, and through the actual strength as well as the possibility of creating for the enemy unbearable nuclear destruction, accomplishes the objective of preventing an enemy nuclear attack. This is defensive nuclear deterrence.

According to this assessment, "assured retaliation" and "uncertainty" both help describe Chinese thinking about nuclear strategy. Assured retaliation states that China can be certain that a significant portion of their nuclear forces will survive a nuclear first strike in order to launch a

second-strike. This second-strike only has to be large enough to inflict a degree of damage that the enemy sees as unacceptable.<sup>744</sup>

The concept of uncertainty helps achieve the “assured” portion of the assured retaliation doctrine. Uncertainty in this context points to an enemy not confident in its ability to significantly damage or destroy China’s nuclear arsenal. Not disclosing the size of the nuclear arsenal, mobility, hardening, and tunneling, all contribute to uncertainty.<sup>745</sup>

According to the Union of Concerned Scientists report, Chinese strategy states:<sup>746</sup>

On the question of nuclear deterrence, maintaining an appropriate degree of ambiguity, allowing opponents to guess about China’s nuclear capability, the scale and timing of a Chinese nuclear retaliatory attack, etc. increases the degree of difficulty for the opponent’s policy, helping raise the effective deterrent function of China’s limited nuclear force.

However, the report also notes that the Chinese have talked about trying to limit retaliation if deterrence fails, in part because they do not feel that their nuclear forces are yet secure or capable enough to target enemy military forces in a way that would give them a significant military advantage. According to unclassified sources, Chinese nuclear forces remain limited. Jin-class SSBNs are new and are presumably still somewhat noisy and detectable. Land based missiles are detached from warheads when in storage, and missile units signal their deployment by the use of a large group of ground vehicles and helicopters when on the move.<sup>747</sup>

This helps explain why the Union of Concerned Scientists report indicates that *The Science of Military Strategy* provides the following guidelines regarding its limited retaliatory nuclear attack.<sup>748</sup>

1. A Chinese retaliatory nuclear attack will be limited. An unstated number of China’s surviving nuclear capabilities must be held in reserve for additional acts of retaliation;
2. A Chinese retaliatory nuclear attack will target enemy cities, not enemy military capabilities;
3. The objective of a Chinese retaliatory nuclear attack is to cause the enemy to cease future nuclear attacks against China.

Targeting cities (countervalue) and not military targets (counterforce) reduces the requirements for effective targeting and retaliation against the enemy’s military capabilities and the Chinese believe that attacking cities would cause a large loss of life and break the will of the enemy. *The Science of Military Strategy* explains this concept as follows:<sup>749</sup>

There are in principle two targets for a nuclear attack, military targets and urban targets. Politically, attacking military targets is comparatively more acceptable. Militarily it enables gaining the initiative, which is beneficial to controlling the war situation. But it requires comparatively high requirements for the number, precision, and destructive function of nuclear weapons.

In order to effectively destroy an opponent’s nuclear forces a preemptive nuclear attack is generally required. This is the choice commonly pursued by large nuclear countries with aggressive nuclear strategies. Targeting cities can cause great damage to an enemy society and a large loss of life, which creates the effect of strong shock while having comparatively lower requirements for the scale of the force of a nuclear attack, the capabilities of nuclear weapons, the timing of a nuclear attack, etc.

There are experts, however, who feel that China may actually have more nuclear weapons than unclassified sources report, and place more emphasis on the possible use of such weapons in theater and tactical situations. It is also unclear that the restraint China shows while it is still an emerging power and faces massive U.S. (and Russian) strategic nuclear superiority, will continue

once it fully emerges as a major global power. Some aspects of China's current nuclear modernization indicate that it may already be placing more emphasis on nuclear forces.

### **Change and Missile Defense**

Chinese nuclear forces and strategy are changing. One reason has been that global advances in ballistic missile defense (BMD) have raised concerns in China that they may threaten assured retaliation and uncertainty. As BMD systems become increasingly effective, assured retaliation will depend not only on nuclear weapons surviving a first-strike but also on the ability of warheads to penetrate missile defenses and reach their targets. Likewise, Chinese nuclear weapons must develop in a way such that an enemy cannot be certain that its missile defenses can minimize damage to an acceptable level or destroy all oncoming warheads.

Although strategic and theater ballistic missile defense systems are still under development, and can be saturated and overwhelmed in their current form, Chinese strategists have been forming their analyses based on a worst-case scenario where BMD systems are very effective. Even though some U.S. BMD systems have been curtailed or even scrapped, Chinese analysts tend to believe that the American missile defense project never truly ends.<sup>750</sup> Consequently, the need to consider the effects of BMD systems in shaping Chinese nuclear strategy has become a fixture in Chinese nuclear strategy.

The perceived threats to Chinese nuclear strategy by programs like national missile defense (NMD) and prompt global strike (PGS) have also led to debates within China about whether or not to add caveats to the NFU policy or even scrap it altogether. Western analysts have debated the status of China's NFU policy especially after Phillip Karber released his report on the extensive tunnel systems that the SAF uses to store, hide, and protect its nuclear weapons.<sup>751</sup> Chinese officials have grudgingly admitted that such debates have taken place, but have decided that it was in China's best interest to maintain the NFU.<sup>752</sup>

At the same time, China is concerned about the deployment of theater missile defense systems in Japan, and the potential deployment of theater missile defense systems in South Korea. China's stated rationale is similar to Russia's in claiming that such systems might potentially be used against its strategic missile forces and upset the balance of mutual assured destruction – either by destroying strategic nuclear missiles or by improving warning.

Like Russia, however, China's scientists and military experts are fully aware of the acute limits on the ability of any theater missile defense system to intercept a strategic nuclear missile because of its location, vector, apogee and reentry velocity. It is also aware of the fact that U.S. satellite systems can warn of the launch and vector of Chinese strategic missiles, and actual battle management of a strategic missile defense system will rely on radars nearer to, or in U.S. territory. In practice, such Chinese objections to theater missile defense systems again seem to be based more on the same criteria as Russia's. Any theater missile defense does limit Chinese ability to use its missiles in theater attacks (as well as limit North Korea's), and the strategic leverage such missile forces give to China.

### **The Strategic Impact of China's Evolving Nuclear Forces**

More broadly, many other factors drive the changes in China's nuclear forces. China is one of the five nuclear weapons states acknowledged in the Nuclear Non-Proliferation Treaty (NPT). China's first nuclear test occurred in 1964. Since then, China has conducted 45 nuclear tests, including thermonuclear weapons and a neutron bomb.<sup>753</sup> It has also become a party to the Comprehensive

Test Ban Treaty (CTBT), the Biological and Toxin Weapons Convention, and the Chemical Weapons Convention.

Despite the omission of no-first-use policy in the 2013 Defense White Paper—leading to some international consternation—China has long maintained a no-first-use policy.

China's 2008 Defense White Paper stated that:<sup>754</sup>

The Second Artillery Force is a strategic force under the direct command and control of the CMC, and the core force of China for strategic deterrence. It is mainly responsible for deterring other countries from using nuclear weapons against China, and for conducting nuclear counterattacks and precision strikes with conventional missiles.

The Second Artillery Force sticks to China's policy of no first use of nuclear weapons, implements a self-defensive nuclear strategy, strictly follows the orders of the CMC, and takes it as its fundamental mission the protection of China from any nuclear attack. In peacetime the nuclear missile weapons of the Second Artillery Force are not aimed at any country. But if China comes under a nuclear threat, the nuclear missile force of the Second Artillery Force will go into a state of alert, and get ready for a nuclear counterattack to deter the enemy from using nuclear weapons against China.

If China comes under a nuclear attack, the nuclear missile force of the Second Artillery Force will use nuclear missiles to launch a resolute counterattack against the enemy either independently or together with the nuclear forces of other services. The conventional missile force of the Second Artillery Force is charged mainly with the task of conducting medium- and long-range precision strikes against key strategic and operational targets of the enemy.

Similarly, China's 2010 White Paper argued that:<sup>755</sup>

China has never evaded its obligations in nuclear disarmament and pursues an open, transparent and responsible nuclear policy. It has adhered to the policy of no-first-use of nuclear weapons at any time and in any circumstances, and made the unequivocal commitment that under no circumstances will it use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones. China has never deployed nuclear weapons in foreign territory and has always exercised the utmost restraint in the development of nuclear weapons, and has never participated in any form of nuclear arms race, nor will it ever do so. It will limit its nuclear capabilities to the minimum level required for national security

China reiterated this position in *China Military Strategy* in 2015:<sup>756</sup>

The nuclear force is a strategic cornerstone for safeguarding national sovereignty and security. China has always pursued the policy of no first use of nuclear weapons and adhered to a self-defensive nuclear strategy that is defensive in nature. China will unconditionally not use or threaten to use nuclear weapons against non-nuclear-weapon states or in nuclear-weapon-free zones, and will never enter into a nuclear arms race with any other country. China has always kept its nuclear capabilities at the minimum level required for maintaining its national security. China will optimize its nuclear force structure, improve strategic early warning, command and control, missile penetration, rapid reaction, and survivability and protection, and deter other countries from using or threatening to use nuclear weapons against China.

### **U.S. Assessments of Shifts in Chinese Strategy**

China's 2013 and 2015 Defense White Papers did not address the changes in China's nuclear forces and strategy in detail. China is, however, in the process of a major modernization of its nuclear-armed missile forces and is developing a "stealth" strike aircraft – the J-20 and J-31. It is also adopting multiple independently targetable re-entry vehicle (MIRV) warheads for its strategic missiles. MIRV systems are ballistic missiles with a payload containing several warheads, each capable of being aimed to hit one of a group of targets. By contrast, China's present missiles have a unitary warhead—a single warhead on a single missile. China seems to have bypassed intermediate improvements like multiple re-entry vehicle (MRV) missiles that carry several warheads which are dispersed but are all aimed at the same target or maneuverable re-entry



vehicle (MaRV) missiles which allows warhead movement to be adjusted midflight. Only China, the United States, Russia, and France, are known to have developed MIRV missiles.

The U.S. DoD report on Chinese military power for 2016 provided the following analysis of how these developments interact with China's no first use policy.<sup>757</sup>

China's nuclear weapons policy prioritizes maintaining a nuclear force able to survive an attack and to respond with sufficient strength to inflict unacceptable damage on an enemy. China insists the new generation of mobile missiles, with warheads consisting of multiple independently targeted reentry vehicles (MIRVs) and penetration aids, are intended to ensure the viability of China's strategic deterrent in the face of continued advances in U.S. and, to a lesser extent, Russian strategic ISR, precision strike, and missile defense capabilities. Similarly, India's nuclear force an additional driver behind China's nuclear force modernization. The PLA has deployed new command, control, and communications capabilities to its nuclear forces to improve control of multiple units in the field. Through the use of improved communications links, ICBM units now have better access to battlefield information and uninterrupted communications connecting all command echelons. Unit commanders are able to issue orders to multiple subordinates at once, instead of serially, via voice commands.

China has long maintained a "no first use" (NFU) policy, stating it would use nuclear forces only in response to a nuclear strike against China. China's NFU pledge consists of two stated commitments: China will never use nuclear weapons first and China will never use or threaten to use nuclear weapons against any non-nuclear-weapon state or in nuclear-weapon-free zones. There is some ambiguity over the conditions under which China's NFU policy would apply. Some PLA officers have written publicly of the need to spell out conditions under which China might need to use nuclear weapons first; for example, if an enemy's conventional attack threatened the survival of China's nuclear force or of the regime itself. However, there has been no indication that national leaders are willing to attach such nuances and caveats to China's NFU doctrine.

China will probably continue to invest considerable resources to maintain a limited, but survivable, nuclear force to ensure that the PLA can deliver a damaging responsive nuclear strike. Recent press accounts suggest China may be enhancing peacetime readiness levels for these nuclear forces to ensure responsiveness.

The 2016 DoD report described the current status of Chinese developments on land-based and sea-based platforms, as well as future efforts, as follows:<sup>758</sup>

**Land-Based Platforms.** China's nuclear arsenal currently consists of approximately 75-100 ICBMs, including the silo-based CSS-4 Mod 2 (DF-5A) and Mod 3(DF-5B); the solid-fueled, road-mobile CSS-10 Mod 1 and Mod 2 (DF-31 and DF-31A); and the more-limited-range CSS-3 (DF-4). This force is complemented by road-mobile, solid-fueled CSS-5 Mod 6 (DF-21) MRBM for regional deterrence missions.

**Sea-based Platforms.** China continues to produce the JIN-class nuclear-powered ballistic missile submarine (SSBN), with four commissioned and another under construction. The JIN will eventually carry the CSS-NX-14 (JL-2) SLBM with an estimated range of 7,200 km. Together these will give the PLAN its first credible long-range sea-based nuclear capability. JIN SSBNs based at Hainan Island in the South China Sea would then be able to conduct nuclear deterrence patrols.

**Future Efforts.** China is working on a range of technologies to attempt to counter U.S. and other countries' ballistic missile defense systems, including maneuverable reentry vehicles (MaRVs), MIRVs, decoys, chaff, jamming, and thermal shielding. China has acknowledged that it tested launched a hypersonic glide vehicle in 2014. China's official media also cited numerous training exercises featuring maneuver, camouflage, and launch operations under simulated combat conditions, which are intended to increase survivability. Together with the increased mobility and survivability of the new generation of missiles, these technologies and training enhancements strengthen China's nuclear force and bolster its strategic strike capabilities. Further increases in the number of mobile ICBMs and the beginning of SSBN deterrence patrols will force the PLA to implement more sophisticated C2 systems and processes that safeguard the integrity of nuclear release authority for a larger, more dispersed force.

## **The Impact of Multiple Independently-Targetable Re-entry Vehicles (MIRV)**

China was slow to miniaturize warheads and to begin ‘MIRVing,’ although it long had the technology to develop such a capability. According to one report, the CIA predicted that the DF-5 MIRV payload could consist of three warheads developed for the DF-31 more than a decade ago.<sup>759</sup>

The attempt of the *New York Times* to explain China’s decision is as follows, “a succession of Chinese leaders deliberately let it [MIRV technology] sit unused; they were not interested in getting into the kind of arms race that characterized the Cold War nuclear competition between the United States and the Soviet Union”<sup>760</sup>.

This situation changed in the late 1990s. In 1999, a U.S. National Intelligence Estimate (NIE) concluded that China had the capability to develop multiple re-entry vehicles (MRV) and that MIRV technology, capable of “maneuvering to several different release points to provide targeting flexibility” was several years away.<sup>761</sup>

Actual deployment took several years as China began upgrading its DF-5s into MIRVs. The DoD’s 2015 report to Congress<sup>762</sup> marked the first acknowledgment of China’s MIRV capability. The 2016 DoD report further stated that,<sup>763</sup>

The PLARF continued to modernize its nuclear forces by enhancing its silo-based intercontinental ballistic missiles (ICBM) and adding more survivable, mobile delivery systems. China’s ICBM arsenal to date consists of approximately 75-100 ICBMs, including the silo-based CSS-4 Mod 2 (DF-5) and multiple independently-targetable reentry vehicle (MIRV)-equipped Mod 3 (DF-5B); the solid-fueled, road-mobile CSS-10 Mod 1 and 2 (DF-31 and DF-31A); and the shorter range CSS-3 (DF-4). The CSS-10 Mod 2, with a range in excess of 11,200 km, can reach most locations within the continental United States. China also is developing a new road-mobile ICBM, the CSS-X-20 (DF-41) capable of carrying MIRVs.

According to the Bulletin of the Atomic Scientists:<sup>764</sup>

Some of the DF-5As have been upgraded to carry multiple independently targetable reentry vehicles (MIRVs). The MIRVed version is known as DF-5B (CSS-4 Mod 3) (U.S. Defense Department 2015, 8). China had the ability to deploy multiple warheads on the DF-5 (and later the DF-5A) for decades but did not; it appears to have started doing so in response to the U.S. deployment of a ballistic-missile defense system. We estimate that China has a total of approximately 20 DF-5s of both versions, of which perhaps half have been equipped with MIRVs.

Seen through the lens of traditional Western nuclear strategy and deterrence theory, China has a unique rationale for MIRVing. When the United States and Soviet Union became the first countries to develop MIRVs in the 1960s, it was partly in reaction to the development of missile defense technology. More significantly Soviet and American deployment of MIRVs, and the major improvement in missile accuracy and reliability of MIRV missiles gave Moscow and Washington the ability to change strategy from a reliance on countervalue targets (cities and large military area targets) to counterforce targets (the other side’s nuclear forces and small, critical military targets).

As previously noted, China still states that it remains committed to the equivalent of countervalue targeting, and China still lacks the substantial number of warheads necessary to deploy a viable counterforce targeting strategy. However, declaring a public strategy based on current capabilities is not a reliable indicator of future intentions and capabilities.

Jeffrey G. Lewis states in *The Lure and Pitfalls of MIRVs*:<sup>765</sup>

For decades, Chinese leaders have sought to match the technical achievements of other nuclear powers, without necessarily replicating the number of weapons or adopting foreign doctrines. One Chinese official has characterized this behavior as the pursuit of the “minimum means of reprisal” — a concept that Western academics have come to describe as “assured retaliation.” One element of this approach is that Chinese decision makers have tended to emphasize China’s possession of the same technologies as other powers.

The credibility of China’s deterrent depends at least in part on the perception that it is modern. From the 1950s, China has sought to develop thermonuclear weapons that could arm ICBMs rather than, say, a regional force of theater nuclear weapons. Chinese leaders have viewed deterrence as arising more from the possession of equivalent nuclear capabilities than from the numerical calculations of exchange ratios and windows of vulnerability that have dominated Western discourse. Chinese experts, to be sure, are aware of the possibilities created by new technologies, but at least until the present, Chinese decisions about modernizing the country’s nuclear forces have followed a technological trajectory marked by milestones rather than a strategic trajectory marked by requirements.

This means that China could embrace many technologies associated with counterforce targeting while not necessarily embracing that strategy or the exacting requirements to implement them.

### **The Possible Impact of Chinese Tunnel Facilities**

There also are debates over the size of China’s nuclear stockpile and nuclear-armed missile forces. One such debate focuses on the fact the PLA has been building underground tunnels to protect and conceal key military assets since the early 1950s. According to some sources, the total length of China’s network of underground tunnels could stretch for over 5,000 km.<sup>766</sup>

Experts like Phillip Karber have noted the value of these tunnels for both missile deployments and their potential ability to stockpile much larger numbers of nuclear weapons than are normally estimated to be in China’s forces.<sup>767</sup> **Figure 14.1** shows a *Washington Post* image, the assessment made by Phillip Karber about China’s tunnel system and its potential ability to hide China’s nuclear capabilities.

While U.S. DoD reports have seen the tunnel network as a defensive asset, the 2015 DoD report did highlight the level of uncertainty caused by China’s lack of transparency, and acknowledged the role PLA underground facilities can play in denial and deception.<sup>768</sup>

China maintains a technologically advanced underground facility (UGF) program protecting all aspects of its military forces, including command and control, logistics, and missile and naval forces. Given China’s no first use (NFU) nuclear policy, China has assumed it might have to absorb an initial nuclear blow while ensuring leadership and strategic assets survive and can respond.

China determined it needed to update and expand its military UGF program in the mid- to late-1980s. This modernization effort took on a renewed urgency following China’s observation of U.S. and coalition air operations during the 1991 Gulf War and their use in the 1999 NATO ALLIED FORCE. A new emphasis on “winning high tech battles” in the future precipitated research into advanced tunneling and construction methods. These military campaigns convinced China it needed to build more survivable, deeply buried facilities, resulting in the widespread UGF construction effort we have detected throughout China for the last decade.

### **Denial and Deception**

In historical and contemporary PLA texts, Chinese military theorists routinely emphasize the importance of secrecy and deception for both the protection of personnel and infrastructure and the concealment of sensitive military activities. In 2012 and 2013, the Chinese press featured the PLA using a variety of denial and deception (D&D) methods, including camouflage, decoys, and satellite avoidance activities during training events to protect PRC forces from enemy surveillance and targeting. Key D&D principles identified in official PLA monographs include:

- Conforming to what the enemy expects and creating false images that correspond to the target's psychological tendencies and expectations;
- Detailed pre-planning, centralized control, and operational integration to ensure strategic coherence at the political, diplomatic, and economic levels;
- Extensive, current, and sophisticated understanding of enemy psychology, predisposition, capabilities (particularly C4ISR), intentions, and location; and
- Operational flexibility, rapid response, and the ability and willingness to employ new D&D techniques and devices.

Contemporary PLA writings also indicate the Chinese view D&D as a critical enabler of psychological shock and force multiplication effects during a surprise attack, allowing the PLA to offset the advantages of a technologically superior enemy and to reinforce its military superiority against weaker opponents.

Lieutenant General Michael Flynn, former Director of the DIA, also noted the importance of tunnel facilities in protecting nuclear assets and improving denial and deception tactics:<sup>769</sup>

The use of underground facilities (UGFs) to conceal and protect critical military and other assets and functions is widespread and expanding. UGFs conceal and increase the survivability of weapons of mass destruction, strategic command and control, leadership protection and relocation, military research and development, military production and strategic military assets.

A significant trend of concern is the basing of ballistic and cruise missiles and other systems designed for anti-access/area denial weapons directly within UGFs. In addition, Russia, China, Iran, and North Korea operate national-level military denial and deception programs. These four states are devoting increased resources, and particular attention, to improving the denial and deception tactics, techniques, and procedures, for their road-mobile missile and cruise missile forces.

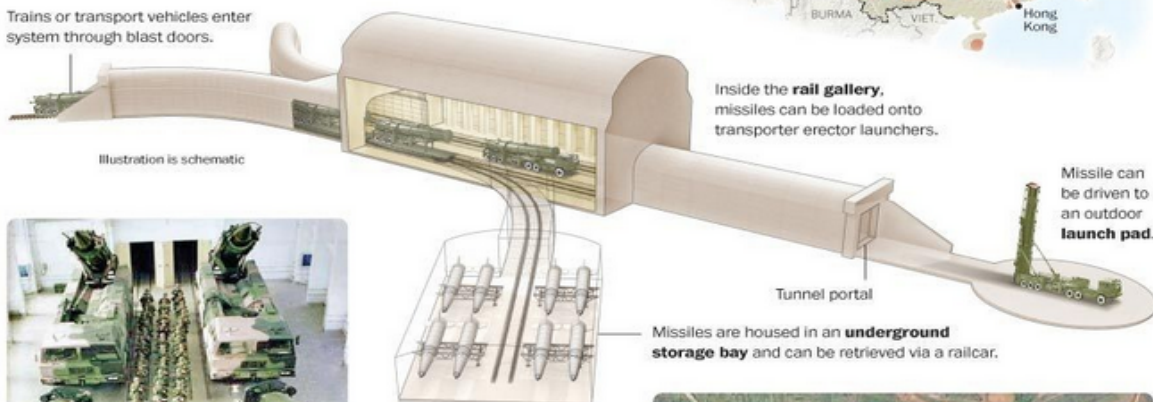
**Figure 14.1: China's Nuclear Tunnel Storage System**

The military branch in charge of China's nuclear arsenal has acknowledged building a network of tunnels more than 3,000 miles long. For the past three years, a team of Georgetown University students has studied those tunnels, led by their professor, a former senior Pentagon strategist. Using translated documents, satellite imagery and online video reports, the students and their professor concluded that China could have many more nuclear weapons than previously assumed hidden in those tunnels.

#### MOBILIZING A MISSILE IN THE CHINESE TUNNEL SYSTEM

Each network of tunnels leads out to multiple, redundant portal openings in case of attack, in which an enemy may try to block missiles from getting out to launch.

Trains or transport vehicles enter system through blast doors.



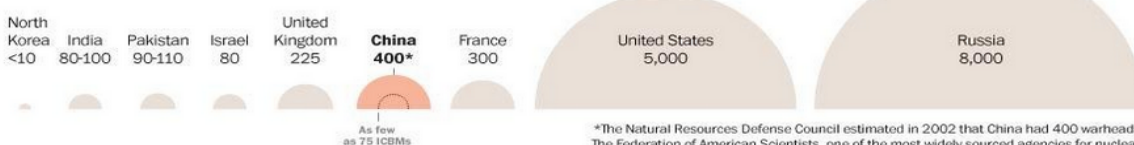
#### UNCONVENTIONAL RESEARCH

The students based their findings on not only traditional sources, such as major books, journals and strategy manuals, but also on nontraditional sources, including the mapping software Google Earth, Chinese television coverage (right) and military Web sites and blogs (left).



#### THE WORLD'S NUCLEAR STOCKPILES, 2011

While some countries share numbers about their nuclear arsenals, China has maintained strict secrecy. In past years, government and independent studies have estimated the number of China's nuclear warheads at anywhere from 80 to 400. The Georgetown study argues that a much greater number may be hidden in China's tunnels.



Source: "Evidence of China's Nuclear Storage System," *Washington Post*, November 29, 2011, [https://www.washingtonpost.com/world/national-security/evidence-of-chinas-nuclear-storage-system/2011/11/29/gIQR2GUAO\\_graphic.html](https://www.washingtonpost.com/world/national-security/evidence-of-chinas-nuclear-storage-system/2011/11/29/gIQR2GUAO_graphic.html).

## *The Strategic Nuclear Balance*

These uncertainties in Chinese forces also affect estimates of the nuclear balance. Unclassified estimates of the present structure of U.S., Chinese, and other outside nuclear forces are shown in the following figures:

- **Figure 14.2** compares the overall strength of U.S. and major Northeast Asian nuclear powers.
- **Figure 14.3** provides an estimate of the global holdings of nuclear weapons between the latest assessments made by the Federation of American Scientists in 2015 and Center for Arms Control and Non-Proliferation in 2013.
- **Figure 14.4** draws from various reports compiled by Henry Sokolski of George Mason University which shows the number of operationally deployed warheads by the world nuclear powers and the trends extending to 2021.

These nuclear balances include Russia, and it is important to note that most U.S. official policy and estimates of the nuclear balance and arms control still focus on Russia, North Korea, and Iran in the aftermath of Joint Comprehensive Plan of Action (JCPOA) – not on China. The forces on each side are also anything but static. The U.S. is simultaneously pursuing a reduction in nuclear forces while planning for a substantial nuclear modernization program. China is increasing its forces and their capabilities, although there is little credible unclassified data on Chinese plans and activities.

It is also unclear how much weapons numbers shown in these figures will actually affect future contingencies unless events forced both sides into a major nuclear engagement. The fact the U.S. will have much larger weapons numbers for the foreseeable future might mean the U.S. could theoretically “win” in terms of inflicting the most strikes and damage, but such a victory would be as pyrrhic a “victory” as a feared Cold War-era exchange between the U.S. and Russia.

Nevertheless, it is clear that the U.S. and China are major nuclear powers with boosted and thermonuclear weapons and advanced missile delivery capabilities. While neither is likely to use these weapons, they have the capability and – at a minimum – their possession of nuclear weapons plays a major role in the balance of deterrence and in shaping the risks of asymmetric escalation.

As noted earlier, North Korea’s growing missile forces and nuclear programs, create an unstable wild card that might trigger U.S. threats to use nuclear weapons or even the development of a nuclear weapons capability by Japan and South Korea, leading to further regional nuclear instability. North Korea now, at most, has very limited numbers of nuclear weapons and no nuclear armed missiles; but if North Korea can create larger and more effective nuclear weapons, both China and the U.S. would confront the risk of North Korean use of such weapons – or even a serious threat to use such weapons – which could force the U.S. to respond and ultimately confront China with a nuclear crisis on its borders.

**Figure 14.2: Chinese, U.S. and Russian Nuclear Forces- Part One****CHINA**

Quantity	Role/Type
<b>Strategic Missiles (figures are estimates)</b>	
<b>ICBM</b>	
8	DF-31 (CSS-10 Mod 1)
24	DF-31A (CSS-10 Mod 2)
10	DF-4 (CSS-3)
10	DF-5A (CSS-4 Mod 2)
10	DF-5B (CSS-4 Mod 3)
<b>MRBM</b>	
80	DF-21/21A (CSS-5 Mod 1/2)
36	DF21C (CSS-5 Mod 3)
18	DF-21D (CSS-5 Mod 5 – ASBM)
12	DF-16 (CSS-11 Mod 1)
<b>IRBM</b>	
6	DF-3A (CSS-2 Mod)
<b>SRBM</b>	
108	DF-11A/M-11A (CSS-7 Mod 2)
81	DF-15B (CSS-6 Mod 3)
<b>LACM</b>	
54	CJ-10 (DH-10)
<b>Navy</b>	
1	Xia <i>With 12 JL-1 (CSS-N-3) strategic SLBM</i>
4	Jin <i>With up to 12 JL-2 (CSS-NX-4) strategic SLBM</i>

**Figure 14.2: Chinese, U.S. and Russian Nuclear Forces – Part Two**  
**UNITED STATES**

Quantity	Role/Type
<b>Navy</b>	
14	Ohio SSBN 730 <i>Each with up to 24 UGM-133A Trident D-5 strategic SLBM</i>
<b>Air Force</b>	
5	SQN with 71 B-52H Stratofortress <i>Each with up to 20 AGM-86B nuclear ALCM</i>
2	SQN with 19 B-2A Spirit <i>Each with up to 16 free-fall bombs</i>
9	SQN with 450 LGM-30G Minuteman III <i>Each with a capacity of 1-3 MIRV Mk12/Mk12A per missile</i>

Source: Based primarily on material in IISS, *The Military Balance 2016* and IHS 2016. Figures do not include equipment used for training purposes. Some equipment and personnel figures are estimates. All equipment figures represent equipment in active service. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.



**Figure 14.2: Chinese, U.S. and Russian Nuclear Forces – Part Three****RUSSIA**

Quantity	Role/Type
<b>Navy</b>	
3	Kalmar (Delta III) <i>Each with 16 RSM-50 (SS-N-18 Stingray) strategic SLBM</i>
6	Delfin (Delta IV) <i>Each with 16 R-29RMU Sineva (SS-N-23Skiff) strategic SLBM (1 vessel in repair, 2014 expected return to service)</i>
1	Akula (Typhoon) <i>Each with 20 RSM-52 Sturgeon strategic SLBM</i>
3	Borey <i>Each with 16 Bulava (SS-N-X-32) SLBM (missiles not yet operational), (1 additional units completed sea trials with notional ISD 2014; 2 further units in build)</i>
<b>Strategic Rocket Force Armies</b>	
3	<p>Strategic Rocket Forces is a separate branch of the Russian Armed Forces, directly subordinate to the General Staff. Strategic Rocket Forces include three missile armies: the 27th Guards Missile Army (HQ in Vladimir), the 31st Missile Army (Orenburg), the 33rd Guards Missile Army (Omsk). The 53rd Missile Army (Chita) was disbanded in 2002. It appears that the 31st Missile Army (Orenburg) will be liquidated by 2016. As of 2015, the missile armies included 11 missile divisions.*</p> <p>As of January 2015, the Strategic Rocket Forces were estimated to have 305 operational missile systems of five different types. Intercontinental ballistic missiles of these systems could carry 1166 warheads.*†</p>
<b>Strategic Missiles</b>	
54	RS-20 (SS-18) Satan (mostly mod 5, 10 MIRV per msl)
108	RS-12M (SS-25) Sickle
30	RS-18 (SS-19) Stiletto (mostly mod 3, 6 MIRV per msl)
60	RS-12M2 Topol-M (SS-27M1), silo based
18	RS-12M2 Topol-M (SS-27M1), road mobile
58	RS-24 Yars (SS-27M2; estimated 3 MIRV per msl, 4 are silo-based)

### Long-Range Aviation Command

1	Sqn Tu-160 Blackjack <i>16 Tu-160 each with up to 12 Kh-55SM (AS-15A/B Kent) nuclear ALCM</i>
3	Sqn Tu-95MS Bear <i>31 Tu-95MS6 (Bear H-6) each with up to 6 Kh-55 (AS-15A/B Kent) nuclear ALCM</i> <i>31 Tu-95MS16 (Bear H-16) each with up to 16 Kh-55 nuclear ALCM; (Kh-102 likely now in service on Tu-95MS)</i>

\* Based on “Strategic Nuclear Forces” section of Russian Forces Project, <http://russianforces.org/missiles/>.

†Based on *The Military Balance 2016*, from IISS, the Strategic Rocket Force Troops have 378 strategic missiles and are divided into 3 armies, further divided into 12 divisions. Launcher groups normally have 10 silos (6 for RS-20/SS-18), or 9 mobile launchers, and one control center.

Source: Based primarily on material in IISS, *The Military Balance 2016*. Figures do not include equipment used for training purposes. Some equipment and personnel figures are estimates. All equipment figures represent equipment in active service. Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 14.3: Comparative Estimate of Global Holdings of Nuclear Weapons**

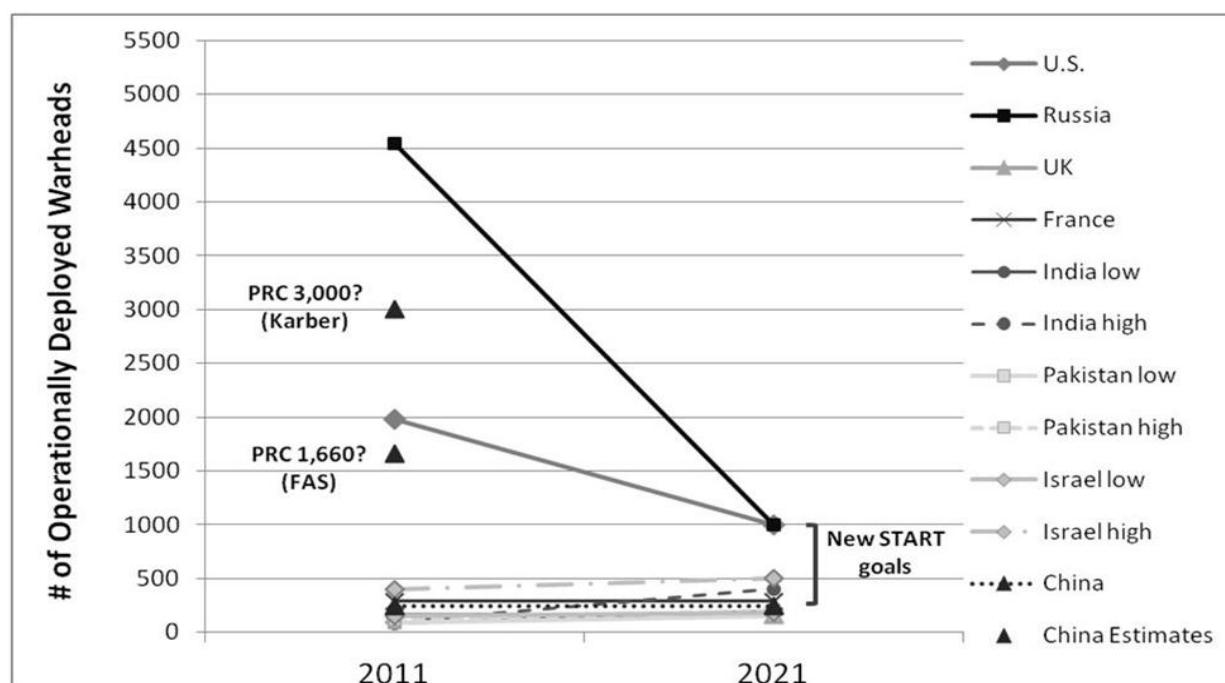
Country	Russia		U.S.		China		DPRK	
Information Source	FAS <sup>770</sup> 2016	CAC <sup>771</sup> 2013	FAS 2016	CAC 2013	FAS 2016	CAC 2013	FAS 2016	CAC 2013
Operational: Strategic	1,790	1,740	1,750	1,950	0	n/a	0	n/a
Operational: Non-strategic	0	0	180	200	?	n/a	n/a	n/a
Non-deployed/ Reserve	2,700	2,700 (+ 4,000 awaiting dismantlement)	2,570	2,650 (+ 3,000 awaiting dismantlement)	260	240-300	<10	<10
Total Inventory	7,300	8,500	7,000	7,700	260	300	<10	<10
Growth Trend	Decreasing		Decreasing		Growing		Growing	

Country	UK		Israel		Pakistan		India		France	
Information Source	FAS 2016	CAC 2013	FAS 2016	CAC 2013	FAS 2016	CAC 2013	FAS 2016	CAC 2013	FAS 2016	CAC 2013
Operational: Strategic	120	<160	0	n/a	0	n/a	0	n/a	280	<300
Operational: Non-strategic	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	50
Non-deployed/ Reserve	95	65	80	80	110-130	90-110	100-120	80-100	10	n/a
Total Inventory	215	225	80	80 (200)	110-130	90-110	100-120	80-100	300	298-300
Growth Trend	Decreasing		Steady		Growing		Growing		Steady	

Note: FAS – Federation of American Scientists; CAC – Center for Arms Control and Non-Proliferation

Source: FAS, Status of World Nuclear forces, May 26, 2016, <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/> Fact Sheet: Global Nuclear Weapons Inventories in 2013, Center for Arms Control and Non-Proliferation, March 2013, [http://armscontrolcenter.org/issues/nuclearweapons/articles/fact\\_sheet\\_global\\_nuclear\\_weapons\\_inventories\\_in\\_2012/](http://armscontrolcenter.org/issues/nuclearweapons/articles/fact_sheet_global_nuclear_weapons_inventories_in_2012/). Adapted by Anthony H. Cordesman and Joseph Kendall at the Center for Strategic and International Studies.

**Figure 14.4: Nuclear Competition and Uncertainty**



Source: Henry Sokolski, "China's Nuclear Weapons and Fissile Materials Holdings: Uncertainties and Concerns," George Mason University, March 26, 2012.<sup>772</sup>

### ***Detailed Assessments of China's Nuclear Forces***

The U.S. government has not provided detailed unclassified data on Chinese nuclear forces, nor has the U.S. made them a key focus of its arms control efforts. The U.S. only gives them passing mention in its recent unclassified reporting on U.S. doctrine for sizing and employing U.S. nuclear forces. A number of leading sources on nuclear forces and arms control do, however, provide considerable detail. The data involved are sometime contradictory, but generally provide a common picture of Chinese nuclear weapons stockpiles and designs.

### **The Nuclear Threat Initiative (NTI) Estimate**

At the same time, nuclear watchdogs like the Nuclear Threat Initiative (NTI) do provide estimates with considerable detail. They do lack access to intelligence sources, but often provide a good picture of the issues being reviewed and debated within the U.S. government. The NTI described China's nuclear forces as follows in a July 2015 assessment, although it made no attempt to project China's future holdings of strategic, theater, and tactical nuclear weapons:<sup>773</sup>

On 16 October 1964 China exploded its first nuclear device. China has since consistently asserted that its nuclear doctrine is based on the concept of no-first-use, and Chinese military leaders have characterized the country's nuclear weapons as a minimum deterrent against nuclear attacks. Although the exact size of China's nuclear stockpile has not been publicly disclosed, reports indicate that as of 2011 China has produced a total of 200 to 300 nuclear warheads. In 2011, Robert S. Norris and Hans M. Kristensen estimated the size of China's current nuclear stockpile to be approximately 254 warheads. Roughly 190 of these warheads are currently considered operational.

Since the inception of its nuclear weapons program, China has relied on a mixture of foreign and indigenous inputs to steadily develop and modernize its nuclear arsenal from its first implosion device to the development of tactical nuclear weapons in the 1980s. As a result, The Federation of American Scientists

assesses China to have at least six different types of nuclear payload assemblies: a 15-40 kiloton (kt) fission bomb; a 20 kt missile warhead; a 3 megaton (mt) thermonuclear missile warhead; a 3 mt thermonuclear gravity bomb; a 4-5 mt missile warhead; and a 200-300 kt missile warhead. China is thought to possess a total of some 150 tactical nuclear warheads on its short-range ballistic, and possibly cruise missiles.

In its most recent (2013) Annual Report to Congress on the Military and Security Developments of the People's Republic of China, the U.S. Department of Defense stated that China's nuclear-capable missile arsenal consists of a total of 50-75 intercontinental ballistic missiles (ICBMs), including: silo-based, liquid-fueled DF-5 (CSS-4) ICBMs; solid-fueled, road-mobile DF-31 (CSS 10 Mod-1) and DF-31A (CSS-10 Mod 2) ICBMs; limited-range DF-4 (CSS-3) ICBMs; and liquid-fueled DF-3 (CSS-2) intermediate-range ballistic missiles; and DF-21 (CSS-5) road-mobile, solid-fueled MRBMs.

Three JIN-class SSBNs have been delivered to the People Liberation Army Navy (PLAN), which will eventually carry JL-2 submarine-launched ballistic missiles (SLBMs). China also possesses DF-15 (CSS-6) and 700-750 DF-11 (CSS-7) short-range ballistic missiles (SRBMs), though China maintains significantly fewer launchers, and 200-500 DH-10s (a cruise missile thought to be able to support a nuclear payload). The Department of Defense assesses that all Chinese SRBMs are deployed near Taiwan. Most recently, China has developed the long-range DF-31 and DF-31A ICBMs.

There is an ongoing effort to shift from liquid-fueled missiles to solid-fueled missiles. China has also continued to develop new missile launch sites and underground storage facilities in remote inland regions, including the Gobi Desert and the Tibetan highlands. As there is no evidence of long-range missiles being deployed to these new locations, the launch sites appear to be intended primarily as forward bases for potential launches against Russia and India.

Even as it continues to develop its arsenal, however, China has also slowly moved towards increased openness in its willingness to share a limited amount of deployment information and strategy. For example, the 2010 China Defense White Paper details Beijing's no-first-use policy and roughly outlines several stages of nuclear alert. The paper states that "nuclear-weapon states should negotiate and conclude a treaty on no-first-use of nuclear weapons against each other." The White Paper also states China's "unequivocal commitment that under no circumstances will it use or threaten to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones." China's 2013 Defense White Paper did not specifically use the words "no first use." However, the director of the Chinese Academy of Military Science subsequently reiterated that there is "no sign that China is going to change a policy it has wisely adopted and persistently upheld for half a century."

The NTI's 2015 report on Chinese weapons developments provided the following assessment of China's nuclear testing and arms control policy,<sup>774</sup>

China's nuclear tests in the late-1980s and 1990s were geared toward further modernizing its nuclear forces. Although China officially declared in 1994 that these tests were for improving safety features on existing warheads, they were also likely intended for the development of new, smaller warheads for China's next-generation solid-fueled ICBMs (e.g., DF-31 and DF-31A), and possibly to develop a multiple warhead (MRV or MIRV) capability as well. China's last test was on 29 July 1996, and less than two months later on 24 September 1996 Beijing signed the Comprehensive Nuclear Test Ban Treaty (CTBT). In order to sign the treaty China overcame several of its initial concerns, including allowing an exemption for Peaceful Nuclear Explosions and the use of national technical means and on-site inspections for verification. The National People's Congress, however, has yet to ratify the treaty.

China's 1996 signing of the CTBT was the latest in a series of policy shifts on nuclear nonproliferation issues. In fact, it was during the 1980s that China's position on nuclear proliferation first started to change. Since the 1960s, Beijing had criticized the Treaty on the Non-Proliferation of Nuclear Weapons (NPT) as imbalanced and discriminatory, but by the 1980s the country had also indicated that it accepted in principle the norm of nuclear nonproliferation. In 1984, China joined the IAEA and agreed to place all of its exports under international safeguards; that same year, during a trip to the United States, Chinese Premier Zhao Ziyang provided Washington with verbal assurances that China did not advocate or encourage nuclear proliferation. In 1990, though still not a member of the NPT, China attended the fourth NPT review conference and, while it criticized the treaty for not banning the deployment of nuclear weapons outside national territories and for not including concrete provisions for general nuclear disarmament, it also

stated that the treaty had a positive impact and contributed to the maintenance of world peace and stability. In August 1991, shortly after France acceded to the NPT, China also declared its intention to join, though it again expressed its reservations about the treaty's discriminatory nature.

China formally acceded to the NPT in March 1992, as a nuclear weapon state. In its statement of accession, the Chinese government called on all nuclear weapon states to issue unconditional no-first-use pledges, to provide negative and positive security assurances to non-nuclear weapon states, to support the development of nuclear weapon-free zones, to withdraw all nuclear weapons deployed outside of their national territories, and to halt the arms race in outer space. Since its accession, China has praised the NPT's role in preventing the proliferation of nuclear weapons, and also supported the decision to indefinitely extend the NPT at the 1995 Review and Extension Conference.

However, China has continued to state that it views nonproliferation not as an end in itself, but rather as a means to the ultimate objective of the complete prohibition and thorough destruction of nuclear weapons. Despite this, China was embroiled in nuclear proliferation scandals throughout the late 1980's and early 1990's, particularly with respect to its sale of ring magnets to Pakistan in 1995. China provided Pakistan with a nuclear bomb design (used in China's October 1966 nuclear test). These designs were later passed to Libya by the A.Q. Khan network, and discovered by IAEA inspectors in 2004 after then President Muammar Qadhafi renounced his nuclear weapons program and allowed inspectors to examine related facilities. The plans contained portions of Chinese text with explicit instructions for the manufacture of an implosion device.

The NTI web site described the future of China's Nuclear Modernization as follows in July 2015:<sup>775</sup>

There is much speculation that China's nuclear modernization program may be geared toward developing the capacity to move from a strategy of minimum deterrence to one of limited deterrence. Under a "limited deterrence" doctrine, China would need to target nuclear forces in addition to cities, which would require expanded deployments. However, such a limited deterrence capability may still be a long way off. According to Alastair Johnston, "It is fairly safe to say that Chinese capabilities come nowhere near the level required by the concept of limited deterrence."

China is working to expand its nuclear deterrent by developing an SSBN force. According to the Department of Defense's 2013 Annual Report to Congress on the Military and Security Developments of the People's Republic of China, these developments will give the PLA Navy its "first credible sea-based nuclear deterrent."

Meanwhile, tensions between China and Taiwan have declined, and in the wake of Japan's 2011 nuclear crisis, China and Taiwan are taking concrete measures to cooperate on nuclear safety issues. Such cross-strait cooperation includes establishing a formal nuclear safety agreement and an official contact mechanism between the two sides, which will be used to facilitate information exchanges and emergency responses in case of an accident.

While China's decreased threat perception may not slow its nuclear modernization efforts, which are seen simply as representing the replacement of obsolete equipment, it does have the potential to slow acquisitions in key areas — for example, the buildup of short-range missiles. If sustained, the shift may also make both sides more amenable to nonproliferation efforts such as ratification of the Comprehensive Nuclear Test Ban Treaty.

Only limited data are available on Chinese military nuclear facilities. The NTI reported that:<sup>776</sup>

China possesses a comprehensive nuclear infrastructure for both military and civilian purposes, including enrichment and reprocessing capabilities. China initially constructed its military nuclear facilities with Soviet assistance, but after withdrawing in 1959, completed them independently. In the late 1960s China constructed numerous military nuclear facilities as a part of its "Third Line" policy of duplicating essential military infrastructure.

Beginning in the late 1980s, China initiated a policy of "military to civilian" conversion of industries, including nuclear energy, and has established many nuclear corporations for civilian nuclear

energy programs. China currently has 17 nuclear power reactors in operation and 28 under construction, in addition to 15 operational research reactors.

The Chairman of the Central Military Commission (CMC) is the ultimate authority with regards to China's nuclear weapons, and the management of relevant facilities. The CMC has delegated authority over the Chinese military's nuclear facilities to the General Armaments Department (GAD) under the People's Liberation Army, which oversees the China Academy of Engineering Physics (CAEP). CAEP is responsible for most of the research, development, testing and production of China's nuclear weapons.

Soviet assistance was critical in the early stages of China's nuclear facility construction. Between 1955 and 1958 the two nations signed six accords on the development of China's nuclear science, industry, and weapons program. In these accords, Soviet assistance included the supply of a nuclear reactor, cyclotron, aid in building China's nuclear industries and research facilities, and a prototype atomic bomb.

The Sino-Soviet Split prevented the transfer of a prototype weapon, and the Chinese had to independently finish the construction of the gaseous diffusion plant at Lanzhou, Jiuquan's plutonium-producing reactor and plutonium-processing plant, and the Baotou Nuclear Fuel Component Plant.[18] China duplicated these facilities in its Third Line Policy with the construction of the Heping Uranium Enrichment Plant, Guangyuan facility (Plant 821), and the Yibin Nuclear Fuel Factory.

Highly enriched uranium (HEU) production was based primarily in the Lanzhou and Heping gaseous diffusion plants. Both facilities stopped HEU production in 1979 and 1987 respectively. China's current inventory of HEU for weapons is estimated to total  $16 \pm 4$  tons. China has produced plutonium for weapons at two sites, the Jiuquan Atomic Energy Complex and Guangyuan plutonium production complex.

China's current inventory of weapon-grade plutonium is estimated to total  $1.8 \pm 0.5$  tons. Many HEU research reactors in China are being converted to low enriched uranium (LEU) or shut down. In 2007 the Nuclear Power Institute of China converted its high flux engineering test reactor (HFETR) as well as the HFETR Critical Assembly from HEU to LEU. China shut down the MNSR-SH at the Shanghai Testing and Research Institute in March 2007, and confirmed the shutdown of the MNSR-Shandong reactor in December 2010.

### **The Bulletin of the Atomic Scientists Estimate**

The Bulletin of the Atomic Scientists, another respected source outside the U.S. government, addressed the distribution of China's nuclear forces in a 2016 report. It is important to note that its assessments – like those of other sources – only cover deployed nuclear weapons and not total stockpiles – which have to take into account the need to service weapons and deal with modernization. Equally, there is no practical way to assess the modernization existing systems in terms of accuracy and reliability.

Improvement in these areas can, however, greatly increase the lethality and target coverage of existing systems since the aim point can be hit with much greater probability, lethality estimates become more reliable, and fewer missiles may need to be targeted on a single target.<sup>777</sup>

During the past decade, China has fielded a more diverse and capable nuclear arsenal than it did previously. Since our Nuclear Notebook on China in July 2015 (Kristensen and Norris 2015), the trend has continued: China's nuclear modernization efforts have resulted in a new version of an existing nuclear medium-range mobile ballistic missile, as well as a new dual-capable intermediate-range mobile ballistic missile. The country has also test-flown a new follow-on mobile intercontinental ballistic missile, and reorganized its nuclear missile command structure.

Although there is no sign that the Chinese government has officially diverted from its nuclear policy – which includes a pledge not to use nuclear weapons first, not to use them against non-nuclear countries or in nuclear-weapon-free zones, and to maintain a minimum deterrent designed only to ensure a survivable second-strike capability – its modernization program is adding significant new capabilities. These qualitative improvements may in turn alter Chinese nuclear policy and strategy.

We estimate that China has a stockpile of approximately 260 nuclear warheads for delivery by nearly 150 land-based ballistic missiles, 48 sea-based ballistic missiles, and bombers. This stockpile is likely to grow further over the next decade as new nuclear-capable missiles become operational. Moreover, in response to the U.S. deployment of missile defense systems in the Pacific, China has now begun to equip its silo-based missiles with the capability to carry multiple warheads (Table 1). This development could potentially further increase the size of the Chinese nuclear warhead inventory.

We continue to observe that China does not normally deploy nuclear warheads on its missiles, but stores them separately in central storage facilities. There are new and disturbing reports, however, that Chinese military officials are advocating increasing the readiness of China's nuclear missiles (Kulacki 2016). Thus far, we have not seen evidence that the government has decided to follow their advice.

### The Bulletin of the Atomic Scientists described China's land-based nuclear forces as follows,

The modernization of China's land-based nuclear-capable missile force has progressed significantly over the past year, with the introduction of a new version of an existing medium-range road-mobile ballistic missile and the fielding of a new intermediate-range road mobile ballistic missile. There are reports that some existing missiles are being re-equipped to carry multiple warheads. China has also test-launched a new follow-on intercontinental road-mobile ballistic missile, which may carry multiple warheads.

The modernization, which began in the 1990s, is part of a transition from older, transportable, liquid fuel, slow-launching missiles to longer-range, road mobile, solid-fuel, and quicker-launching missiles. The modernization also involves the nuclear command and control systems needed to operate the missiles. The end result will be a land-based missile force that will be better able to survive U.S. (and to some extent Russian) surprise attacks. The modernized force is more mobile, responsive, and accurate, and can overwhelm a limited U.S. ballistic missile defense system.

The U.S. Defense Intelligence Agency says that "China has the world's largest and most comprehensive missile force" (Stewart 2016, 11). While technically that may be true, most of the missile force is made up of non-nuclear short-range missiles. The nuclear portion of China's missile force is significantly smaller than the nuclear missile arsenal of either Russia or the United States. Most of China's nuclear missiles are medium and intermediate-range, with launchers for intercontinental ballistic missiles (ICBMs) numbering between 50 and 75. The size of the ICBM force has remained relatively stable over the past five years, following an increase during the previous five years. The number of missiles for the ICBM launchers is a little higher because the oldest type (DF-4) has one or two extra reloads per launcher (Kristensen 2016).

Fifteen years ago, the U.S. intelligence community estimated that by 2015, China would have 75–100 warheads on ICBMs, primarily targeted at the United States (CIA 2001, 3). This prediction did not come to pass. Of China's 50–75 ICBMs, an estimated 40–50 – capable of carrying 60–70 warheads in total – can target the continental United States...Nonetheless, the Chinese ICBM force will probably continue to grow slowly, and with the addition of multiple warheads on the DF-5B and possibly the DF-41 in the future, the number of ICBM warheads primarily targeted against the United States may exceed 100 a decade from now.

Overall, we estimate that China possesses approximately 143 nuclear-capable land-based missiles that can carry 163 nuclear warheads. The force is slowly increasing in both number and variety.

The 2016 edition of the Pentagon's annual report on Chinese military developments no longer lists the old DF-3A (CSS-2) (U.S. Defense Department 2016). A liquid-fueled, single-stage, intermediate-range ballistic missile, the DF-3A was first deployed in 1971 and could deliver a 3.3-megaton warhead up to 3000 kilometers (km). The last remaining DF-3A brigade at Dengshahe in northeast China has now been upgraded to the DF-21 medium-range ballistic missile (Kristensen 2014b).

China continues to maintain one brigade of the DF-4 (CSS-3) ICBM. This two-stage, liquid-fueled missile was first deployed in 1980 and can deliver a 3.3 megaton warhead more than 5500 km, a sufficient range to target India, part of Russia, and Guam. The brigade has approximately 10 transportable launchers, some or all of which may be based in caves with a roll-out-to launch capability. Each launcher has one or two reloads of additional missiles. The remaining DF-4s will probably be replaced by the DF-31 in the near future.

China's DF-5A (CSS-4 Mod 2) – a liquid-fueled, two-stage, silo-based ICBM – has a range that exceeds 13,000 km and has been targeted at the United States and Russia since the early 1980s. The DF-5A is an



upgraded version of the original DF-5 (CSS-4 Mod 1), which was first deployed in 1981. Apparently, some of the DF-5As have been upgraded to carry multiple independently targetable reentry vehicles (MIRVs). The MIRVed version is known as DF-5B (CSS-4 Mod 3) (U.S. Defense Department 2015, 8). China had the ability to deploy multiple warheads on the DF-5 (and later the DF-5A) for decades but did not; it appears to have started doing so in response to the U.S. deployment of a ballistic-missile defense system (Sanger and Broad 2015; Kristensen 2015; U.S. Defense Department 2015, 8, 31). We estimate that China has a total of approximately 20 DF-5s of both versions, of which perhaps half have been equipped with MIRVs.

China's primary regional nuclear missile is the two stage, solid-fuel, road-mobile DF-21 (CSS-5), a medium-range ballistic missile. The DF-21 has existed in two nuclear versions for the past decade and a half: the DF-21 (CSS-5 Mod 1) and the newer DF-21A (CSS-5 Mod 2). The Mod 1 version has a range of at least 1750 km, but the new version probably has a longer range of about 2150 km. The Defense Department recently reported the existence of a third nuclear version of the DF-21, known as the CSS-5 Mod 6 (U.S. Defense Department 2016, 58). We estimate that China has approximately 80 launchers for the nuclear DF-21. China has also deployed two conventional versions of the DF-21: the DF-21C (CSS-4 Mod 4) land-attack missile, and the DF-21D (CSS-5 Mod 5) anti-ship missile.

For the past decade, the focus of China's ICBM modernization has been the DF-31 (CSS-10 Mod 1) and a longer-range version known as DF-31A (CSS-10 Mod 2). The DF-31, which was first deployed in 2006 but now appears to have been terminated with fewer than 10 launchers, is a three-stage, road-mobile missile that is transported in a 15-meter-long canister on a six-axle transporter-erector-launcher (TEL). The DF-31 has a range of more than 7000 km, but cannot reach the continental United States. It is presumed to have taken over much of the regional targeting – of Russia, India, and Guam – previously done by the DF-4. The reasons for the slow introduction of the DF-31 are unclear.

The DF-31A (CSS-10 Mod 2) – a solid-fueled, three stage, road-mobile ICBM – is an extended-range version of the DF-31, designed to reach targets in most of the continental United States. We estimate that China deploys about 25 DF-31A ICBMs in four brigades.

Perhaps the biggest missile event in 2015 was China's public unveiling of the new DF-26 intermediate-range road-mobile missile during a military parade in Beijing in September. A total of 16 DF-26 launchers took part in the parade. Like the existing DF-4 and DF-31 ICBMs, the 4000-km range DF-26 is capable of targeting important U.S. bases in Guam. Unlike the DF-4 and DF-31, however, the DF-26 is thought to be dual-capable, and so could also be used to target the island with conventional warheads.

The Pentagon has reported for more than two decades that China is developing a new follow-on road mobile ICBM known as the DF-41. After considerable delay, the program appears to have made progress with several flight tests over the past few years, some of which have included multiple payloads. Reporting in the Washington Free Beacon, Bill Gertz reported that the "DF-41 is assessed by U.S. intelligence agencies to be powerful enough to deliver between six and 10 warheads up to 7456 miles – far enough to reach every corner of the United States from launch areas in eastern China" (Gertz 2016).

However, Gertz did not provide a specific source for the assessment, which may be an exaggeration. To "reach every corner of the United States," a missile with a range of 7456 miles (about 12,000 km) would have to launch from the most northeastern provinces of China, at least 400 km northeast of Beijing. But Chinese ICBMs tend to be based much further inside China to protect them against preemptive attacks.

Moreover, given China's limited nuclear testing program, it seems reasonable to assume that the warhead intended for the DF-41 may be similar in size to the warhead used on the DF-31A and DF-5B. If so, a payload of six to 10 warheads would weigh more than twice as much as the payload on the DF-5B, which probably has a range of some 12,000 km with three warheads. The DF-5B is a liquid-fuel missile, but the DF-41, according to one expert, appears to be a modified variant of the post-boost stage of the DF-5B that has been placed on a larger solid rocket motor (Gertz 2016).

Gertz cited unidentified Pentagon officials who say that the DF-41 flight-tested on 19 April 2015, carried two warheads, closer to the three warheads thought to be carried by the DF-5B (Gertz 2016). The U.S. Defense Department says the DF-41 is "capable of carrying MIRVs" (U.S. Defense Department 2016, 25). In this case, the DF-41 is probably intended to replace the DF-5 and be equipped with a few warheads and penetration aids to ensure that it can penetrate the U.S. missile defense system.

Most of China's short-range ballistic missiles are conventional with one exception: the nuclear capable DF-15 (CSS-6). After reporting that the nuclear test China conducted on 16 August 1990 may have been "related to development of a warhead for a Chinese short-range ballistic missile" (CIA 1990, 1), a CIA memorandum concluded in September 1993 "that China will begin to field nuclear-armed CSS-X-6's next year." The memorandum went on, "China almost certainly has already developed the warhead for this system. Testing might be needed for formal weaponization or for additional warhead options" (CIA 1993, 5). Despite the apparent nuclear capability developed at the time, it is unclear whether China ever completed and fielded a nuclear warhead for the DF-15. Instead, it might have developed the capability as a possible option for future warhead miniaturization efforts

The same report provided the following assessment of Chinese sea-based nuclear forces:

China currently operates a fleet of four Jin-class (Type 094) nuclear-powered ballistic missile submarines (SSBNs). All are based at the Longposan naval base near Yulin on Hainan Island.

It is not known with certainty in the West how many SSBNs China plans to build. The U.S. Office of Naval Intelligence predicted nearly a decade ago that China might build five Jin SSBNs (Kristensen 2007). A 2015 Pentagon report agreed with that projection, saying "up to five may enter service" before China begins work on a next-generation SSBN (U.S. Defense Department 2015, 9). Yet in early 2015, other U.S. government sources suggested that China might build more. In his prepared testimony before the Senate Armed Services Committee in February 2015, Director of National Intelligence James Clapper said that China "might produce additional JIN-class nuclear powered ballistic missile submarines" (Clapper 2015, 7). He repeated the assessment in 2016 (Clapper 2016, 7). Admiral Samuel J. Locklear, commander of the U.S. Pacific Command, said in 2015 that "up to five more [Jin SSBNs] may enter service by the end of the decade" (Locklear 2015, 9), although that projection seems unrealistic.

The 2016 Pentagon report seems to clear up the confusion, saying that four Jin-class SSBNs are in service and a fifth is being built. Although the Jin-class is more advanced than China's first experimental SSBN – the single and now inoperable Xia (Type 092) – it is still a very noisy design (Kristensen 2009b). It seems likely that China will end production after five boats and develop and produce a third-generation (Type 096) SSBN over the next decade. The next SSBN is expected to carry a new missile, the JL-3.

The Jin SSBNs are designed to carry the new JL-2 (CSS-NX-14), a submarine-launched ballistic missile (SLBM) that is a modified version of the DF-31. Each JL-2 is equipped with a single warhead (and, possibly, penetration aids). The JL-2 has not been tested to its full range of 7000-plus km. The 2015 Pentagon report estimated its range is 7400 km (U.S. Defense Department 2015, 9), but the 2016 Pentagon report estimates a range of 7200 km (U.S. Defense Department 2016, 26). That would be sufficient to target Alaska, Guam, Hawaii, Russia, and India from waters near China – but unless the submarine carrying the weapon sailed significantly eastward, it could not target the continental United States. We estimate that 4 warheads have already been produced for the 48 JL-2s that the four existing SSBNs can carry.

Confusion continues about whether the JIN submarines have sailed on deterrent patrols with nuclear weapons on board. U.S. Chief of Naval Operations Vice Adm. Joseph Mulloy said in early 2015 that one Chinese SSBN had gone on a 95-day patrol (Osborn 2015). In late 2015, STRATCOM Commander Adm. Cecil Haney said Chinese SSBNs had been at sea, and that while he didn't know if they had nuclear weapons on board, he had to assume they did (Gertz 2015). In early 2016, the head of the U.S. Defense Intelligence Agency said that the Chinese navy "deployed the JINclass nuclear-powered ballistic missile submarine in 2015" on an extended patrol far from Chinese waters (Stewart 2016, 12).

These statements indicate that although one of the JIN submarines apparently sailed on an extended voyage in 2015, it is not clear that Chinese SSBNs have ever conducted a deterrent patrol with nuclear-armed JL-2 SLBMs onboard. The 2016 Pentagon report says that "China will probably conduct its first SSBN nuclear deterrent patrol in 2016" (U.S. Defense Department 2016, 26).

The Chinese SSBN fleet faces several doctrinal, technical, and operational constraints. Our analysis suggests that China's Central Military Commission currently does not allow the military services to have warheads deployed on missiles under normal circumstances. Handing over custody of nuclear warheads to deployed submarines in peacetime would constitute a significant change of Chinese policy.

Moreover, China's navy and the Central Military Commission will have to build up experience operating an SSBN force during realistic military operations. This will require development of new command-and-control technologies and procedures. The submarines will also need a destination. Even if China deployed nuclear-armed SSBNs to sea in a crisis, where would they sail? For a JL-2 to be able to strike targets in the continental United States, a Jin SSBN would have to sail through the East China Sea and well into the Pacific Ocean, through dangerous choke points where it would be vulnerable to hostile antisubmarine warfare (see Figure 1).

China's main concern is making sure that its minimum nuclear deterrent would survive a first strike, and for that reason it spends considerable resources on modernizing and hiding its land-based missiles. This frankly makes its submarine program puzzling, for it seems much riskier for China to deploy nuclear weapons at sea, where submarines can be sunk by unfriendly forces, than to hide the nuclear weapons deep inside China's landmass (Kristensen 2014a).

## **The Global Security Estimate**

Global Security provided the following summary of China's historical development of nuclear weapons and potential future steps in July 2015. It has many similarities to the NTI and Bulletin of Atomic Scientist assessments, but provides considerable additional historical background:<sup>778</sup>

By 1953 the Chinese, under the guise of peaceful uses of nuclear energy, had initiated research leading to the development of nuclear weapons. The decision to develop an independent strategic nuclear force was made no later than early 1956 and was to be implemented within the Twelve-Year Science Plan presented in September 1956 to the Eighth Congress of the CCP. The decision to enter into a development program designed to produce nuclear weapons and ballistic missile delivery systems was, in large part, a function of the 1953 technology transfer agreements initiated with the USSR.

In 1951 Peking signed a secret agreement with Moscow through which China provided uranium ores in exchange for Soviet assistance in the nuclear field. In mid-October 1957 the Chinese and Soviets signed an agreement on new technology for national defense that included provision for additional Soviet nuclear assistance as well as the furnishing of some surface-to-surface and surface-to-air missiles. The USSR also agreed to supply a sample atomic bomb and to provide technical assistance in the manufacture of nuclear weapons. The Soviets provided the Chinese with assistance in building a major gaseous diffusion facility for production of enriched uranium. Subsequently the Chinese accused Moscow of having abrogated this agreement in 1959, and having "refused to supply a simple atomic bomb and technical data concerning its manufacture."

China began developing nuclear weapons in the late 1950s with substantial Soviet assistance. Before 1960 direct Soviet military assistance had included the provision of advisors and a vast variety of equipment. Of the assistance provided, most significant to China's future strategic nuclear capability were an experimental nuclear reactor, facilities for processing uranium, a cyclotron, and some equipment for a gaseous diffusions plant.

When Sino-Soviet relations cooled in the late 1950s and early 1960s, the Soviet Union withheld plans and data for an atomic bomb, abrogated the agreement on transferring defense technology, and began the withdrawal of Soviet advisers in 1960. Despite the termination of Soviet assistance, China committed itself to continue nuclear weapons development to break "the superpowers' monopoly on nuclear weapons," to ensure Chinese security against the Soviet and United States threats, and to increase Chinese prestige and power internationally.

When China decided in 1955 to develop atomic bombs it faced a number of technological choices as to the most appropriate route to follow. At that time China could only work on one path, and had to choose between producing Pu239 from a reactor, or developing the method of producing U235 through isotope separation. The uranium path offered two alternatives, either system, either chemical separation or physical separation. Chemical separation of Pu235 from the mixed system of U235 and U238 would have been easier than physical separation, but the separation of plutonium and uranium was difficult due to the high radioactivity of the Pu-U system, and the severe toxicity of plutonium. Therefore, the chosen path was the physical separation of U235 and U238 isotopes. The implosion method of detonating an atomic bomb was

considered more technically advanced, though there were questions as to whether China was capable of producing a uranium bomb detonated by the implosion method.

China made remarkable progress in the 1960s in developing nuclear weapons. In a thirty-two-month period, China successfully exploded its first atomic bomb (October 16, 1964), launched its first nuclear missile (October 25, 1966), and detonated its first hydrogen bomb (June 14, 1967).

The first Chinese nuclear test was conducted at Lop Nor on 16 October 1964 (CHIC 1). It was a tower shot involving a fission device with a yield of 25 kilotons. Uranium 235 was used as the nuclear fuel, which indicates Beijing's choice of the path of creating high-yield nuclear weapons right away. Of the ten test shots that followed by 29 September 1969, six are believed to have been related to thermonuclear development. The others had as their goals the adaptation of CHIC 1 for bomber delivery and test of a missile warhead (CHIC 4). The third nuclear test was conducted on 9 September 1966 using a Tu-16 bomber. In addition to uranium 235, this nuclear device, with a yield around 100 KT, this time contained lithium 6, which attested to China's readiness to test a thermonuclear explosion. CHIC 6, an airdrop test on 17 June 1967, was the first full-yield, two-stage thermonuclear test.

Although the Cultural Revolution disrupted the strategic weapons program less than other scientific and educational sectors in China, there was a slowdown in succeeding years. The successes achieved in nuclear research and experimental design work permitted China to begin series production of nuclear (since 1968) and thermonuclear (since 1974) warheads.

Subsequent nuclear tests (CHIC 12, CHIC 13) were suggestive of a new phase of the PRC test programs. Both were low yield weapons. It appeared possible that CHIC 13 was delivered by an F-9 fighter aircraft and may have been a proof test of a weapon.

The PRC's nuclear weapons intelligence collection efforts began after the end of the Cultural Revolution in 1976, when the PRC assessed its weaknesses in physics and the deteriorating status of its nuclear weapons programs. The PRC's warhead designs of the late 1970s were large, multi-megaton thermonuclear weapons that could only be carried on large ballistic missiles and aircraft. The PRC's warheads were roughly equivalent to U.S. warheads designed in the 1950s. The PRC may have decided as early as that time to pursue more advanced thermonuclear warheads for its new generation of ballistic missiles.

In addition to the development of a sea-based nuclear force, China began considering the development of tactical nuclear weapons. PLA exercises featured the simulated use of tactical nuclear weapons in offensive and defensive situations beginning in 1982. Reports of Chinese possession of tactical nuclear weapons remained unconfirmed in 1987. In 1988 Chinese specialists tested a 1-5 KT nuclear device with an enhanced radiation yield, advancing the country's development of a very low yield neutron weapon and laying the foundation for the creation of nuclear artillery.

The PRC has already begun working on smaller thermonuclear warheads. During the 1990s, the PRC was working to complete testing of its modern thermonuclear weapons before it signed the Comprehensive Test Ban Treaty in 1996. The PRC conducted a series of nuclear tests from 1992 to 1996. Based on what is known about PRC nuclear testing practices, combined with data on PRC warhead yield and on PRC missile development, it is clear that the purpose of the 1992 to 1996 test series was to develop small, light warheads for the PRC's new nuclear forces.

One of the objectives of the final series of Chinese nuclear tests was to miniaturize China's nuclear warheads, dropping their weight from 2200 kgs to 700 kgs in order to accommodate the next generation of solid-fueled missile systems. This series of PRC nuclear weapons test explosions from 1992 to 1996 began a debate in the U.S. Government about whether the PRC's designs for its new generation of nuclear warheads were in fact based on stolen U.S. classified information. The apparent purpose of these PRC tests was to develop smaller, lighter thermonuclear warheads, with an increased yield-to-weight ratio.

The United States did not become fully aware of the magnitude of the counterintelligence problem at Department of Energy national weapons laboratories until 1995. In 1995, a "walk-in" approached the Central Intelligence Agency outside the PRC and provided an official PRC document classified "Secret" that contained specific design information on the W-88 Trident D-5, and technical information on other thermonuclear warheads. The CIA later determined that the "walk-in" was directed by the PRC intelligence

services. Nonetheless, CIA and other Intelligence Community analysts that reviewed the document concluded that it contained U.S. warhead design information.

Completing the development of its next-generation warhead poses challenges for the PRC. The PRC may not currently be able to match precisely the exact explosive power and other features of U.S. weapons. Nonetheless, the PRC may be working toward this goal, and the difficulties it faces are surmountable. Work-arounds exist, using processes similar to those developed or available in a modern aerospace or precision-guided munitions industry. The PRC possesses these capabilities already.

Assessing the extent to which design information losses accelerated the PRC's nuclear weapons development is complicated because so much is unknown. The full extent of U.S. information that the PRC acquired and the sophistication of the PRC's indigenous design capabilities are unclear. Moreover, there is the possibility of third country assistance to the PRC's nuclear weapons program, which could also assist the PRC's exploitation of the stolen U.S. nuclear weapons information.

There is some uncertainty in published estimates of the size of the Chinese nuclear weapons stockpile. Between January 1971 and late 1972 a second set of new nuclear facilities was identified in the West. This included a gaseous diffusion plant at Chinkouho which was estimated to be able to produce more U-235 than the original plant at Lanchow. This new facility was predicted to begin partial production in late 1972 with full operation in late 1974. There was an additional reactor for production of plutonium at Kuangyuan and additional weapons grade material could enter the stockpile by 1974-75. Also, there was a possible new weapons fabrication facility located at Tzutung. All of these new facilities would give the PRC the capability of becoming the third largest nuclear power in the world. Based on their production capability, DIA assessed in 1972 that the Chinese could have as many as 120 thermonuclear warheads and 260 fission nuclear weapons in their stockpile.

In the late 1980s it was generally held that China was the world's third-largest nuclear power, possessing a small but credible nuclear deterrent force of 225 to 300 nuclear weapons.

Other estimates of the country's production capacities suggested that by the end of 1970 China had fabricated around 200 nuclear weapons, a number which could have increased to 875 by 1980. With an average annual production of 75 nuclear weapons during the 1980s, some estimates suggest that by the mid-1990s the Chinese nuclear industry had produced around 2,000 nuclear weapons for ballistic missiles, bombers, artillery projectiles and landmines.

The retired Russian General Viktor Yesin, former chief of staff of the Russian Strategic Missile Forces, claimed that China's HEU stockpile was actually 40 tons, and a plutonium inventory of up to 10 tons. He says that these are the best estimates of Russian experts. Based on these estimates of nuclear weapon material production, Yesin estimates that China could have 1,600 to 1,800 warheads.

Jeffrey Lewis writes that "China operated exactly two nuclear reactors for the production of military plutonium through 1991. Open-source estimates reliably band China's production of plutonium at 2-5 metric tons. Classified Department of Energy estimates, leaked to the press, provide a narrower band of 1.7-2.8 metric tons. (Hui Zhang, a former colleague of mine at Harvard who previously worked in the Chinese nuclear weapons establishment, calculates Chinese production as being on the low end of that estimate in the most recent International Panel on Fissile Materials report.) Using a conservative estimate of 4-8 kilograms of plutonium per warhead, that yields a total force of probably no more than 375 warheads, with an extreme upper bound of no more than 700 warheads."

China's nuclear forces, in combination with the PLA's conventional forces, served to deter both nuclear and conventional attack. Chinese leaders repeatedly have pledged never to be the first to use nuclear weapons, and they have accompanied the no first-use pledge with a promise of certain nuclear counterattack if nuclear weapons are used against China. China envisioned retaliation against strategic and tactical attacks and would probably strike countervalue rather than counterforce targets. The combination of China's few nuclear weapons and technological factors such as range, accuracy, and response time might further limit the effectiveness of nuclear strikes against counterforce targets. China is seeking to increase the credibility of its nuclear retaliatory capability by dispersing and concealing its nuclear forces in difficult terrain, improving their mobility, and hardening its missile silos.

## **The Union of Concerned Scientists (UCS) Estimate**

The Union of Concerned Scientists (UCS) provided another unclassified summary of China's nuclear weapons programs in October 2011. Once again, there are striking similarities to other assessments, but many details differ and there is no clear agreement on the number of nuclear weapons deployed.<sup>779</sup>

U.S. governmental and non-governmental assessments<sup>1</sup> indicate China currently possesses a small nuclear arsenal, with an estimated 155 nuclear warheads ready to be deployed on six different types of land-based missiles. Approximately 50 of those missiles can reach the continental United States.

...Warheads: Estimates of the current number of Chinese nuclear warheads vary, but China is believed to have manufactured a total of between 200 and 300 warheads, roughly 50 of which have been used for nuclear tests. Currently, approximately 155 of those are believed to be prepared for deployment.

China's stocks of military plutonium limit how much it could expand its arsenal without restarting plutonium production. Estimates of the size of China's existing plutonium stocks are uncertain, but imply that the number of new warheads China could produce from existing stocks ranges from very few to possibly several hundred.

China has halted production of military plutonium but has not declared an official moratorium. Its dedicated military plutonium production facilities have been decommissioned. However, China recently began operating a pilot plant for reprocessing spent fuel from its commercial reactors and is discussing plans for a larger commercial reprocessing facility. These facilities extract plutonium that is created in the reactor from the spent fuel. China also operates an experimental fast breeder reactor, which is optimized to produce plutonium that would be used as fuel, and is considering purchasing two additional fast breeder reactors from Russia. If necessary, China could divert plutonium extracted from these experimental and commercial facilities for military use.

Satellite observations of the production facilities suggest they are not producing plutonium but they are well maintained. China officially supports negotiation of a Fissile Material Cut-off Treaty (FMCT) that would ban all future production for military use. This would cap China's capability to produce new warheads and place an upper bound on the size of its nuclear arsenal.

...China has conducted 45 nuclear tests. This relatively small number of tests (the United States conducted 1,054 and the Soviet Union/Russia conducted 715) suggests there are a limited number of tested Chinese warhead designs certified for deployment. China accelerated the pace of its nuclear testing during the three years it took to negotiate the Comprehensive Test Ban Treaty (CTBT) in the mid- 1990s in order to complete a series of tests on a smaller warhead design...U.S. analyses of that final test series suggest this smaller warhead is still too large for China to place multiple warheads on the long-range mobile missile designed deliver it, the DF-31...

...Unlike other nuclear weapons states, China keeps all of its warheads in storage. China's nuclear warheads and nuclear-capable missiles are kept separate and the warheads are not mated to the missiles until they are prepared for launch. Interestingly, for this reason under the counting rule for New START the number of Chinese weapons would be counted as zero...

...Estimates of the number, ranges, and payloads of Chinese nuclear-capable missiles vary. The estimates indicate China deploys approximately 150 land- based missiles that can carry nuclear payloads, fewer than 50 of which are long-range and can reach the United States....China is not believed to currently place multiple warheads on its missiles. However, some sources say DF-4 and DF- 5 missile tests have included testing of multiple re-entry vehicles...These tests may allow China to replace the older, larger single warheads on these two liquid-fueled missiles with smaller warheads and penetration aids. Chinese reports indicate that these may be tests of dummy warheads and penetration aids designed to defeat missile defenses...

China is experimenting with submarine-launched ballistic missiles but the one nominally operational nuclear-armed ballistic missile submarine it currently possesses does not patrol and Chinese experts describe it as a failure...China built two new ballistic missile submarines and is rumored to be building more, but the

nuclear-capable missile designed for deployment on those submarines failed initial flight tests...

...U.S. governmental and non-governmental reports indicate China possesses a stockpile of air-deliverable nuclear weapons but they have no "primary mission," according to U.S. assessments. Chinese cruise missiles can be armed with nuclear payloads but U.S. assessments state they are not. U.S. observations of China's military facilities, equipment, and training suggest China does not maintain a stockpile of tactical nuclear weapons...

...Chinese nuclear experts believe the risk that a nuclear-armed adversary would threaten to use nuclear weapons in an attempt to coerce China in some way is greatly reduced if this adversary doubts its ability to launch a strike that could eliminate China's ability to retaliate. China therefore values secrecy over transparency, since China believes transparency undermines its confidence in the survivability of its nuclear arsenal. Moreover, this confidence waxes and wanes in response to perceived trends in technological development. Technological improvements by a potential adversary that may increase its willingness to risk an attack against China with nuclear weapons, or an attack against China's nuclear weapons with conventional weapons, decreases Chinese confidence in its ability to retaliate. This precipitates requests by China's leadership to adjust or improve its arsenal.

Because of this sensitivity to technological change, China's defense scientists and engineers play a decisive role in determining China's nuclear posture. The open source literature published by this technically oriented community over the past several decades suggests it sees improvements in space and missile defense technology as the most significant and likely challenges to the credibility of China's ability to retaliate with nuclear weapons. For example, China is concerned that improvements in satellite reconnaissance may reveal the location of Chinese weapons and command and control facilities, and may increase the ability of adversaries to track and target mobile weapons. Or that missile defenses may increase the willingness of foreign adversaries to threaten a strike against China's nuclear arsenal, thus exposing Chinese leaders to the "nuclear blackmail" their arsenal is designed to prevent.

...A comparative look at China's arsenal relative to the arsenals of its principal rivals reveals that the evolution of China's nuclear weapon systems has occurred more slowly and on a smaller scale than that of the United States and the Soviet Union/Russia... China's modernization efforts are focused on developing solid-fueled missiles that can be deployed on mobile platforms, to reduce the likelihood its missiles could be destroyed in a first strike, compared to its original liquid-fueled missiles at fixed launch sites. In the past few years it

...The small size and limited capabilities of China's nuclear arsenal make the threat of a first use of nuclear weapons against the United States or Russia highly unlikely and not at all credible, since it would invite massive nuclear retaliation as well as international condemnation. None of the improvements to China's arsenal that are currently underway would present Chinese decision-makers with a more credible ability to threaten the first use of nuclear weapons against the United States or Russia. Therefore, it is reasonable to assume that the improvements being made to the Chinese nuclear arsenal are limited to maintaining a credible threat to retaliate.

...Because of the lack of nuclear testing, China is not modernizing or improving the design or nuclear components of its warheads. If China needs to manufacture warheads for the new nuclear-capable missiles it is deploying, these warheads would be manufactured according to existing, tested warhead designs certified for deployment before it stopped testing in 1996. As noted above, the size of China's existing stocks of military plutonium will place a limit on how many additional warheads it could build without producing more plutonium.

...China is also deploying a 1,700-km range nuclear missile, the DF-21, which is mobile and uses solid fuel. As with China's other missiles, the nuclear-capable DF-21 has been produced in small batches and progressively modified to accommodate different conventional military objectives, such as to launch the anti-satellite interceptor China tested in 2007 and the anti-ship

...Chinese efforts to develop a submarine-launched nuclear missile, despite decades of effort, have yet to produce a deployable capability. This may be in part because it is not a high priority. Based on the history of Soviet submarines, if these first-generation submarines are eventually deployed they are expected to be noisy enough to be easily detectable at sea, which would restrict them to patrolling in shallow areas around the Chinese coast inside its territorial waters and beyond interference from U.S. forces.

Moreover, should China eventually begin to deploy submarine-launched missiles, deployment would require placing both the warheads and missiles on the submarine, giving the commander greater responsibility and independence under conditions in which continuous secure and reliable communications with the political leadership are more difficult to maintain than with China's land-based missiles. This would be a major change, and could be seen as weakening the Chinese leadership's tight control over its development and testing of penetration aids. The development of these aids may be responsible for the increase in Chinese missile testing observed by U.S. satellites during the past decade.

### **The Federation of American Scientists (FAS) Estimate**

Finally, the Federation of American Scientists (FAS) provided the following additional historical detail on Chinese tests and weapons developments in a November 2006 report:<sup>780</sup>

When China decided in 1955 to develop atomic bombs it faced a number of technological choices as to the most appropriate route to follow. At that time China could only work on one path, and had to choose between producing Pu239 from a reactor, or developing the method of producing U235 through isotope separation. The uranium path offered two alternatives, either system, either chemical separation or physical separation. Chemical separation of Pu235 from the mixed system of U235 and U238 would have been easier than physical separation, but the separation of plutonium and uranium was difficult due to the high radioactivity of the Pu-U system, and the severe toxicity of plutonium. Therefore, the chosen path was the physical separation of U235 and U238 isotopes. The implosion method of detonating an atomic bomb was considered more technically advanced, though there were questions as to whether China was capable of producing a uranium bomb detonated by the implosion method.

China made remarkable progress in the 1960s in developing nuclear weapons. In a thirty-two-month period, China successfully exploded its first atomic bomb (October 16, 1964), launched its first nuclear missile (October 25, 1966), and detonated its first hydrogen bomb (June 14, 1967).

The first Chinese nuclear test was conducted at Lop Nor on 16 October 1964 (CHIC 1). It was a tower shot involving a fission device with a yield of 25 kilotons. Uranium 235 was used as the nuclear fuel, which indicates Beijing's choice of the path of creating high-yield nuclear weapons right away. Of the ten test shots that followed by 29 September 1969, six are believed to have been related to thermonuclear development. The others had as their goals the adaptation of CHIC 1 for bomber delivery and test of a missile warhead (CHIC 4). The third nuclear test was conducted on 9 September 1966 using a Tu-16 bomber. In addition to uranium 235, this nuclear device, with a yield around 100 KT, this time contained lithium 6, which attested to China's readiness to test a thermonuclear explosion. CHIC 6, an airdrop test on 17 June 1967, was the first full-yield, two-stage thermonuclear test.

Although the Cultural Revolution disrupted the strategic weapons program less than other scientific and educational sectors in China, there was a slowdown in succeeding years. The successes achieved in nuclear research and experimental design work permitted China to begin series production of nuclear (since 1968) and thermonuclear (since 1974) warheads.

Subsequent nuclear tests (CHIC 12, CHIC 13) were suggestive of a new phase of the PRC test programs. Both were low yield weapons. It appeared possible that CHIC 13 was delivered by an F-9 fighter aircraft and may have been a proof test of a weapon.

One of the objectives of the final series of Chinese nuclear tests was to miniaturize China's nuclear warheads, dropping their weight from 2200 kgs to 700 kgs in order to accommodate the next generation of solid-fueled missile systems.

In addition to the development of a sea-based nuclear force, China began considering the development of tactical nuclear weapons. PLA exercises featured the simulated use of tactical nuclear weapons in offensive and defensive situations beginning in 1982. Reports of Chinese possession of tactical nuclear weapons remained unconfirmed in 1987. In 1988 Chinese specialists tested a 1-5 KT nuclear device with an enhanced radiation yield, advancing the country's development of a very low yield neutron weapon and laying the foundation for the creation of nuclear artillery.

There is considerable uncertainty in published estimates of the size of the Chinese nuclear weapons stockpile. In the late 1980s it was generally held that China was the world's third-largest nuclear power, possessing a



small but credible nuclear deterrent force of 225 to 300 nuclear weapons. Other estimates of the country's production capacities suggested that by the end of 1970 China had fabricated around 200 nuclear weapons, a number which could have increased to 875 by 1980. Assuming an average annual production of 75 nuclear weapons during the 1980s, some estimates even suggested that by the mid-1990s the Chinese nuclear industry had produced around 2,000 nuclear weapons for ballistic missiles, bombers, artillery projectiles and landmines.

While these analyses differ in detail, they still track broadly with what several experts in the U.S. government felt could be said about Chinese nuclear weapons on an unclassified basis. There are other U.S. experts, however, who believe that China may be concealing a much larger nuclear effort, have much larger stockpiles – including theater and smaller tactical weapons – and be moving more aggressively towards MIRV deployment and improving its strategic nuclear warhead numbers.

### ***China and United States Nuclear Forces and Policies***

The United States had over 1,750 deployed strategic warheads as of May 2016. It had an additional 180 active theater nuclear weapons. The FAS reported that the United States had an estimated 2,570 warheads in central storage. In addition to these warheads, approximately 2,340 retired by intact warheads under the control of the U.S. Department of Energy are in storage, bringing the total U.S. inventory of roughly 7,000 warheads. The United States has cut a total of 158 strategic warheads and 88 launchers since February 2011 and plans on making further reductions by 2018.<sup>781</sup>

The United States summarized its strategy in dealing with deterrence and nuclear forces as follows in its FY2017 defense budget overview:<sup>782</sup>

**Nuclear Deterrence:** Strengthening the nuclear enterprise remains one of the Air Force's highest priorities. The Air Force continues its actions to deliver safe, secure, and effective nuclear capabilities within its Nuclear Deterrence Operations (NDO) portfolio. The Air Force's intercontinental ballistic missiles and bombers provide two legs of the nation's Nuclear Triad and dual-capable fighters and bombers extend deterrence and provide assurance to our allies and partners.

**Intercontinental Ballistic Missile (ICBM):** The FY 2017 budget request funds additional investments to sustain and modernize the ICBM force, including Ground Based Strategic Deterrent (GBSD) integrated design and development.

### **The United States and Theater Nuclear Weapons**

Theater nuclear weapons present another set of complex issues because U.S. policy has changed and the current status of such forces in contingencies outside Europe remains somewhat ambiguous. Since the end of the Cold War, the U.S. has been removing its deployed tactical and theater nuclear weapons from Europe and Asia. In 2008, the U.S. informed Japan it would be retiring its sea-based nuclear warhead Tomahawk cruise missiles (TLAM-N) from the region.<sup>783</sup>

A report by Amy Woolf of the U.S. Congressional Research Service in February 2015 provides important insights into U.S. policy towards the use of nuclear weapons in theater conflicts – although it does not fully address possible U.S. reactions to the increasing Russian threats to use theater nuclear weapons to defend itself against NATO or developments like North Korea's expanding stockpile of nuclear weapons,<sup>784</sup>

In the past, U.S. discussions about nonstrategic nuclear weapons have also addressed questions about the role they might play in deterring or responding to regional contingencies that involved threats from nations that may not be armed with their own nuclear weapons. For example, former Secretary of Defense Perry stated that, "maintaining U.S. nuclear commitments with NATO, and retaining the ability to deploy nuclear capabilities to meet various regional contingencies, continues to be an important means for deterring

aggression, protecting and promoting U.S. interests, reassuring allies and friends, and preventing proliferation (emphasis added)."

Specifically, both during the Cold War and after the demise of the Soviet Union, the United States maintained the option to use nuclear weapons in response to attacks with conventional, chemical, or biological weapons. For example, in 1999, Assistant Secretary of Defense Edward Warner testified that "the U.S. capability to deliver an overwhelming, rapid, and devastating military response with the full range of military capabilities will remain the cornerstone of our strategy for deterring rogue nation ballistic missile and WMD proliferation threats. The very existence of U.S. strategic and theater nuclear forces, backed by highly capable conventional forces, should certainly give pause to any rogue leader contemplating the use of WMD against the United States, its overseas deployed forces, or its allies." These statements do not indicate whether nonstrategic nuclear weapons would be used to achieve battlefield or tactical objectives, or whether they would contribute to strategic missions, but it remained evident, throughout the 1990s, that the United States continued to view these weapons as a part of its national security strategy.

The George W. Bush Administration also emphasized the possible use of nuclear weapons in regional contingencies in its 2001 Nuclear Posture Review. The Bush Administration appeared to shift towards a somewhat more explicit approach when acknowledging that the United States might use nuclear weapons in response to attacks by nations armed with chemical, biological, and conventional weapons, stating that the United States would develop and deploy those nuclear capabilities that it would need to defeat the capabilities of any potential adversary whether or not it possessed nuclear weapons. This does not, by itself, indicate that the United States would plan to use nonstrategic nuclear weapons. However, many analysts concluded from these and other comments by Bush Administration officials that the United States was planning for the tactical, first use of nuclear weapons. The Bush Administration never confirmed this view, and, instead, indicated that it would not use nuclear weapons in anything other than the most grave of circumstances.

The Obama Administration, on the other hand, seemed to foreclose the option of using nuclear weapons in some regional contingencies. Specifically, it stated, in the 2010 NPR, that "the United States will not use or threaten to use nuclear weapons against non-nuclear weapons states that are party to the Nuclear Non-Proliferation Treaty (NPT) and in compliance with their nuclear nonproliferation obligations." Specifically, if such a nation were to attack the United States with conventional, chemical, or biological weapons, the United States would respond with overwhelming conventional force, but it would not threaten to use nuclear weapons if the attacking nation was in compliance with its nuclear nonproliferation obligations and it did not have nuclear weapons of its own. At the same time, though, the NPR stated that any state that used chemical or biological weapons "against the United States or its allies and partners would face the prospect of a devastating conventional military response—and that any individuals responsible for the attack, whether national leaders or military commanders, would be held fully accountable."

### **Force Structure**

Through the late 1990s and early in George W. Bush Administration, the United States maintained approximately 1,100 nonstrategic nuclear weapons in its active stockpile. Unclassified reports indicate that, of this number, around 500 were air-delivered bombs deployed at bases in Europe. The remainder, including some additional air-delivered bombs and around 320 nuclear-armed, sea-launched cruise missiles, were held in storage areas in the United States. After the Clinton Administration's 1994 Nuclear Posture Review, the United States eliminated its ability to return nuclear weapons to U.S. surface ships (it had retained this ability after removing the weapons under the 1991 PNI). It retained, however, its ability to restore cruise missiles to attack submarines, and it did not recommend any changes in the number of air-delivered weapons deployed in Europe. During this time, the United States also consolidated its weapons storage sites for nonstrategic nuclear weapons. It reportedly reduced the number of these facilities "by over 75%" between 1988 and 1994. It eliminated two of its four storage sites for sea-launched cruise missiles, retaining only one facility on each coast of the United States. It also reduced the number of bases in Europe that store nuclear weapons from over 125 bases in the mid-1980s to 10 bases, in seven countries, by 2000.

The Bush Administration did not recommend any changes for U.S. nonstrategic nuclear weapons after completing its Nuclear Posture Review in 2001. Reports indicate that it decided to retain the capability to restore cruise missiles to attack submarines because of their ability to deploy, in secret, anywhere on the

globe in time of crisis. The NPR also did not recommend any changes to the deployment of nonstrategic nuclear weapons in Europe, leaving decisions about their status to the members of the NATO alliance.

Nevertheless, according to unclassified reports, the United States did reduce the number of nuclear weapons deployed in Europe and the number of facilities that house those weapons during the George W. Bush Administration. Some reports indicate that the weapons were withdrawn from Greece and Ramstein Air Base in Germany between 2001 and 2005. In addition, reports indicate that the United States withdrew its nuclear weapons from the RAF Lakenheath air base in the United Kingdom in 2006. According to unclassified reports, the United States now deploys 160-200 bombs at six bases in Belgium, Germany, Italy, the Netherlands, and Turkey. Some of these weapons are stored at U.S. bases and would be delivered by U.S. aircraft. Others are stored at bases operated by the “host nation” and would be delivered by that nation’s aircraft if NATO decided to employ nuclear weapons.

The Obama Administration has not announced any further reductions to U.S. nuclear weapons in Europe and has indicated that the United States would “consult with our allies regarding the future basing of nuclear weapons in Europe.” In the months prior to the completion of NATO’s new Strategic Concept, some politicians in some European nations did propose that the United States withdraw these weapons. For example, Guido Westerwelle, Germany’s foreign minister, stated that he supported the withdrawal of U.S. nuclear weapons from Germany. Some reports indicate that Belgium and the Netherlands also supported this goal. As was noted above, NATO did not call for the removal of these weapons in its new Strategic Concept, but did indicate that it would be open to reducing them as a result of arms control negotiations with Russia.

Moreover, in the 2010 NPR, the Obama Administration indicated that it would take the steps necessary to maintain the capability to deploy U.S. nuclear weapons in Europe. It indicated that the U.S. Air Force would retain the capability to deliver both nuclear and conventional weapons as it replaced aging F-16 aircraft with the new F-35 Joint Strike Fighter. The NPR also indicated that the United States would conduct a “full scope” life extension program for the B61 bomb, the weapon that is currently deployed in Europe, “to ensure its functionality with the F-35.” This life extension program will consolidate four versions of the B61 bomb, including the B61-3 and B61-4 that are currently deployed in Europe, into one version, the B61-12. Reports indicate that this new version will reuse the nuclear components of the older bombs, but will include enhanced safety and security features and a new “tail kit” that will increase the accuracy of the weapon.

On the other hand, the NPR indicated that the U.S. Navy would retire its nuclear-armed, sea-launched cruise missiles (TLAM-N). It indicated that “this system serves a redundant purpose in the U.S. nuclear stockpile” because it is one of several weapons the United States could deploy forward. The NPR also noted that “U.S. ICBMs and SLBMs are capable of striking any potential adversary.” As a result, because “the deterrence and assurance roles of TLAM-N can be adequately substituted by these other means,” the United States could continue to extend deterrence and provide assurance to its allies in Asia without maintaining the capability to redeploy TLAM-N missiles.

The documents the President submitted with his proposed FY2017 U.S. defense budget described several other current U.S. plans for strategic forces, deterrence, and defense. It is not clear how they will affect the future U.S. stockpile of nuclear weapons, but they do reflect the impact of both budget cutbacks and ongoing improvements in other areas. The U.S. Department of Defense Fiscal Year 2017 Budget Request that the United States issued in February 2016 stated that:<sup>785</sup>

The FY 2017 budget request funds the development and deployment of ballistic missile defense (BMD) capabilities to support the Administration’s commitment to protect the U.S. homeland, deployed forces, allies, and partners. The FY 2017 budget request for missile defense is \$9.1 billion, which includes \$7.5 billion for the Missile Defense Agency and reflects a decrease of \$.7 billion below the FY 2016 enacted level of \$9.8 billion.

For homeland defense, the FY 2017 budget request maintains the commitment to increase the number of deployed Ground-Based Interceptors (GBI) to 44 (by delivering an additional 14 interceptors over the FY 2016 level of 30 fielded interceptors); continue development of the Redesigned Kill Vehicle (REKV); and proceed with the development of the Long-Range Discrimination Radar (LRDR). When combined with the planned GBI reliability, system engineering, and discrimination improvements, these enhancements will

enable the missile defense system to deal effectively with the Intercontinental Ballistic Missile (ICBM) threat from North Korea and a potential ICBM threat from Iran.

The FY 2017 budget request also reflects the Department's commitment to building the regional missile defense forces that are interoperable with the North Atlantic Treaty Organization (NATO) Air Command and Control and Patriot Systems, Israeli Arrow and Patriot Weapon Systems, and Japan Aerospace Defense Ground Environment (JADGE), and Aegis Weapon Systems and SM-3 interceptors deployed by international partners.

The Department continues to support the European Phased Adaptive Approach (EPAA), which is designed to protect U.S. deployed forces and allies in Europe from ballistic missile attacks from the Middle East. The FY 2017 budget request supports the implementation of Phase 3 of the EPAA, to include the deployment of Aegis Ashore to Poland in the FY 2018 timeframe. The Aegis Ashore will be capable of launching Standard Missile-3 (SM-3) Blocks IA, IB, and IIA (delivery in 2018) variants.

The FY 2017 budget request also:

- Provides additional funding for key capabilities to meet the maturing threat from North Korean ICBMs and the potential threat from Iranian ICBMs, including GBI reliability and system engineering enhancements, GBI modifications to address the root causes of previous flight test failures, and operation of the Sea-Based X-band radar;
- Provides funding for advanced technologies to meet the future threat, including discrimination improvements, directed energy research, and multiple kill technologies;
- Provides funding for Terminal High Altitude Area Defense (THAAD) concept development and risk reduction activities for follow-on capabilities; and procures 24 THAAD interceptors in FY 2017;
- Procures 85 new Missile Segment Enhancement (MSE) missiles. The MSE is a significant evolutionary improvement over the Patriot Advanced Capability-3 (PAC-3) missile, and provides greater agility and lethality;
- Continues U.S. contributions to the Iron Dome system to defeat short-range missiles and rockets; continues support for the Arrow Weapon System, Israeli Upper Tier Interceptors, and the David's Sling Weapon System; and
- Continues conversion of Aegis ships to provide BMD capability and procures 35 SM-3 Block IB missiles to be deployed on Aegis BMD ships and at the Romania Aegis Ashore site.

The U.S. remains committed to civil nuclear programs as well. It has 99 nuclear power reactors producing approximately 20% of U.S. energy needs.<sup>786</sup>

### **The U.S. Focus on Russia at a Time of Rising Chinese Capability**

The U.S. has promoted significant U.S. and Russian nuclear weapons reductions, while not addressing Chinese nuclear forces. President Obama declared in April 2009 that the U.S. was committed to the long-term goal of zero nuclear weapons, and there has been a unilateral Congressional moratorium on nuclear tests since 1992. Although the 2001 Nuclear Posture Review suggested that the U.S. might develop new types of nuclear weapons, the 2010 Nuclear Posture Review reversed course. The new posture is that nuclear weapons research will only involve components based on previous designs, not new capabilities or missions.

After the 2010 Review and the ratification of the New START Treaty, President Obama directed the Departments of State, Energy, Defense, and the intelligence community to analyze U.S. nuclear deterrence requirements and policy in the current security environment. A White House fact sheet released on June 19, 2013 described Obama's new guidance on nuclear employment planning, force structure, and posture decisions, which.<sup>787</sup>

- affirms that the United States will maintain a credible deterrent, capable of convincing any potential adversary that the adverse consequences of attacking the United States or our allies and partners far outweigh any potential benefit they may seek to gain through an attack.
- directs DOD to align U.S. defense guidance and military plans with the policies of the NPR, including that the United States will only consider the use of nuclear weapons in extreme circumstances to defend the vital interests of the United States or its allies and partners. The guidance narrows U.S. nuclear strategy to focus on only those objectives and missions that are necessary for deterrence in the 21<sup>st</sup> century. In so doing, the guidance takes further steps toward reducing the role of nuclear weapons in our security strategy.
- directs DOD to strengthen non-nuclear capabilities and reduce the role of nuclear weapons in deterring non-nuclear attacks.
- directs DOD to examine and reduce the role of launch under attack in contingency planning, recognizing that the potential for a surprise, disarming nuclear attack is exceedingly remote. While the United States will retain a launch under attack capability, DOD will focus planning on the more likely 21<sup>st</sup> century contingencies.
- codifies an alternative approach to hedging against technical or geopolitical risk, which will lead to more effective management of the nuclear weapons stockpile.
- reaffirms that as long as nuclear weapons exist, the United States will maintain a safe, secure and effective arsenal that guarantees the defense of the U.S. and our allies and partners. The President has supported significant investments to modernize the nuclear enterprise and maintain a safe, secure, and effective arsenal. The administration will continue seeking congressional funding support for the enterprise.

The DoD's June 12, 2013 *Report on Nuclear Employment Strategy of the United States* referenced China directly, making clear that the United States will continue to seek maintenance of strategic stability with China and Russia.<sup>788</sup>

While addressing the increasingly urgent threats of nuclear terrorism and proliferation, the United States must continue to address the more familiar challenge of ensuring strategic stability with Russia and China....

The United States is concerned about many aspects of China's conventional military modernization efforts and is watching closely the modernization and growth of China's nuclear arsenal. The lack of transparency surrounding its nuclear programs, specifically their pace and scope, as well as the strategy and doctrine that guides them, raises questions about China's long-term intentions.

The United States remains committed to maintaining strategic stability in U.S.-China relations and supports initiation of a dialogue on nuclear affairs aimed at fostering a more stable, resilient, and transparent security relationship with China.

.... The new guidance states that the United States will maintain a nuclear Triad, consisting of intercontinental ballistic missiles (ICBMs), submarine-launched ballistic missiles (SLBMs), and nuclear-capable heavy bombers. Retaining all three triad legs will best maintain strategic stability at reasonable cost, while hedging against potential technical problems or vulnerabilities. These forces should be operated on a day-to-day basis in a manner that maintains strategic stability with Russia and China, deters potential regional adversaries, and assures U.S. Allies and partners....

Russian President Putin and President Obama discussed non-proliferation at the June 2013 G8 summit, and Obama gave a public speech on the issue on a June 19 visit to Germany, calling for reductions in strategic nuclear weapons stockpiles of one-third.<sup>789</sup> While concentrating on Russia and the European theatre, it seems that China was not mentioned.

## ***Chinese Reactions and North and South Korean Developments***

U.S. intelligence estimates of the Democratic People's Republic of Korea's (DPRK) nuclear weapons program have long warned that the DPRK has an active program. It is clear that Pyongyang has effectively ignored or terminated its past agreements to limit the production of nuclear materials and missile tests, posing very real concerns not only in the region, but also in the International community.

### **North Korean Developments from 2010 to 2013**

According to a May 2010 UN Security Council report on the DPRK's nuclear program, "the Democratic People's Republic of Korea believes ... that its nuclear programme can provide the country a way to achieve its stated goal of becoming a 'strong and prosperous country' (*kangsongdaeguk*) by the year 2012 without succumbing to what they view as 'foreign influences.'"<sup>790</sup>

In June 2010, a DPRK Foreign Ministry spokesman stated that "recent developments" have underscored the need for the DPRK "to bolster its nuclear deterrent in a newly developed way."<sup>791</sup> Given the aggressiveness in the DPRK sinking of the Republic of Korea (ROK) Corvette *Cheonan* in March 2010 and the shelling of Yeonpyeong Island in November, there may be little possibility that the DPRK will give up its nuclear weapons program any time soon.

DNI James R. Clapper noted in 2011 that:<sup>792</sup>

Based on the scale of the facility and the progress the DPRK has made in construction, it is likely that North Korea has been pursuing enrichment for an extended period of time. If so, there is clear prospect that DPRK has built other uranium enrichment related facilities in its territory, including likely R&D and centrifuge fabrication facilities, and other enrichment facilities. Analysts differ on the likelihood that other production-scale facilities may exist elsewhere in North Korea.

Ironically, the "Arab Spring" may have acted as a further incentive to the DPRK. Some experts feel that North Korea sees Muammar Qaddafi's willingness to give up Libya's nuclear programs as one reason that the UN and NATO were willing to impose a no-fly zone and make a de facto effort to remove him from power. It also sees India, Iran, Israel, and Pakistan as examples of states whose nuclear efforts also give them political and military leverage where they may not have had it. Looking at the examples of Libya and Iraq, countries that gave up their WMD programs, the DPRK state media outlet noted on April 4, 2013 that "the nuclear weapons of Songun Korea are not something for display and the DPRK is very different from Iraq, Libya and the Balkans."<sup>793</sup>

A Rand assessment in 2012 stated that:<sup>794</sup>

It should also be considered that even speculative sources estimate that North Korea cannot have more than a few nuclear weapons available. If they exist, these devices are very precious to the regime, and it seems unlikely that they would be mounted on inaccurate and unreliable missile systems—the risk of "loosing" a weapon is simply too high. Of course, a singular shot can never be totally ruled out, but the chances of success are very low. And even if this unlikely event was to happen, with North Korea unable to repeat this feat on short notice, this scenario should be seen more like a terrorist attack than nuclear warfare.

In 2013, U.S. officials assessed DPRK nuclear capabilities as "being more for deterrence, international prestige, and coercive diplomacy than for war fighting, and assess that Pyongyang most likely 'would consider using nuclear weapons only under narrow circumstances.'"<sup>795</sup> The DPRK noted in a state-run newspaper, "The DPRK was left with no option but to choose the way

of accessing nuclear deterrent in order to put an end to the U.S. ever-more intensified nuclear threat and defend the sovereignty, dignity, and vital rights of the country” – making nuclear weapons a matter of defense and dignity, not offense.<sup>796</sup>

That same year, a former DOD official called the DPRK’s nuclear weapons acquisition a “survival game” in that nuclear weapons are the only reason anyone pays attention to the DPRK, which is necessary for the regime to gain aid and assistance. As the poorest country in the region, it would receive little without calling attention to itself so forcefully.<sup>797</sup>

### **The Impact of the 2013 North Korean Test**

In any case, the DPRK’s third nuclear test in February 2013 signaled that it was attempting to establish itself as a nuclear power or, at the very least, a de-facto nuclear state – like Israel, India, and Pakistan – a nation that is implicitly recognized as a nuclear state by the international community, though not formally recognized under the NPT framework. The Institute for Science and International Security (ISIS) also reported in August 2013, that satellite data indicated that the DPRK might have doubled the area used to enrich uranium at its Yongbyon reactor complex – its key source of weapons grade material – over the previous months.<sup>798</sup>

It is also clear that the DPRK stepped up its nuclear research and production activity in 2014, as well as gave indications that it planned new nuclear tests in June and November.<sup>799</sup> Gen. Curtis M. Scaparrotti, the Commander of U.S. forces in the ROK stated publically on October 24, 2014 that he believed that the DPRK had probably developed a nuclear weapon small enough to be used in a nuclear warhead on a ballistic missile.<sup>800</sup>

Scaparrotti’s public statement at a Pentagon press conference was particularly significant because of an intelligence incident in April 2013, when the Defense Intelligence Agency had issued a statement that it had concluded with “moderate confidence” that the DPRK now had the technology to make a nuclear weapon small enough to fit a ballistic missile warhead. A few days later, James R. Clapper Jr., the Director of National Intelligence, stated that the DIA’s one-paragraph assessment had been declassified by mistake, and was inadvertent disclosure that revealed competing views on the country within the United States’ spy agencies.<sup>801</sup>

On November 18, 2014, the U.S.-Korea Institute at SAIS at Johns Hopkins University, issued a report that recent commercial satellite imagery of the Yongbyon nuclear facility indicated the DPRK might be preparing to reprocess spent nuclear fuel to extract weapons-grade plutonium. When a United Nations committee recommended that the leaders of the DPRK should be prosecuted for human rights violations on November 19th, the DPRK threatened to conduct a fourth nuclear test.<sup>802</sup>

It is also unclear how reliable or safe such a warhead would be, what the risks would be if it might malfunction, how well it could survive an accident, and whether the DPRK could predict its operational yield in kilotons.<sup>803</sup>

The nuclear test as led to new tensions between the DPRK and the U.S. and the ROK. While initial reports indicated no sign of imminent DPRK military action accompanying a February 2013 nuclear test, by March 29, extra troop and vehicle movements at the DPRK’s mid- and long-range missile sites were reported in the South Korean news. On March 28, the U.S. had flown two radar-evading B-2 spirit bombers over South Korea, flying from the U.S. and back, dropping inert munitions as a practice run in the South for the first time.

The following day, the DPRK put its missile units on standby to attack U.S. military bases, with Kim Jong-un reportedly signing a plan to technically prepare the country's strategic rockets to be on standby. In previous periods of U.S.-ROK joint military exercises, the DPRK has similarly put its military on highest readiness to fight, and Kim Jong-un has also previously given "final orders" for the DPRK military to wage revolutionary war with the ROK.<sup>804</sup>

At the end of March, the DPRK announced a "new strategic line" to build both its nuclear arsenal and its economy simultaneously – because a growing nuclear deterrent would allow the DPRK to reduce military spending and invest more resources into light industries and the agricultural sector. In order to promote the new guidelines, the Central Committee of the ruling Workers' Party met for the first time since 1993, with Kim Jong-un presiding; the next day the Supreme People's Assembly – the DPRK's rubber-stamp Parliament – was expected to follow up and pass the guidelines.<sup>805</sup>

In early April 2013, the DPRK passed a decree at the 7<sup>th</sup> session of the 12<sup>th</sup> Supreme People's Assembly on "further consolidation of the self-defense nuclear power status."<sup>806</sup> The North also announced that, as part of a plan to put all of its nuclear facilities to use in expanding its nuclear arsenal, it would restart its plutonium reactor at Yongbyon, the cooling tower of which had been destroyed pursuant to the Six Party Talks in 2007 – and continue construction on other reactors. The DPRK also cited the need to generate more electricity as a motivation for its actions.

Siegfried Hecker noted that it could take six months to a year for the DPRK to restart the aging plutonium reactor, and another three years to reprocess and extract enough fissile material for more weapons. Hecker has stated that the DPRK could do so without needing foreign materials or equipment, and, once operational, could produce 6 kg of plutonium per year.<sup>807</sup>

Simultaneously, the U.S. reported that an Aegis-class warship had been moved to the ROK's southwest coast, and an SBX-1 sea-based radar platform was being moved to the western Pacific to monitor the DPRK as well.<sup>808</sup>

In addition, the DPRK moved what appeared to be two Musudan missiles (unveiled in 2010 but not yet tested) and seven mobile launchers to its east coast in early April, and a ROK military source noted on April 21, 2013 that satellite images showed that the DPRK had moved an additional two short-range Scud mobile missile launchers to South Hamgyeong Province (also on the east coast). These missiles appeared to have been removed by early May 2013.<sup>809</sup>

In response to the Musudan missiles on the east coast, Japan deployed ballistic missile interceptors near Tokyo.<sup>810</sup> The U.S. repositioned two Aegis missile destroyers – the John McCain and the Decatur – in waters near the Korean Peninsula, and announced it would deploy a second TPY-2 missile-defense tracking radar in Japan,<sup>811</sup> along with the Terminal High-Altitude Area Defense (THAAD) system – a land-based missile defense system that includes a truck-mounted launcher, a component of interceptor missiles, an AN/TPY-2 tracking radar, and an integrated fire control system – to Guam within the next several weeks.<sup>812</sup>

The United States deployed B-2 and B-52 bombers, both with nuclear capabilities, over the ROK, and used F-22s in drills with the ROK.<sup>813</sup> On April 10, ROK-U.S. combined forces raised their alert level to WATCHCON 2 to increase surveillance monitoring, while the ROK had raised its alert level to "vital threat," as it appeared that at least one of the Musudan missiles was fueled and ready for launch.<sup>814</sup>



The United States also announced that it would deploy additional ballistic missile interceptors in California and Alaska, increasing the number of ground-based interceptors from 30 to 44 at a cost of just under \$1 billion. While the system has only been successful in 50% of tests, the weapons send a signal of credible deterrence, showed the ROK and Japan that the U.S. remained committed, and also warned Beijing to restrain the DPRK or face an expanding U.S. military focus in the Asian-Pacific region; according to one senior government official, “We want to make it clear that there’s a price to be paid for letting the North Koreans stay on the current path.” The missiles could also be used to deter Iran.<sup>815</sup> At the same time, in an attempt to avoid misperception by the DPRK, a long-scheduled test of Minuteman-3 ICBMs was delayed.<sup>816</sup>

### **The Impact of DPRK, ROK, and U.S. Developments Through 2016**

Several foreign companies operating in the ROK announced they were considering contingency plans for their employees’ safety,<sup>817</sup> while the ROK stock market was negatively affected by the growing tension on the Peninsula. One expert noted that the DPRK was attempting to use extreme propaganda to damage foreign direct investments in South Korea, a type of asymmetrical psychological warfare attack on the ROK’s economic strength.<sup>818</sup> While on a visit to China, Secretary of State John Kerry attempted to garner increased Chinese support of the U.S. position towards the DPRK – meaning, a reduction in Chinese support of the North – and reportedly offered to reduce U.S. missile defense in the Asia-Pacific if the DPRK abandoned its nuclear program.<sup>819</sup>

However, in early 2015 the United States made it increasingly clear to the ROK that it should install the THAAD system as a deterrent to the DPRK’s missile threats. This issue brought increased tension between Seoul and Beijing because China worries that the THAAD system would compromise its own strategic deterrent capabilities by having U.S. radar sensors extend deeper into Chinese territories.<sup>820</sup>

On January 6<sup>th</sup>, 2016 North Korea completed its fourth nuclear weapons test, which they claimed to be the detonation of a thermonuclear bomb. While North Korea released a statement noting the test was a “complete success”, numerous experts questioned the validity of the claim that it was thermonuclear weapon.<sup>821</sup> Arms Control Association noted, “Monitoring stations from the Comprehensive Nuclear Test Ban Treaty Organization detected the seismic activity from the test. The type of device tested remains unclear, although experts doubt it was of a hydrogen bomb based on seismic evidence.”<sup>822</sup> Nevertheless, the test was another mark of North Korea’s nuclear resolve and presaged the uptick in Pyongyang’s nuclear posturing throughout 2016.

On February 7<sup>th</sup>, the DPRK used a Unha-3 rocket to launch the satellite Kwangmyongsong-4 into space.<sup>823</sup> However, most experts believe the launch was simply a pretext to test long-range ballistic missile technology as the Unha rocket is also integral to the Taepodong-2—North Korea’s ICBM in development. In a State Department press statement, John Kerry criticized the test as, “a flagrant violation of UN Security Council Resolutions related to the D.P.R.K. use of ballistic missile technology.”<sup>824</sup>

On March 10<sup>th</sup>—days after DPRK officials claimed they had the capability to miniaturize nuclear warheads<sup>825</sup>—North Korea launched two short-range ballistic missiles into the sea in response to the annual U.S.-ROK military exercise.<sup>826</sup> On April 8<sup>th</sup>, a new solid-fuel ICBM engine was successfully tested marking a substantial technological step forward from liquid to solid fuel.<sup>827</sup> Further troubling the international community, North Korea conducted an SLBM test on April 23<sup>rd</sup>, though it appeared to be unsuccessful.<sup>828</sup>

North Korea also conducted six tests of its Musudan (KN-07) IRBM between April 15<sup>th</sup> and June 22<sup>nd</sup>. While the first five tests were failures, the sixth was assessed as a success by both the DPRK and independent experts.<sup>829</sup> WikiLeaks released the description of the Musudan made available to members of the Missile Technology Control Regime (MTCR).<sup>830</sup>

Recently, North Korea has developed a new land-mobile IRBM --called the Musudan by the United States. The Musudan is a single-stage missile and may have a range of up to 4,000 km with a 500 kg payload. The Musudan is derived from the SS-N-6 submarine-launched ballistic missile (SLBM) and represents a substantial advance in North Korea's liquid propellant technology, as the SS-N-6 had a much more advanced engine and used more energetic propellants -- unsymmetrical dimethylhydrazine (UDMH) and nitrogen tetroxide (N2O4) -- than those used in Scud-type missiles. Development of the Musudan with this more advanced propulsion technology allows North Korea to build even longer-range missiles -- or shorter range missiles with greater payload capacity -- than would be possible using Scud-type technology.

The successful test is of concern to the United States — assuming the maximum range estimates for the Musudan are correct — because it means North Korea has the capability to strike the U.S. territory of Guam.<sup>831</sup> Additionally, as *The New York Times* notes, it could lead to further DPRK technological breakthroughs.<sup>832</sup>

“Mr. Lewis said the development of the Musudan is especially worrisome because it also advances the North’s KN-08 program — the development of its first intercontinental ballistic missile with a range to reach the continental United States. The first stage of the KN-08 missile comprises a pair of Musudan-type engines, he said.”

Despite the progress of the DPRK’s nuclear and missile program, it is also unclear whether the DPRK has mastered the ability to efficiently and reliably weaponize a nuclear device it can deploy on a missile. The detonation of a nuclear explosive device is a significant scientific achievement, but creating a device that can be included in a small bomb or a missile warhead presents a number of difficult engineering problems.<sup>833</sup> Theoretically, the DPRK could use an aircraft, a ship, or even a vehicle to deliver a nuclear weapon, but these platforms are either vulnerable or unreliable.

ROK intelligence believes, however, that DPRK engineers were able to make significant progress in warhead miniaturization between 1999 and 2001, and the national defense ministry – along with ROK experts – now believes the DPRK has warheads that can be mounted on ballistic missiles.<sup>834</sup> Furthermore, ROK intelligence sources told the ICG in 2009 they believe the DPRK has deployed nuclear warheads for *Nodong* missiles in the northern part of the country.<sup>835</sup> As noted earlier, U.S. intelligence experts and senior officers also indicate in 2013 and 2014, however, that the DPRK may have reached the point where it has the technical capability to deploy a nuclear missile warhead.

### **The Impact of Broader ROK Reactions**

China has not been able to ignore the fact that the creation of a ROK nuclear weapons program became the subject of a new political debate after the DPRK’s new military provocations in 2010. Conservatives of the Saenuri party wanted the U.S. to redeploy tactical nuclear weapons, while an August 2011 survey of 2,000 South Koreans revealed that 63% supported the idea that the ROK should indigenously develop nuclear weapons to counteract the DPRK.

A similar survey in 2010 reported that 56% supported such development. In 2012, 66% were in favor of a weapons program; approximately the same results were seen in a 2013 poll that was taken several weeks after the DPRK’s third nuclear test. From 2010 to 2012, the number of those who “strongly supported” such a program rose from 13% to 25%. At the same time, the 2013 poll

results show that the “most salient” issue facing the country was job creation (40%), not North-South relations (8-15%).<sup>836</sup>

Outgoing President Lee Myung-bak gave qualified support for the idea in mid-February, saying, “There are some people saying South Korea should also have nuclear weapons. Those remarks are patriotic and I think highly of them. I don’t think the comments are wrong because they also serve as a warning to North Korea and China.” Yet Lee still added, “It is premature and improper for our government to discuss nuclear armament because the ultimate goal is for Pyongyang to give up its nuclear program through international cooperation, in spite of the DPRK announcement that it was no longer interested in denuclearization.”<sup>837</sup> This announcement meant the ROK could make a case that the 1992 Korean Peninsula denuclearization agreement was dead.

Some ROK analysts have argued that the DPRK’s third nuclear test was the ROK’s Cuban missile crisis. Many in the South are now convinced that the DPRK may never give up its nuclear weapons, leading some to argue that the ROK should either develop its own or the U.S. should restore the nuclear balance on the Peninsula by reintroducing U.S. nuclear weapons, which had been removed in 1991.<sup>838</sup>

A small but growing number of South Koreans are concerned that the U.S., either because of budget cuts or a lack of will, might not provide its nuclear umbrella indefinitely – perhaps even pulling out of the country, like in Vietnam. Koreans are also frustrated that the U.S. and international community has been unable to end the DPRK’s nuclear program.<sup>839</sup>

One prominent national assemblyman (and the controlling interest in Hyundai) recently spoke at the April 2013 Carnegie International Nuclear Policy Conference, arguing that the ROK could potentially think about temporarily withdrawing from the NPT. As the U.S. was not stopping the DPRK’s development of nuclear weapons, and the U.S. would not trade Seattle for Seoul, Chung argued that the ROK might need to develop nuclear capabilities of its own. It has also been noted that if there was not powerful (government) support for his comments in the ROK, he would not be saying such things in a public forum.<sup>840</sup>

Facing an extraordinary threat to national security, South Korea may exercise the right to withdraw from the NPT as stipulated in Article X of the treaty. South Korea would then match North Korea’s nuclear program step by step, while committing to stop if North Korea stops.... South Korea should be given this leeway as a law-abiding member of the global community who is threatened by a nuclear rogue state.... The alliance has failed to stop North Korea from acquiring nuclear weapons. Telling us not to consider any nuclear weapons option is tantamount to telling us to simply surrender.

However, in the aftermath of the North Korea’s 2016 nuclear test, support for South Korea possessing nuclear weapons decreased significantly according to polling. Toby Dalton of the Carnegie Endowment of International Peace states:<sup>841</sup>

Contrary to the effective doubling of media coverage in 2016 as compared to 2013, public support for the nuclear option seems to have decreased. Moreover, polling in 2016 shows considerable variability regarding support for nuclear possession, casting doubt on earlier polling that seems to show consistent support in excess of 60 percent.

The most valid comparison of public attitudes between the two periods comes from Gallup Korea, which administered polls within two weeks of the 2013 and 2016 nuclear tests using consistent questions and an identical methodology. Those polls, which have equivalent margins of error, show an unambiguous overall decline in support for South Korean nuclear weapons possession from 64 percent in 2013 to 54 percent in 2016. That is matched by a ten-point increase in opposition, from 28 percent to 38 percent (see figure 1). The polls also reveal a decline in the percentage of respondents who view the North Korean nuclear tests as threatening to peace on the Korean Peninsula, from 76 percent in 2013 to 61 percent in 2016 (see figure 2).

This drop is unexpected given North Korea's claim that it tested a hydrogen bomb in 2016, indicating a qualitative increase in the lethality of its weapons design.

Developing nuclear weapons would create major problems for the ROK's nuclear program and energy security. The ROK would run out of nuclear fuel and might not be able to access imported fossil fuels, while the U.S. might remove its security guarantee as punishment. The ROK would also have to drop out of the NPT, freezing relations with China, Japan, and Russia, and correspondingly increasing the likelihood of a DPRK attack.<sup>842</sup>

The ROK possesses a large and extensive civilian nuclear power industry – the world's fifth-largest, with 21 reactors providing almost 40% of the ROK's electricity.<sup>843</sup> It has plans for a total of 40 reactors providing 59% of the ROK's electricity by 2030. Coupled with past weapons research, some estimate this technology could serve as a basis for any plans to develop nuclear weapons in the future should it feel that DPRK nuclear threats or a potential downturn in the U.S.-ROK alliance warrant such a move.

The ROK is also interested in developing an indigenous, plutonium fuel cycle for its civilian power program and had negotiated with the IAEA and the U.S. Department of Energy over safeguards for a "partially constructed, pilot pyroprocessing facility" that it wanted to complete by 2012, with a semi-commercial facility in place by 2025.<sup>844</sup> While ROK officials have claimed that the desire for such a facility was the result of "scientific curiosity" or part of plans to localize the production of nuclear fuel, it should be noted that these actions do have applications for weapons development, and questions remain about past activities that appear to have had more direct weapons applications.<sup>845</sup>

Bill Gates visited the ROK in April 2013 to meet with President Park Geun-hye in order to promote his project of developing a next-generation nuclear reactor. His plan is for his nuclear start-up (TerraPower) and the Korea Atomic Energy Research Institute to jointly develop a 600 megawatt prototype by 2022, after which a final decision could be made on the feasibility of more large-scale production. Gates argued that it could be an effective means of dealing with the ROK's nuclear waste stockpiles – discussed further in the following sections – and that TerraPower was developing a safer and more economical next-generation reactor.

One ROK nuclear expert with links to the current administration said it agreed to do a three-month feasibility study with Gates. The reactor is called a "traveling wave reactor," similar to the ROK's sodium-cooled fast reactor development project. Both types use spent fuel from conventional reactors, and can greatly reduce the volume of nuclear waste and its toxicity, compared to existing reactors.<sup>846</sup>

### **Chinese and Russian Reactions**

Traditionally, there seems to be a debate among Chinese citizens, government officials, and academics as to how much the DPRK's nuclear program should affect China's support of the DPRK. While one Chinese academic was suspended from his job after publishing an article pushing for abandonment of the DPRK – as discussed previously in this chapter – Xi Jinping, China's new president, said in a 2013 speech that no Asian country "should be allowed to throw a region and even the whole world into chaos for selfish gain," an indirect though clear criticism of the DPRK.<sup>847</sup>

According to U.S. Joint Chiefs of Staff Chairman General Martin E. Dempsey, the Chinese government wants to limit the DPRK's nuclear ambitions though it remains unclear what China

would do to realize that goal. General Dempsey stated, “Chinese leadership is as concerned as we are with North Korea’s march toward nuclearization and ballistic missile technology. And they have given us an assurance that they are working on it, as we are. But I didn’t gain any insights into particularly how they would do that.”<sup>848</sup> His interlocutor, Chief of the General Staff Gen. Fang Fenghui, said Beijing is firmly opposed to the DPRK’s nuclear weapons program and believes it should be addressed through dialogue.<sup>849</sup>

Yet, in the aftermath of the January nuclear test and February rocket launch, the United Nations Security Council enacted Resolution 2270 that levied the strongest round of sanctions ever imposed on North Korea. The sanctions were not only noteworthy for their strength, but also for the agreement between the U.S. and China regarding their necessity. *The New York Times* noted<sup>850</sup>:

“The development also reflected closer cooperation between the United States and China on a longstanding dispute. The 15-member Council approved a resolution, negotiated for weeks by American and Chinese officials, that called for inspecting all cargo going in and out of the country, banning all weapons trade and expanding the list of individuals facing sanctions.”

Furthermore, there are early signs that China is taking the sanctions regime more seriously than it has previously. A project by the Center for Strategic and International Studies entitled *Beyond Parallel* tracked China-North Korean trade through satellite images in the aftermath of the January 2016 nuclear test and concluded that trade has decreased. Though satellite evidence itself is not fully conclusive, the evidence is interesting nonetheless. The *Beyond Parallel* report notes:<sup>851</sup>

Six specific areas were examined to assess potential presence of trade: Sinuiju Cheongnyeon Railroad Station, Sinuiju Customs Area, Sino-Korean Friendship Bridge, Dandong Customs Area, Dandong Railroad Station, and the Yalu River that separates the cities. North Korea-China trade was measured by the presence of 1) railcars at the stations; 2) trucks in customs areas; 3) trucks on the bridge; and 4) undocked boats in the Yalu River. Imagery analysis resulted in two particularly interesting conclusions.

First, the satellite images indicate a substantive reduction of economic activity on the Sino-North Korean border measured by the fewer trucks, trains, and boats in the February 2016 image compared to a similar timeframe in 2015. While snowfall was present in both cities in the later image, this can be assumed not to be a factor leading to reduced trade because other roads have been plowed and cars are seen on the city streets. In the aftermath of North Korea’s January 2016 nuclear test, this observed downturn in activity was comprehensive across customs areas, railway, and road traffic.

Second, the images also suggest that independent Chinese actions were taken to reduce trade in this region after the nuclear test and prior to China’s signing on to UN Security Council Resolution 2270. These findings run contrary to some estimates that Sino-North Korean trade (particularly Chinese exports) increased in the first quarter of 2016, and might confirm large anomalies in trade data as reported by China’s customs statistics, KOTRA (Korea Trade-Investment Promotion Agency), and other organizations. Trends in North Korea data tend to be incomplete and opaque, especially for economic indicators. Adjusting our aperture to include data from satellite imagery can help supplement existing information, bringing on-the-ground reality into clearer focus. With a clearer understanding of events taking place in the region, policymakers and stakeholders can better plan for the future, including planning for unification.

Russia has not taken a strong stand against DPRK nuclear weapons, but has expressed concern about the risk of escalation on the Korean Peninsula – at least in the period before the Ukraine crisis in 2014. Prime Minister Vladimir Putin remarked in early April 2013 that, “I would make no secret about, we are worried about the escalation on the Korean peninsula because we are neighbors... And if, God forbid, something happens, Chernobyl which we all know a lot about, may seem like a child’s fairy tale. Is there such a threat or not? I think there is... I would urge

everyone to calm down... and start to resolve the problems that have piled up for many years there at the negotiating table.”<sup>852</sup>

## *Chinese Reactions to Nuclear Developments in India and Pakistan*

North Korea is not the only regional nuclear power that can be a wild card in China’s military development, and that needs to be considered in any U.S. and Chinese dialogue or negotiations on nuclear weapons. South Korea, Japan, and Iran are all potential nuclear forces. More importantly China faces current potential nuclear threats from India and must consider the risk Pakistan might lose control of some of its nuclear weapons.

At present, both countries continue to build up their nuclear-armed missile forces and stockpiles of nuclear weapons. While unclassified estimates are very uncertain and differ greatly in detail, The Bulletin of the Atomic Scientists reported in November 2015 that India’s nuclear weapons stocks and missiles could be summarized as follows:<sup>853</sup>

India’s drive to develop a nuclear triad reached an important milestone in 2014 with the first nuclear-powered ballistic missile submarine deploying on its initial, brief, sea-trial voyage. Now, with several long-range ballistic missiles in development, the Indian nuclear posture is entering an important and dynamic new phase. After nearly two decades of concentrating on competition with Pakistan, India’s nuclear outlook now seems to be focused more toward its future strategic relationship with China.

India is estimated to have produced approximately 540 kilograms (kg) of weapon-grade plutonium (IPFM, 2013: 21), sufficient for 135 to 180 nuclear warheads; however, not all of the material has been converted into nuclear warheads. Based on available information about its nuclear-capable delivery vehicles, we estimate that India has produced 110 to 120 nuclear warheads. It will need more than that to arm new missiles it is developing. In addition to the Dhruva plutonium production reactor near Mumbai, India plans to construct a second reactor near Visakhapatnam, on the east coast.

India has four types of land-based nuclear capable missiles that appear to be operational: the short-range Prithvi-2 and Agni- 1, the medium-range Agni-2, and the intermediate-range Agni-3. At least two other longer-range Agni missiles are under development: The Agni-4 and Agni-5 (see Table 1).

It remains unclear how many of these missile types India plans to keep in its arsenal. Some may serve as technology development programs for longer range missiles. Although the Indian government has made no statements about the future composition of its land-based missile force, intermediate-range and medium-range missiles could potentially be discontinued, with only short and long-range missiles deployed in the future to provide a mix of strike options against near and distant targets. Otherwise India appears to plan a very diverse and expensive missile force.

The Indian ballistic missile force remains dominated by the short-range Prithvi system. Initially, the 150 km range Prithvi-1 was thought to be nuclear, but it appears that the system might be conventional and being replaced with the Prahaar short-range missile system. The Indian government stated in 2013 that the Prithvi-2 missile was the first to be developed under the country’s prestigious Integrated Guided Missile Development Program (IGMDP) for India’s nuclear deterrence (Government of India, 2013). The Prithvi-2 can deliver a nuclear or conventional warhead to a range of 250 kilometers (155 miles). After test launches in 2011, 2012, and 2013, the Indian government reported the range as 350 km (see, for example, Government of India, 2012), but the U.S. National Air and Space Intelligence Center (NASIC) lists the range as 250 km (NASIC, 2013: 13). The 350-km range version is sometimes called Prithvi-3 and has been converted to the ship-launched Dhanush missile. Given its small size (9 meters long and 1 meter in diameter), the Prithvi is difficult to spot in satellite images and therefore little is known about where it is deployed.

The two-stage, solid fuel, road-mobile Agni-1 missile became operational in 2007, three years after its introduction into the armed forces. The short-range missile is capable of delivering a nuclear or conventional warhead to a distance of approximately 700 km (435 miles). The mission of the Agni-1 is thought to be

focused on targeting Pakistan, and an estimated 20 launchers are deployed in western India, possibly with the 334th Missile Group.

The two-stage, solid-fuel, rail-mobile Agni-2 is an improvement on the Agni-1, and can deliver a nuclear or conventional warhead more than 2,000 km (1,243 miles). The missile possibly began being introduced into the armed forces in 2004, but technical issues delayed operational capability until 2011. Fewer than 10 launchers are thought to be deployed in northern India, possibly with the 335th Missile Group. Targeting is likely focused on western, central, and southern China.

The Agni-3, a two-stage, solid-fuel, rail-mobile, intermediate-range ballistic missile is capable of delivering a nuclear warhead 3,200-plus km (1,988-plus miles). The Indian Ministry of Defence declared in 2014 that the Agni-3 is in the arsenal of the armed forces (Indian Ministry of Defence, 2014: 86), and the Indian military's Strategic Forces Command conducted its third user trial on April 16, 2015 from the Wheeler Island Test Range. If the Agni-3 is operational, there are probably fewer than 10 launchers. Several years ago an army spokesperson remarked that with this missile, India can even strike Shanghai (IndoAsian News Service, 2008), but this would require launching the Agni-3 from the northeastern corner of India.

India is also developing the Agni-4 missile, a two-stage, solid fuel, rail-mobile intermediate-range ballistic missile capable of delivering a single nuclear warhead 3,500-plus km (2,175-plus miles). The Indian Ministry of Defence lists the range as 4,000 km (2,486 miles) (Indian Ministry of Defence, 2014). Following the final development test on January 14, 2014, the Ministry declared that Agni-4 serial production will begin shortly (Indian Ministry of Defence, 2014: 86). A second flight test conducted on December 2, 2014 was the Army's first Agni-4 launch (Indian Ministry of Defence, 2014). The missile will undergo a small number of induction tests before it becomes operational.

Although the Agni-4 will be capable of striking targets in nearly all of China from northern India, including Beijing and Shanghai, India is also developing the longer-range Agni-5, a three-stage, solid-fuel, rail-mobile, intercontinental ballistic missile (ICBM) capable of delivering a warhead more than 5,000 km (3,100-plus miles). The extra range will allow the Indian military to establish Agni-5 bases in central and southern India, further away from China.

India is modifying the Agni-5 launcher to carry the missile in a sealed canister. The new canister design will reduce the reaction time drastically ... just a few minutes from stop-to-launch, according to Avinash Chander (Pandit, 2013b), the Agni program engineer who headed India's Defence Research and Development Organization from 2013 until he was sacked by the government of new Prime Minister Narendra Modi in January 2015 the same month the organization launched the Agni-5 from a canister launcher for the first time. The missile was in its deliverable configuration that enables launch of the missile within a very short time as compared to an open launch, the organization later stated (Defence Research and Development Organization, 2015: 4).

Moreover, unlike previous Agni-5 flight tests that took place from rail mobile launchers, the January 2015 flight test appeared to use a new road-mobile launcher with the canister erected by four hydraulic arms from a six- or seven-axle trailer towed by a three-axle truck. Although the Defence Research and Development Organization released a video of the 2015 launch, the frame did not show the new road-mobile launcher (Defence Research and Development Organization, undated a), unlike videos of the 2012 and 2013 launches that clearly showed the rail-mobile launchers (Defence Research and Development Organization, undated b, undated c).

Despite widespread speculation in news media articles and on social media that the Agni-5 will be equipped with multiple warheads even multiple independently targetable reentry vehicles (MIRVs) there is good reason to doubt that India can or will add multiple warheads or MIRVs to its arsenal in the near future. There are no reports of MIRV technologies being flight-tested, and loading multiple warheads on the Agni-5 would reduce its extra range, which was a key reason for developing the missile in the first place. The Agni-5 is estimated to be capable of delivering a payload of 1.5 tons (the same as the Agni-3 and -4), and India's first- and second generation warheads, even modified versions, are relatively heavy compared with warheads developed by other nuclear weapon states that deploy MIRVs. It took the Soviet Union and the United States hundreds of nuclear tests and many years of effort to develop reentry vehicles small enough to equip a ballistic missile with a MIRV. Moreover, deploying missiles with multiple warheads would invite serious questions about the credibility of India's minimum deterrent doctrine; using MIRVs would reflect a strategy

aimed at quickly striking many targets, and would also run the risk of triggering a warhead race with India's adversaries. It remains to be seen whether China's decision to equip some of its silo-based ICBMs with MIRVs will trigger a similar development in India.

The Bulletin of Atomic Scientists described Pakistan's nuclear program in November 2015 as including the following nuclear and missile capabilities:<sup>854</sup>

We estimate that Pakistan has a nuclear weapons stockpile of 110 to 130 warheads, an increase from an estimated 90 to 110 warheads in 2011 (Kristensen and Norris, 2011). The U.S. Defense Intelligence Agency projected in 1999 that by 2020 Pakistan would have 60 to 80 warheads (U.S. Defense Intelligence Agency, 1999), but it appears to have reached that level more than a decade early, in 2006 or 2007 (Norris and Kristensen, 2007). In January 2011, our then-estimate of Pakistan's stockpile was confirmed in The New York Times by officials and outsiders familiar with the American assessment who said that the official U.S. estimate for deployed weapons ranged from the mid-90s to more than 110 (Sanger and Schmitt, 2011).

With several delivery systems in development, four operating plutonium production reactors, and its uranium facilities, however, Pakistan's stockpile will likely increase over the next 10 years. By how much will depend on many things. Two key factors will be how many nuclear-capable launchers Pakistan plans to deploy, and how much the Indian nuclear arsenal grows. Speculations that Pakistan may become the world's third largest nuclear weapon state with a stockpile of some 350 warheads a decade from now are, we believe, exaggerated because that would require a buildup two to three times faster than growth over the past two decades. Pakistan simply does not have the industrial capacity to develop, produce, and deploy that many additional nuclear weapon systems in a decade. Based on Pakistan's performance over the past 20 years and its current and anticipated weapons deployments, we estimate that its stockpile could more realistically grow to 220 to 250 warheads by 2025. If that happens, it would make Pakistan the world's fifth largest nuclear weapons state.

Pakistan appears to have six operational nuclear-capable ballistic missiles, three more than in 2011 (Kristensen and Norris, 2011): the short-range Abdali (Hatf-2), Ghaznavi (Hatf-3), Shaheen-1 (Hatf-4), and NASR (Hatf-9); and the medium-range Ghauri (Hatf-5) and Shaheen-2 (Hatf-6). At least two other nuclear capable ballistic missiles are under development: the short-range Shaheen-1 A and medium-range Shaheen-3.

... Pakistan is developing two new cruise missiles, the ground-launched Babur (Hatf-7) and the air-launched Raad (Hatf-8). According to the Pakistani government, the Babur and Raad both have stealth capabilities and pinpoint accuracy, and each is described as a low altitude, terrain-hugging missile with high maneuverability (ISPR 2011a, 2011c). They are both much slimmer than Pakistan's ballistic missiles, suggesting some success with warhead miniaturization based on plutonium instead of uranium.

So far, China has shown only limited overt concern about the risks posed by regional nuclear weapons and proliferation, but almost certainly sees these risks as all too real and thus sizes and deploys its forces accordingly.

### ***Chinese Reactions to Russian Nuclear Developments***

It is unlikely that Russian forces would be involved in a high level of conflict against China or in Northeast Asia, but Russia's status as a nuclear power cannot be ignored. The IISS estimated that Russia has 1,499 warheads that could be deployed on SLMs, ICBMs, and heavy bombers. However, there is no accurate count of the country's tactical nuclear weapons, so the current total stockpile of tactical and strategic warheads is unknown. Furthermore, it is estimated that Russia possesses 737 metric tons of weapons grade-equivalent HEU and approximately 128 metric tons of plutonium; however, it should be noted that transparency in these areas is limited.<sup>855</sup>

All three arms of the Russian military are working to restructure its nuclear triad. The Russian Air Force was planning to deploy a new strategic cruise missile in 2012, the Navy is building Borei-class SSBN (Project 995), and the Strategic Rocket Forces are looking into a new liquid-propelled ballistic missile while continuing to use the solid-fueled RS-24 Yars. It does not look like much



progress has been made on previous proposals to create a unified strategic command. According to the Nuclear Threat Initiative,<sup>856</sup>

The Kh-101/Kh-102 (AS-2X) likely entered service with the Russian air force in 2012, carried on the Tupolev Tu-95MS Bear H. The Kh-102 is the nuclear variant of this large cruise missile, with the Kh-101 a conventionally armed derivative. It is not known if the missile also entered service during 2012 with the half-dozen or so Tu-160 Blackjack bomber aircraft the air force has operational at any one time.

The Kh-101/102 programme has been under way since at least the latter half of the 1980s. Development was hampered by the collapse in defence expenditure in the 1990s and 2000s, but funding has improved in the last few years. After nearly 20 years in the doldrums the Russian air force now has a fifth-generation fighter in flight-test and also harbors ambitions to introduce a new strategic bomber (PAK-DA) after 2025. Tupolev, the USSR's main bomber design house, was selected in 2009 to develop the aircraft in preference to a bid from Sukhoi. Though the decision may seem obvious in that Tupolev has design history in bomber fleets, it has fared poorly since the collapse of the Soviet Union. Sukhoi, by comparison, has emerged as the country's pre-eminent combat-aircraft manufacturer. The government and industry finally concluded a contract in May 2012 covering the purchase of five Project 955A Borei SSBNs following prolonged negotiations over price and the schedule for the delivery of boats.

Russia has been working to modernize its rocket forces with both silo-based and mobile ICBMs as well as MIRVed variants. The country has had technical issues developing a new generation of SLBMs, though tests in 2011 of the new Bulava SLBM were reported successful. Other modified and new missiles have also been under development since then.<sup>857</sup>

Russia is also working to increase its missile air defense capabilities. The IISS reports that Russia created an Aerospace Defense Command on December 1, 2011, in order to unify as one force (the Aerospace Defense Forces) the country's Space Forces, Air Force air-defense units, and Air-Space Defense Strategic Command.

It has been reported that air-defense units that were previously part of the Air Force have been reorganized into 11 brigades that include both radio-radar and anti-aircraft missile regiments. It seems that this new Command will focus on medium- and upper-tier threats, leaving lesser threats to the geographical areas in which they appear. The IISS provides the following detail description of Russia's missile defense capabilities:<sup>858</sup>

Equipment includes early-warning systems (in two echelons – space and ground), space-tracking systems, Russia's Ballistic Missile Defence System (A-135) and missile systems in the service of AA brigades. The early-warning space echelon presently consists of only three satellites, providing limited surveillance with significant time gaps, a problem due to be solved by the introduction of new satellites. The ground echelon consists of seven independent radio-radar centers equipped with Dnepr, Daryal, Volga and Voronezh over-the-horizon radar stations. These systems can acquire a ballistic target at ranges from 4,000 to 6,000 kilometers. The only gap in the ground echelon's coverage is presently in the north-east, which will be closed when Voronezh-DM radars are put into service (possibly in Barnaul, Yeniseisk and Omsk). The A-135 system is deployed around Moscow and has only a 150km operational radius. It consists of a warning and monitoring system, silos of 53T6 Gazelle short-range anti-ballistic missiles and 51T6 Gorgon long-range anti-ballistic missiles. Though the system is relatively old, no modernization plans have been announced. Meanwhile, the in-service date of the S-500 missile system, billed as a replacement, has slipped further.

The State Armaments Programme 2011–2020 allocated R4tr (U.S.\$136bn) for aerospace defence, and the plan is for around 100 SAM and Pantsyr-S1 systems, as well as more than 30 Vital medium-range missile systems, to be in service by 2020. Vital is currently in development and, according to media reports, will replace some S-300 systems. It is believed that the system uses the 9M96 and 9M100 missiles. Three anti-aircraft brigades were transferred from the air force and are deployed in the central industrial region, with 12 AA regiments (32 batteries in total) mainly armed with the S-300. Two AA regiments, with two batteries of S-400 in each, are deployed in Electrostal and Dmitrov. Two more S-400 regiments are deployed in the

Baltic Fleet AOR and in the city of Nakhodka (Primorsk Territory). A fifth regimental S-400 unit is supposed to be delivered by the end of 2012. By 2015, the plan is for nine regimental S-400 units to be deployed.

In his 2015 remarks on Russia, DIA Director Lieutenant General Vincent R. Stewart stated,<sup>859</sup>

Russia has made significant progress modernizing its nuclear and conventional forces, improving its training and joint operational proficiency, modernizing its military doctrine to integrate new methods of warfare, and developing long range precision strike capabilities. Despite its economic difficulties, Moscow is fully committed to modernizing both nuclear and conventional forces. At the same time, Russian forces have conducted exercises and a record number of out-of-area air and naval operations. We expect these to continue this year to include greater activity in the Caribbean and Mediterranean Seas.

...Russia will continue to place the highest priority on the maintenance of a robust and capable arsenal of strategic nuclear weapons. Priorities for the strategic nuclear forces include the modernization of its road-mobile intercontinental ballistic missiles (ICBMs) and upgrades to strategic forces' command and control facilities. In the next year, Russia will field more road mobile SS-27 Mod-2 ICBMs with multiple independently targetable re-entry vehicles. It also will continue development of the RS-26 ballistic missile, the Dolgorukiy ballistic missile submarine, its SS-N-32 Bulava submarine-launched ballistic missile, and next-generation air and ground-launched cruise missiles.

### ***Chinese Biological and Chemical Weapons Programs***

While China is a party to many of the international agreements regulating biological weapons, past U.S. government reports have alleged that China maintains a small offensive weapons program and has engaged in proliferation of related items to countries such as Iran. There have also historically been concerns in the United States about Chinese will to enforce export controls on dual use items, but the State Department concluded in 2011 that there were no compliance issues raised between the two.

In ratifying the Chemical Weapons Convention in 1997, China declared three former production facilities. While the U.S. has doubted that China was fully declaring its previous and current activities in this area, the U.S. reported most of its concerns resolved in 2011.<sup>860</sup>

## CHAPTER 15: CHINESE MILITARY MODERNIZATION AND THE TAIWAN STRAIT MILITARY BALANCE

The previous chapters have focused on Chinese strategy, forces, and modernization in the context of China's overall military development and as seen from a military perspective. China also, however, has emerged as a major regional power in a broader political context, and one where its actions and strategy need to be seen from a broader geo-political perspective.

China already is a geo-economic superpower and is now the largest and most modern Asian military power, and is becoming power strong enough to project power outside Asia in an increasingly multi-polar world. This growing military strength is steadily increasing China's willingness to assert its role over Taiwan and the Taiwan Straits, as well as its role in the Pacific – particularly in terms of Japan, the U.S., and the South China Sea.

### *The Historical Context*

It is important, however, to keep China's actions in historical perspective. While China is now asserting its power in ways that put increasing pressure on other states, its actions also reflect a long period in which other states exploited China. Unlike the United States from the first period of European colonialism to World War I, China's current rise has not occurred in a near power vacuum.

European powers like Portugal came to dominate the seas of Asia, and key trade routes between Europe and China in the mid-1500s. From roughly the late 1700s onwards, China's poor political leadership, failure to modernize its economy, and military weakness; forced China into an increasingly defensive mode. It had to make major concessions to outside powers, as well as to fight wars on terms it could not win.

This was true from roughly the first Opium War (1839-1842) to the Chinese revolution in October 1911. Moreover, Japan was able to modernize both its economy and military forces while Chinese progress was slow and blocked by the ineffective governance of the Qing dynasty. China was repeatedly forced to make major concessions to the European powers, lease areas to Portugal and Britain, and suffered the seizure and occupation of its capital in Beijing in 1900.

In the process, China was forced to make territorial concessions to European powers and Japan that severely compromised its sovereignty in coastal areas, saw Western-dominated sea routes and largely replace key elements of trade through its Silk Road. It faced a major loss of influence because of the Rise of European colonialism on its borders in the North and in Central, South, and Southeast Asia, and particularly because of the expansion of Russian influence in the north, British rule in India and Burma, the Anglo-Russian "great game" – which included Tibet – and the French conquest of Vietnam.

China – which seized Taiwan from the Dutch in 1683 – lost Taiwan to Japan and made other major concessions to Japan after being decisively defeated in the first Sino-Japanese War in 1894-1895. It lost influence over Korea after the Japan-Korea Treaty of 1876, saw Korea formally annexed by Japan in 1910; Korea then remained under Japanese rule until the end of World War

II. China also lost influence in Manchuria and Mongolia, first to Russia and then increasingly to Japan after Japan defeated Russia in the Russo-Japanese War of 1905. Japan then invaded Manchuria in September 1931, and created the puppet state of Manchukuo and an occupation of Harbin that lasted until the end of World War II – an action that became the prelude to Japanese efforts to conquer all of China.

It was only after the Chinese revolution and fall of the Qing dynasty that China could begin to modernize and create effective military forces. However, the revolution led by Sun Yat Sen imploded into rule by a series of warlords, however, and Japan's ties to the Allies and the political outcome of World War I further strengthened Japan.

China modernized some of its forces during 1928 through 1937 after a combination of internal power struggles following the revolution in 1911. However, Japanese militarism and the invasion of China effectively limited its military development and China lost many of its best and most modern forces in its effort to defend Shanghai against Japan during August to November 1937, and the 22 major battles that followed. The long struggle that became the Second Sino-Japanese war lasted from the Marco Polo bridge incident on July 7, 1937 to the Japanese surrender on September 2, 1945, at the end of World War II.

China was then divided by a major civil war between the Kuomintang and Chinese Communists that lasted until the Kuomintang was forced to flee to Taiwan in 1949. It was only with the founding of the Chinese People's Republic on October 1, 1949 – more than 200 years after the first Opium War -- that China became unified enough to create the unity and political base necessary to become a major military power.

Even then, China could not begin effective military reform for nearly three more decades. Its economy and political structure was torn apart from 1949 to 1979 by the impact of Mao's efforts at reform, and programs like the Campaign to suppress Counter-revolutionaries, three and five anti-campaigns, the Great Redoubt, the Great Leap Forward, and the Great Proletarian Cultural Revolution.

While Chinese forces played a major role in the Korean conflict after October 1950, and China detonated its first nuclear test in 1964 and a thermonuclear weapon in 1967, the previous Chapters have shown that China did not begin effective economic development and full scale military modernization until it split with the Soviet Union in March 1953, it reached an working accord with the U.S in 1971-1972, Mao's death on September in 1976, the US broke relations with Taiwan and established relations with China in 1979, and the economic reforms that began under Deng Xiaoping in 1979.

Ever since 1949, Taiwan has been a key factor driving China's military modernization, and China shifted from threats to asserting its growing power in the mid-1990s. The Third Taiwan Strait Crisis in 1995-1996 is often described as a catalyzing event for Chinese leadership regarding the importance of developing an informationized military that ascribed to the lessons of the Revolution in Military Affairs.

While the PLA has focused on Taiwan ever since Kuomintang forces retreated to the island in late 1949, the potential for U.S. intervention in a Taiwan contingency became all too clear to China during this crisis, and helped lead China to spend the following decades on military modernization that focused extensively on A2/AD strategy and weaponry.

During the Third Taiwan Strait Crisis, the PRC attempted to intimidate Taiwan and President Lee Teng-hui—who the PRC saw as a threat to “One China” policy—by conducting a series of missile “tests” that landed in the ocean near Taiwanese mainland. Throughout the crisis, the U.S. warned China against escalation and responded to continued Chinese provocation by relocating the USS Nimitz carrier group from Okinawa to east Taiwanese waters and summoning the USS Independence carrier group from the Gulf and locating it in the nearby Philippine Sea.<sup>861</sup>

China also began to focus on other U.S. capabilities. During one missile test China lost the ability to track and direct its missiles, which the PRC attributed to a loss of connection to U.S. military operated GPS. A retired PLA colonel attributed this moment as an impetus for China to develop its own satellite navigation system, noting, “It was a great shame for the PLA ... an unforgettable humiliation. That's how we made up our mind to develop our own global [satellite] navigation and positioning system, no matter how huge the cost. Beidou is a must for us. We learned it the hard way.”<sup>862</sup>

### *Taiwan and Other Flashpoints*

No analysis of China’s actions and strategy can ignore the impact of this history of Chinese perceptions and actions. Moreover, while the previous chapters have shown that China’s formal military strategy still has defensive elements, its practical political strategy must deal with three major flashpoints within the Asia-Pacific region that are steadily increasing tensions in the region, and between the U.S. and China. These flash points have the potential to generating local conflicts and even a broader war: the Taiwan Strait, the Korean Peninsula, the Pacific and the South China Sea.

Due to the many intricacies of the issues involved, this report does not attempt to address all of these flashpoints or every aspect of their impact on US and Chinese strategic relations. The Korean military balance in the Northeast Asian strategic environment – including a detailed analysis of Chinese forces and modernization – has already been analyzed in a separate Burke Chair report.<sup>863</sup> The issues affecting the South China Sea have been summarized earlier in this report’s examination of the PLAN, and are addressed in detail in the next chapter.

This chapter focuses on the military situation in Taiwan, and it is important to keep it in context. The U.S. and China have reached an evolving modus vivendi over Taiwan since the 1970s where the U.S. still supports Taiwan’s right to choose its own destiny and China still claims that Taiwan is already an integral part of China. This has led to a long series of arguments over U.S. arms sales to Taiwan, the Chinese military build-up near Taiwan, and freedom of the air and sea space in the Taiwan Straits.

There does not seem to be an imminent risk of US and Chinese military confrontation over the Taiwan Strait. Even so, it remains an area of tension between the US and China, and it provides a key case study for examining the effects of Chinese military modernization on an existing and continuous military balance.

China-Taiwan relations remain unstable. In June 2016 China suspended diplomatic relations with Taiwan following the refusal of newly elected Taiwanese president Tsai Ing-wen to openly accept the “One China” policy.<sup>864</sup> Consequently, a permanent political solution for the China-Taiwan situation continues to appear unlikely for the near future.

## ***Chinese Military Strategy in the Taiwan Strait***

Chinese strategy remains focused on making Taiwan an integral part of China, and China's efforts has both military and more peaceful tracks. Chinese defense white papers continue to mention Taiwan as one of the biggest threats to the PRC. Yet, China is steadily seeking to increase its economic, cultural, and some aspects of its political ties with Taiwan, and continues to express its desire to unify peacefully under the principle of "one country, two systems".<sup>865</sup> This ambiguity in China-Taiwan relations are evident in comparing increasing trade between China and Taiwan, and China's brief mentions of Taiwan in its defense white papers.

China's 2013 Defense White Paper stated that:<sup>866</sup>

The threats posed by "three forces," namely, terrorism, separatism and extremism, are on the rise. The "Taiwan independence" separatist forces and their activities are still the biggest threat to the peaceful development of cross-Straits relations.

China's 2015 Defense White Paper was somewhat less threatening, but still made China's position clear:<sup>867</sup>

The Taiwan issue bears on China's reunification and long-term development, and reunification is an inevitable trend in the course of national rejuvenation. In recent years, cross-Taiwan Straits relations have sustained a sound momentum of peaceful development, but the root cause of instability has not yet been removed, and the "Taiwan independence" separatist forces and their activities are still the biggest threat to the peaceful development of cross-Straits relations.

The US Department of Defense claimed in its annual *Military and Security Developments Involving the People's Republic of China* for 2016 that this ambiguity preserves China's flexibility in dealing with Taiwan and specifically cites China's Anti-Secession Law.<sup>868</sup>

Article 8 of the March 2005 Anti-Secession Law states that China may use "non-peaceful means" if "secessionist forces... cause the fact of Taiwan's secession from China," if "major incidents entailing Taiwan's secession" occur, or if "possibilities for peaceful reunification" are exhausted. The ambiguity of these "redlines" preserves China's flexibility.

The DoD also listed several situations that the Chinese government had previously noted might precipitate PRC action against Taiwan.<sup>869</sup>

The circumstances under which the mainland has historically warned it would use force have evolved over time in response to the island's declarations of its political status, changes in PLA capabilities, and China's view of Taiwan's relations with other countries. These circumstances have included:

- formal declaration of Taiwan independence;
- undefined moves toward Taiwan independence;
- internal unrest on Taiwan;
- Taiwan's acquisition of nuclear weapons;
- indefinite delays in the resumption of cross-Straits dialogue on unification;
- foreign intervention in Taiwan's internal affairs;
- and foreign forces stationed on Taiwan.

## ***Taiwanese Military Strategy***

There are many different ways to count and portray the balance of forces in the region. The governments of the Republic of China (ROC or Taiwan), Japan, and the United States have issued

their own assessments. **Figure 15.1** shows the Taiwanese view of the balance as described in its 2013 defense white paper.

The unclassified narratives in the discussions of these issues in the Japanese and South Korean white papers are limited and broadly correspond with the assessments made by the US and the IISS. As might be expected, Taiwanese military assessments go into more detail. Taiwan is careful to note the improvements in PRC-ROC relations, but its analyses still present a more urgent threat in what is the most serious area of potential US-Chinese military confrontation in the near-to-mid-term.

This makes the ROC's view of Chinese strategy, military modernization, and warfighting capabilities important to a US-Chinese security dialogue and an understanding of some of the key trends in Chinese military modernization and strategy. Taiwan's *2013 National Defense Report* and *2015 National Defense Report*, provides a good unclassified picture of the ROC's thinking and perception of the PRC's strategy and capabilities. It should be stressed that the following excerpts are a small portion of much longer documents and focus on the Taiwanese threat assessment but not the overall assessment of strategic risk – which does emphasize the improvement in Chinese and Taiwanese relations.

**Figure 15.1: Taiwanese (ROC) Ministry of Defense Summary of the PRC-ROC Military Balance**

Category Items		ROC Armed Forces	People's Liberation Army
Total Force		Over 240,000(The amount will be cut down to 215,000 in the end of 2014)	Over 2,270,000
Ground Forces	Force	Over 170,000	Over 1,250,000
	Combat Equipment	Tanks and armored vehicles: Over 1,500 Helicopters: Over 200 Heavy artillery: Over 1,000	Tanks and armored vehicles: Over 15,400 Helicopters: Over 600 Heavy artillery: Over 7,200 (including anti-tank guns)
Navy	Force	Over 30,000	Over 260,000
	Battleships	Over 190	Over 800
	Principal Combatants	Large battleships: Over 20 Amphibious ships: Over 10 Submarines: 4	Large battleships: Over 70 Amphibious ships: Over 40 Submarines: Over 60
	Aviation servicemen	Anti-submarine helicopters: Over 20	All kind aviation vehicles: Over 600
Air Forces	Force	Over 30,000	Over 370,000
	Principal Combatants	Fighters: Over 370 (F-16, M-2000, IDF and F-5)	Fighters: Over 2,900 (J-7, J-8, J-10, Su-27, Su-30) bomber: Over 400 Attack aircraft: Over 280 Unmanned aircraft: Over 280 Air defense missile systems: Roughly 1,000
Air Defense Missile Command	Force	Over 5,000	
	Principal Combatants	Air Defense Missile: Over 30	
Second Artillery	Force	n/a	Force: Over 149,000
			Strategic Missiles: Over 190
	Principal Combatants	n/a	Tactical Missiles: Over 1,400
			Nuclear Warheads: Over 200

Source: Taiwan Ministry of National Defense, 2013 National Defense Report, <http://report.mnd.gov.tw/en/m/part3.html>

## 2013 National Defense Report

The 2013 report provides the following Taiwanese view of China's active defense and security environment:<sup>870</sup>

The PRC's fifth generation leaders Xi Jin-Ping and Li Ke-Qiang fully took over in March 2012. Current objectives of their administration are to maintain economic growth, maintain internal stability, reduce the poverty gap, secure the party's political leadership, and prevent corruption and uphold integrity. Under the military strategy of "active defense," the PRC emphasizes a number of "core interests," including safeguarding its sovereignty, territorial integrity, and national unification. Besides advocating communication, cooperation and mutual benefits when dealing with sovereignty disputes in the East China Sea and South China Sea, the PRC will also continue to show its determination that it will not back down on



matters concerning its territory and sovereignty. To reconcile the "China Threat Theory," the PRC hopes to create

To reconcile the "China Threat Theory," the PRC hopes to create a peaceful image via frequent visits by high level military and government officials and providing financial (military) aid, especially in the Asia-Pacific. Furthermore, the PRC uses its political and economic strength to consolidate military exchanges with Russia and India, and strengthen relations with countries in the Middle East, Latin America, and Africa, ensuring its energy and mineral resource supply, as well as stable national development during a "stage of strategic opportunities."

### **Significant Expansion of the PRC's Military Power**

The PRC's defense budget has maintained high growth rates for numerous years benefitting from the rapid growth of its comprehensive national strength. However, the transparency of its defense budget is far from meeting the international society's expectations, and its rapid military modernization has raised suspicion and alerted surrounding countries. In recent years, the PRC has used "World of Harmony" and "Good Neighbor Diplomacy" and participated in international peacekeeping and anti-piracy operations to remove suspicions of the international society regarding its military expansion.

The PRC's current national strategy is to maintain domestic political stability, drive comprehensive economic development, and maintain peace in the surrounding environment. Its military development aims to gain leadership in the Asia-Pacific by 2020, and to strengthen "Second Artillery new ammunition development and deployment," "Navy and Air Force modernization and power projection expansion," and "information and electronic warfare and joint operation capability buildup." Furthermore, the PRC is actively developing "Anti-Access/Area Denial (A2/AD)" capabilities as well as related strategies and tactics, in hopes of deterring other military forces from intervening in the situation of the Taiwan Strait or disputes in the Asia-Pacific.

The Taiwan 2013 defense white paper offered an extensive review of the developments and spending of the PLA in the following excerpt and in **Figures 15.2 – 15.4**:<sup>871</sup>

The PRC has actively participated in international affairs and implemented military diplomacy in recent years. Under the economic integration in East Asia, the PRC is building multilateral political, economic, and security cooperative relations with Asia-Pacific countries, which constrains the ROC's space for political, diplomatic, and economic development. The PRC's current military strategy is to focus on handling issues in the East China Sea and South China Sea, but it has not renounced the use of military force against Taiwan and remains our greatest military threat. Furthermore, escalation of disputes over territorial sovereignty in the East China Sea and South China Sea also forms challenges to our national security.

The PRC has absorbed force buildup experiences of advanced countries in Europe and the US, and actively adjusted its force organization, revised its training outline, deployed new weapons, and cultivated military talents to conduct joint operations. These measures were carried out based on the political report of the "18th National Congress" of the PRC in 2012, which demanded "accelerating the modernization of national defense and the armed forces," President of the PRC Xi Jin-Ping's force buildup guidance to "be called and come at any instant, come and be able to fight, fight and be sure to win" in 2013, and the strategic guidance to "quickly win long distance battles and fight a first decisive battle." The PRC hopes to build a modernized force able to "win a local war under conditions of informatization," and has devoted its efforts to field exercises targeting Taiwan, using new tactics, strengthening force training, and enhancing joint operations capabilities.

### **The PRC's Military Strategy against Taiwan**

Although cross-Strait relations have become growingly relaxed, the PRC continues to strengthen its military preparations against Taiwan, and is actively developing and procuring new weapons platforms and precision weapons, so when a dispute arises in the Taiwan Strait, it can deter or delay a foreign military force from intervening.

### **Creating a Peaceful Atmosphere to Weaken Awareness of the Enemy**

The PRC's "National People's Congress" and "Chinese People's Political Consultative Conference" (the "Two Sessions") made a resolution in 2013 and reiterated the "1992 Consensus," insisting on the policy of "One

Country Two Systems and Peaceful Reunification," and adopting the model "into the island, into the households and into the hearts" to expand its interactions with political parties, organizations, and people of Taiwan. This shows that the PRC is using relaxed cross-Straits relations and expanded exchanges in an attempt to create advantageous conditions for cross-Straits political negotiations. It hopes to gradually change the Taiwanese people's impression of it being militaristic, and to weaken the awareness of servicemen in the ROC Armed Forces, so as to weaken our determination to resist the enemy.

### **Hindering ROC Weapons Procurements from the US to Increase its Chances of Victory Using Military Force**

The PRC indicated numerous times to the US that arms sales to Taiwan is the main obstacle of their military exchanges and relations. The "Two Sessions" reiterated in 2013 that the PRC will properly handle the Taiwan issue based on the "three communiqués," and demanded that the US government "gradually reduce arms sales to Taiwan" as stated in the communiqués. Xi Jin-Ping, President of the PRC, during his visit the US in June the same year once again expressed his wishes to US President Obama for the US to stop arms sales to Taiwan, hoping that the US will gradually reduce and eventually end arms sales to Taiwan. The PRC intends to suppress the further upgrade of our defense capabilities and increase its chances of victory when using military force against Taiwan.

### **Claiming a Defensive Strategy to Remove Doubts of the International Society**

Based on the thought to "focus on the Taiwan Strait, manage the South China Sea, stabilize sensitive regions, and step up border control," the PRC is strengthening targeted exercises, but also intentionally emphasizing "self-defense" and "striking only after the enemy has struck" to remove doubts of the international society on its military expansion. Although the PRC publicly claimed that it hopes to peacefully resolve the dispute across the Taiwan Strait, the PLA has the ability to intimidate Taiwan with military force. It is apparent that the PRC's thought on "driving unification with military force" and military preparations against Taiwan were not adjusted as cross-Straits relations improved.

### **Current Status of the PRC's Military Preparedness**

The PRC is actively improving the management performance of its headquarters, and is adjusting the scale and outfit of military branches based on development requirements of information infrastructure, building an elite joint, multi-functional, and highly efficient force. The PRC's defense technologies and indigenous weapons and equipment development capabilities have significantly improved as a result. In recent years, the PRC has actively strengthened its global reconnaissance and surveillance as well as regional strategic warning capabilities, and the new air defense missiles deployed along its southeast coast can reach airports in Taiwan and the patrol area of the ROC Air Force. Furthermore, the PRC is implementing military-civilian collaborative defense and autonomous air defense training, and has achieved the objective of cross military branch and cross department joint training.

In response to strategic force buildup requirements for the East China Sea, South China Sea, and open sea operations, the PRC will continue to conduct cross fleet and cross military branch joint training, and actively develop and procure advanced combat and support aircraft for future operational requirements. The PLA Ground Force consists of composite forces that carry out sea and air joint landing, blockade, and firepower strike exercises along its southeast coast targeting nearby islands. These exercises enhance its amphibious landing operations, cross-region mobility operations, air strike, joint air defense, special operations, and "informatized" command and control capabilities.

The PLA sequentially completed its organizational restructuring and integration from 2011 to 2012 according to the training reform plan of the Twelfth Five-year Plan. Emphasizing base training, actual combat, and conditions of complex electromagnetic environments, the PLA is outfitting new weapons and establishing doctrines to enhance its surveillance and reconnaissance capabilities, strengthen the Second Artillery's tactical (strategic) strike deterrence, improve air assault capabilities, and expand maritime raid capabilities. The PRC is planning high-tech developments with the purpose of deterring and denying intervention from foreign military forces when there is a conflict or other sudden incidents in the Taiwan Strait.

### **The PRC's Defense Budget**

As a result of its economic development, the PRC's defense budget has averaged double digit growth every year to reach second in the world. In terms of budgeting and execution, its defense budget is mainly used to

upgrade the PLA's overall capabilities, traditional and non-traditional weapons, aerospace, manpower and training, and to achieve strategic objectives of its policy to "build a modernized defense and elite force." Since the PRC's defense budget and immense concealed funding has exceeded defense requirements, some countries consider the PRC to be a potential threat and believe that it might start a new armaments race, affecting regional security and stability.

***Figure 15.2: Taiwan Assessment of PRC's Defense Budget from 2004 to 2013***

Year	Defense Budget Total	Defense Budget Growth %	of Overall Expenditure Total	of Overall Expenditure Growth %
2004	2,200.0	15.3	28,486.9	7.7
2005	2,476.0	12.5	33,930.3	7.3
2006	2,979.4	20.4	40,422.7	7.4
2007	3,555.9	19.3	49,781.4	7.1
2008	4,182.0	17.6	62,427.0	6.7
2009	4,951.1	18.5	76,300.0	6.5
2010	5,335.0	7.8	93,180.0	5.7
2011	6,027.7	13.0	108,969.0	5.5
2012	6,703.7	11.2	125,712.0	5.3
2013	7,201.7	6.9	138,246.0	5.2

Source: Taiwan Ministry of National Defense, 2013 National Defense Report, <http://report.mnd.gov.tw/en/m/part3.html>

**Figure 15.3: Taiwan Assessment of PRC's Hidden Defense Budget from 2004 to 2013**

of GDP Total	of GDP Growth %	Converted into US\$100 millions	Difference between nominal and real budget
159,878.3	1.4	262.4	98.0
183,217.5	1.4	302.2	28.5
211,923.5	1.4	381.5	141.0
257,305.6	1.4	482.4	44.7
314,045.0	1.3	572.9	4.4
340,903.0	1.5	725.8	144.0
397,983.0	1.3	796.3	13.9
471,564.0	1.3	956.0	16.0
519,322.0	1.3	1,064.0	2.9
558,271.0	1.3	1,163.4	Not yet disclosed

Source: Taiwan Ministry of National Defense, 2013 National Defense Report,  
<http://report.mnd.gov.tw/en/m/part3.html>

**Figure 15.4: Taiwan Assessment of the PRC's People's Armed Police Budget from 2004 to 2013**

Year	Budget Total	Budget Growth %	Execution Total	Execution Growth %	Execution Compared with Budget %
2004	254	8.1	256	106.7	100.8
2005	273	7.5	286	111.7	104.7
2006	310	13.6	335	117.1	108.1
2007	417	34.5	462	137.9	110.8
2008	477	14.4	502	108.7	105.2
2009	577	21.0	679	135.3	117.7
2010	679	17.7	663	-2.4	97.7
2011	784	15.5	790	119.2	100.7
2012	877	11.9	913	115.6	110.2
2013	1,006	14.7%	Not yet disclosed	Not yet disclosed	Not yet disclosed

Source: Taiwan Ministry of National Defense, 2013 National Defense Report,  
<http://report.mnd.gov.tw/en/m/part3.html>

## **2015 National Defense Report**

The 2015 Taiwan National Defense Report made several important additions to Taiwan's description of the strategies that China was using against Taiwan.<sup>872</sup>

### **Strategies against Taiwan adopted by the PRC**

Cross-Strait relations have eased as a result of increasing economic, cultural, and educational exchange. However, the PRC is still preparing various strategic moves against Taiwan. These strategic moves are also growing increasingly diverse in order to facilitate development of cross-Strait relations that are beneficial to the interests of the PRC and generate advantageous environments for future military invasions.

#### **( I ) Carrot and Stick Unification Strategies**

In addition to emphasizing the common and unchangeable political foundations of Taiwan and China, strategies adopted by the PRC against Taiwan also include drawing a bottom line for developing cross-Strait relationship. Xi Jinping's vision where both sides of the Strait are of the same family and finding the ability to work together and achieve the Chinese Dream are also being followed to broaden and deepen cross-Strait economic and trade cooperation as well as promote youth and ethnic minority cultural exchange programs. These measures are aimed at reducing the gulf between the PRC and Taiwanese citizens and alleviation of mutual hostility.

#### **( II ) Denying External Intervention in the Taiwan Issue**

National defense white paper reports generated by the PRC in recent years have pointed out that the current cross-Strait problem is a result of historical issues. The 2015 national defense white paper re-emphasized that "reunification is an inevitable trend in the course of national rejuvenation". The PRC aims to categorize Taiwan's sovereignty question as a domestic issue in order to construct the basis needed for legally carrying out military operations against Taiwan in the future. The National Security Law of the People's Republic of China as well as Anti-Secession Law has both placed Taiwan within the PRC's national security legal framework, highlighting that unification remains its ultimate objective in the Taiwan issue. The laws also provide a legal basis for pursuing non-peaceful measures against Taiwan, classifying it as a domestic issue in order to prevent external intervention of its military measures against Taiwan.

#### **( III ) Three Wars for Weakening Public Awareness on the Necessity for National Defense**

Since 2003, the PRC has conducted wars on the three fronts of media, psychology, and law. These three wars have been integrated within the *PLA Political Work Regulation* as well as key education and training subjects for its military academies and troops. Recently, the PLA has been committed to establishing a Psychological Warfare Experimental Unit as well as a specialized training and research institution for the training of specialized psychological warfare officers. Military spokespersons have also been provided for the MND of the PRC as well as various armed services in order to maximize the country's capacities in swaying public opinions. The PRC has also mobilized local governments in carrying out dedicated measures against Taiwan, using overtures for peace to dissolve internal unity within the ROC as well as employing military force for intimidation and forceful persuasion with the hopes of achieving major victories in minor battles or victory without a fight.

#### **( IV ) Comprehensive Preparations for Military Actions against Taiwan**

In addition to creating an informatized armed forces to win battles in the digital age, the PRC is also carrying out comprehensive and thorough reforms of its national defense and military. By referring to the annual Outline of Military Training and Evaluation, the PRC is training its troops to improve their abilities to carry out trans-theater reinforcement, military operations against Taiwan, retaliate against foreign military intervention, and respond to regional conflicts. Despite making repeated pleas for resolving the Taiwan Strait dispute in a peaceful manner, the PRC's ambition to take over the ROC has remained unabated despite improvements of cross-Strait relations as observed from the PLA's utilization of the period of strategic opportunities for its development and its continued strengthening of military preparations against Taiwan.

The 2015 report was very similar to the 2013 report in other ways, and addressed the same eight different categories of the PRC military threats focused on Taiwan. Both reports depicted the PLA

as focused on building a modern informatized military with the capability for A2/AD implementation. The 2015 report states:<sup>873</sup>

### **Military Capabilities and Threats of the PRC**

For years, military preparations and planning of the PLA have always been based upon Contingency Military Operations against Taiwan. Military exercises have been conducted against combat tactics, techniques, and procedures employed by the ROC Armed Forces. These exercises are part of the continuous preparations for large-scale military operations against Taiwan, and are implemented to improve precision strikes of the PLA ground artillery forces, strengthen long range target guidance and strike capabilities of naval and air forces, and enhance surface blockade (control) of neighboring shores and islands. Hence, there is still a risk that military confrontation between the PRC and Taiwan may erupt.

### **Military Capabilities Directed against Taiwan by the PRC**

With support granted by its immense defense budget, the PLA has greatly accelerated its modernization of national defense and armed forces, and is preparing for emergency military operations against Taiwan as well as improving its overall joint operational capabilities.

#### **( I ) Intelligence, Surveillance, and Reconnaissance Capabilities**

The PRC is employing various satellites, early warning aircraft, and unmanned surveillance drones as well as building digital data link networks and has greatly enhanced its early warning, command and control, battlefield reconnaissance, aircraft and vessel navigation, communication encryption, and precision weapon strike capabilities. Currently, the PRC has acquired all-time surveillance capabilities in areas to the west of the first island chain.

#### **( II ) Capabilities of the PLA Army**

Under the directives of all-terrain mobility and three-dimensional attack and defense, the PLA Army (PLAA) is accelerating its mechanization processes, making organizational adjustments at the brigade level, implementing informationized transformation, and conducting exercises and training in realistic conditions. Air transport and deployment, equipping of pontoon bridges, and tactical developments have been enhanced and tested in joint amphibious landing exercises to familiarize relevant units in the tactics, techniques, and procedures of landing operations. Currently, the PLAA is already equipped with triphibious landing and warfare capacities to seize offshore islands of the ROC.

#### **( III ) Capabilities of the PLA Navy**

The PLAN complies with the strategic requirements of offshore defense and "open seas protection". Measures carried out include expanding the depth of offshore defense strategy, improving amphibious transport capacities, and active enhancement to joint surface operations and nuclear counterattack capabilities. Current priorities include continued construction of aircraft carriers, nuclear (and conventionally) powered submarines as well as research and production of submarine-launched ballistic missiles (SLBM) as well as long-range submarine-launched anti-ship missiles. Naval aviation units are also outfitted with JH-7 and Su-30 aircraft, with further developments underway for J-15 carrier-based aircraft. All these developments demonstrate the PLAN's growing abilities to initiate nuclear counterattack, deny foreign military access, and blockade and control of the Taiwan Strait.

#### **( IV ) Capabilities of the PLA Air Force**

Under the strategic requirements of integrating air and outer space capabilities as well as conducting both offensive and defensive operations, the PLAAF has accelerated R&D as well as outfitting of its next-generation combat and supporting aircraft such as the J-20 fighters, H-6K bombers, KJ-200 and KJ-2000 early air warning aircraft, and Y-20 strategic airlifter. The indigenous Hong Qi (red flag) series as well as Russia-made S-300 series air defense missiles have also been deployed along the Taiwan Strait. The PLAAF is also making plans to acquire the newest S-400 series air defense missiles from Russia in order to complete its missile defense system. To build an air force capable of seizing air superiority in the airspace to the west of the first island chain, joint exercises for different units have also been strengthened to accelerate digitization of command and control systems and enhance overall air and missile defense capacities as well as abilities to conduct air strike, strategic projection, and strategic coercion.

### **( V ) Capabilities of the PLA Second Artillery Force**

The PLA Second Artillery Force operates under the directives of being lean and effective and possessing both nuclear and conventional missiles, employing universal warhead designs to strike at a diversity of targets to strengthen its capabilities of strategic nuclear coercion, nuclear counterattack and conventional precision strikes. Estimates on missile quantity, precision, and destructive effects equipped by the Second Artillery Force indicate that the unit is capable of launching large-scale joint firepower strikes and deter external military from intervening in any Taiwan Strait disputes.

### **(VI) Information and Electronic Warfare Capabilities**

EW units at various levels of the PLA have recently employed simulated electronic environments of the Taiwan Strait during their training exercises in order to develop various EW tactics, techniques, and procedures. To secure EW dominance throughout the entire course of the battle, exercises of various PLA service branches were also carried out to identify weaknesses in EW tactics and to formulate countermeasures accordingly. Current EW software and hardware attack equipment is also undergoing performance evaluations to monitor and collect electromagnetic parameters as well as to achieve capabilities of disrupting and interfering with ROC Armed Forces surveillance and command and control systems.

### **( VII ) Cyberwarfare Capabilities**

The PLA has established basic offensive and defensive cyberwarfare capabilities at various military departments that include its military commands, 7 military regions, defense research agencies, defense mobilization information systems, and militia forces. In addition to using hackers to plant backdoors for stealing and transferring data, the PLA is also capable of using programs to acquire control privileges over the target server. PLA cyberwarfare units have also managed to infiltrate a target and remain undetected for 1,700 days. These cyberwarfare units are large and highly specialized organizations capable of dealing with information defense technologies employed around the world.

### **(VIII ) Military Aerospace Capabilities**

The PLA has recently launched various military satellites into space. These satellites allow 24/7 military command, control, and intelligence transfer capabilities and are capable of supporting long-range precision strike missions carried out by the PLA in areas to the west of the first island chain. The BeiDou Navigation Satellite System provides coverage over the west Pacific to the Indian Ocean, offering effective improvements to real time targeted surveillance as well as the accuracy of long-range precision strikes.

Once again, the 2013 and 2015 National Defense reports also converged in assessing the preparedness of the PRC. In both reports, there was a significant concern regarding China's military budget (**Figure 15.5**) and the fact that much of the true spending remains obscured. One notable change was that the 2015 report noted that China's international military exercises could help boost readiness. However, the 2013 and 2015 reports still remained very similar.<sup>874</sup>

### **Current Status of the Military Preparedness of the PRC**

Under the strategic directives of winning a campaign in remote area quickly and winning the first campaign decisively, the PRC is researching and procuring various weapon platforms and precision weapons, improving surveillance and reconnaissance capabilities, enhancing Second Artillery Force strike and coercion, advancing aerial assault capacities, and expanding maritime attack prowess. The aim is to achieve comprehensive, long-range, multi-dimensional, rapid and decisive, and multi-faceted operational objectives. The PRC is also strengthening its readiness in conducting military operations in response to incidents in Taiwan, the East China Sea, and the South China Sea. In the event that crisis or contingencies occur in the Taiwan Strait or surrounding regions in the Asia Pacific, the PRC will be capable of deterring the forces of other countries from intervening in the said regions.

### **( I ) Defense Budget of the PRC**

With the exception of 2010, the PRC's defense budget has retained double-digit growth from 2006 to 2015 (a period of 10 years). The total defense budget of the PRC is now the second highest in the world (after the US) and the highest in Asia. Despite emphasizing the defensive nature of its defense policy, the PRC has

recently made substantial investments for external procurement of weapons and technologies while conducting weapons research and development (R&D). National defense development of the PRC has thus gradually grown beyond its defensive requirements, classifying the PRC as a potential threat that has led to an armament race in the Asia Pacific region and affecting regional peace and stability.

### **1. Budget Overview**

The PRC allocated a defense budget of RMB 911.4 billion in 2015, which was a 10% increase from 2014. The PRC declared that the increased budget is mainly used to modernize its military equipment, improve the work environment and salary of entry-level personnel, and drive the restructuring of military systems and organizations (PRC defense budgets from 2006 to 2015 are listed in *Table 2-1*).

### **2. Hidden Budget**

The PRC has repeatedly emphasized that its entire defense budget has been included in the central budget to be reviewed by the National People's Congress before implementation. Hence, issues of hidden expenses would not exist. However, defense R&D projects, arms sales income (the PRC is a major exporter of arms), weapons procurement expenses, external income of national defense industries, and expenses of the People's Armed Police Force (PAPF) have not been included in the defense budget. Investigations indicate that these incomes and expenses may be hidden within non-military budgets. Estimates made by the ROC show that actual defense budget of the PRC may be 2 to 3 times higher than the published figure. Inferential estimates made using the PRC's historical budgets and budget utilization show that the actual budget may be up to 4% of the country's GDP, far-exceeding the 2% of GDP provided in most western countries, making the PRC's defense budget proportions on par with those of the US and Russia.

## **( II ) New Equipment Deployment Overview**

The PRC has expressed that its military preparations must be based upon winning informatized local wars, with particular focus on the development of its navy (PLAN), air force (PLAAF), and Second Artillery Force. The PLAN has deployed long-range anti-ship missiles and new missile boats in the Fujian and Guangdong regions. The PLAAF has been outfitted with long-range missiles and new generation fighters that have been rotated to the coastal areas of the Taiwan Strait to participate in defense operations. The Second Artillery Force has researched, developed, and manufactured a series of new missiles to help the PRC command superiority in the maritime zone and airspace within the first island chain in order to achieve the strategic objectives of "open seas protection".

## **( III ) Active Developments in East China Sea and South China Sea**

Although the Taiwan Strait has remained a key center of gravity for strategic development of the PRC, the country also significantly increased strategic focus upon the East China Sea and South China Sea as well. The PRC is now reclaiming land around islands it occupies in the South China Sea and expanded Diaoyutai Island maritime patrols using public vessels to declare and demonstrate its sovereignty over the islands.

### **1. Increased patrols in waters around Diaoyutai Islands**

Multiple confrontations between the PRC and Japanese maritime vessel have occurred in recent years. The PLA has thus dispatched various aircraft and vessels to intensify patrols in the peripheral maritime areas of the Diaoyutai Islands. PLA naval patrol schedules and routes through the Gonggu Shuidao (Miyako Strait) and Hengyan Shuidao have gradually become a routine as well.

### **2. Strengthening sovereignty and construction works of South China Sea islands and atolls**

In the past 2 years, the PRC has gradually increased its commitment to military exercises and maritime sovereignty defenses in the South China Sea, and has continued to reclaim land on occupied islands. The PRC also deployed naval forces to forcefully evict Filipino and Vietnamese vessels from the area to demonstrate the PRC's effective ownership and management of the South China Sea. To respond to increasing tensions in the South China Sea, Vietnam has acquired new and advanced weapon equipment, while the Philippines also acquired transport vessels, helicopters, and transport aircraft. Military preparations implemented by the aforementioned claimants represent potential challenges and variables to the PRC's control and management of the South China Sea and the sovereignty of its islands in the region.



#### **( IV ) Strengthening Area Denial Capabilities**

The PRC regards foreign intervention as the greatest potential threat if it undertakes military actions against Taiwan. In order to effectively deny foreign military intervention, the PRC has carried out red vs. blue simulation models for its PLAN, PLAAF, and Second Artillery Force exercises in recent years to verify and validate relevant tactics, techniques, and procedures. Regional intelligence, surveillance and reconnaissance (ISR) systems have been developed in tandem with novel weapon systems equipped by the Second Artillery Force, PLAN, and PLAAF in order to increase its A2/AD capabilities in the western Pacific. PLAN vessels and PLAAF aircraft have broken through the first island chain on many occasions, and its long-range strategic bombers have been equipped with YJ100 cruise missiles, giving it a striking range covering Guam. The PRC hopes that it will be capable of establishing itself as the dominant military force within the first island chain and be capable of deterring foreign military from intervening in Taiwan Strait issues.

#### **( V ) Handling Various Security Threats**

The PLA, PAPF, militia, reserve forces are referring to the *National Defense Mobilization System* and *Prescribed General Response Plans for Military Disposition of Contingencies* to conduct various military and non-military operations such as joint law enforcement, mobilization command and control, air defense in urban areas, disaster relief, counter-terrorism and stabilization, and joint search and rescue. To respond to various kinds of security threats and to conduct various types of military operations, the PRC is also involved in global peacekeeping missions, military exchange, and multi-national joint counter-terrorism exercises in order to acquire experiences of various countries in handling conventional and unconventional security threats.

#### **( VI ) Participation in Multi-National Military Exercises**

The PLA has conducted a number of joint operational exercises such as Joint Navy Exercise, Shaheen, and Khaan Quest with more than 40 countries (organizations) in recent years, including Russia, India, ASEAN member states and the Shanghai Cooperation Organization (SCO). The PLA was also invited, for the first time, to attend the US-led RIMPAC multinational joint naval exercise in 2014. The PRC hopes that participation in these military exchanges and direction of joint exercises with regional organizations will help to improve its joint operations capabilities and expand its regional influence.

**Figure 15.5: PRC's Defense Spending from 2015 Taiwan Defense Report**

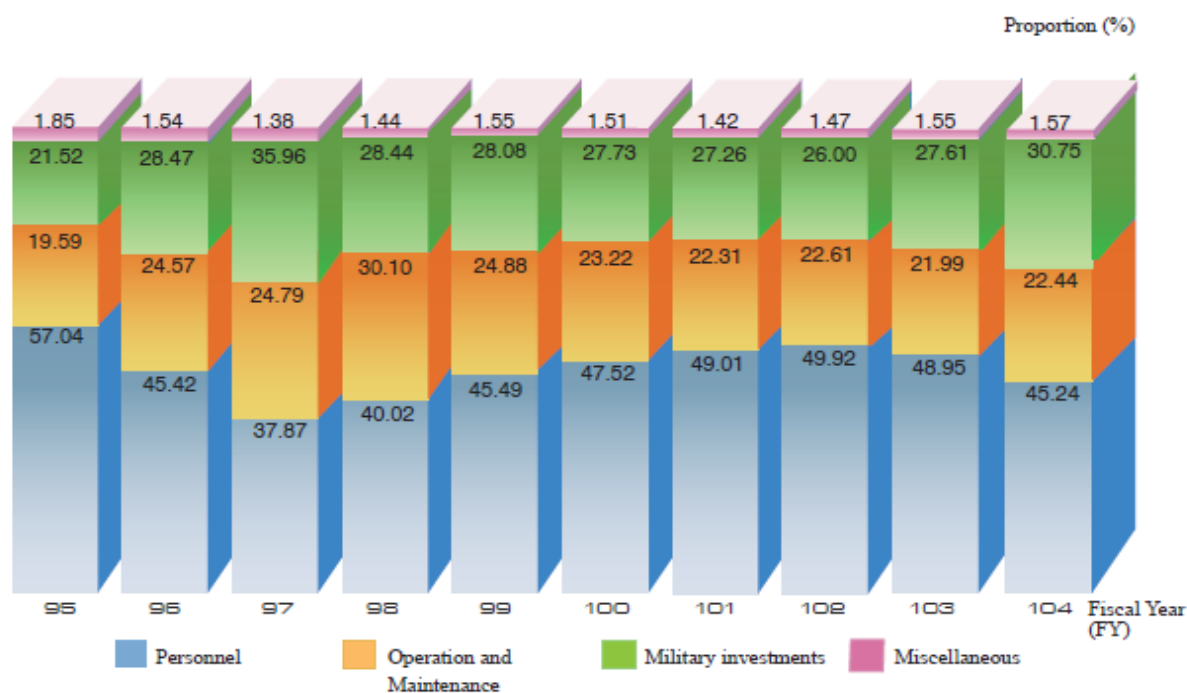
**Table 2-1. A List of Defense Budgets from 2006 to 2015 as Published by the PRC**

Unit: 1 Million RMB

	Year	National defense budget		Proportion of total expense		Proportion of Gross Domestic Product (GDP)		US Dollar equivalent (million)	Difference between the budget and the final accounts report
		Total sum	Growth (%)	Total sum	Proportion (%)	Total sum	Proportion (%)		
	2006	297,938	20.40	4,042,273	7.37	21,192,346	1.40	38,150	14,100
	2007	355,491	19.31	4,978,135	7.14	25,730,556	1.38	48,235	4,469
	2008	418,204	17.64	6,242,703	6.69	31,404,500	1.33	57,289	435
	2009	495,110	18.38	7,630,000	6.48	34,090,300	1.45	72,580	14,400
	2010	533,500	7.75	9,318,000	5.72	39,798,300	1.34	79,630	1,385
	2011	602,670	12.96	10,896,900	5.53	47,156,400	1.27	95,600	1,600
	2012	670,274	11.21	12,571,200	5.33	51,932,200	1.29	106,400	0
	2013	740,600	10.49	13,947,700	5.30	56,884,500	1.30	117,600	150
	2014	828,627	11.88	15,166,200	5.46	63,646,300	1.30	133,700	—
	2015	911,490	10.00	17,150,000	5.31	68,052,000	1.33	145,400	—

Source: Republic of China (Taiwan), *2015 National Defense Report*, October 2015, p. 55.

**Figure 15.6: Taiwan's National Defense Spending**



**Figure 6-3. National Defense Budget Allocation Chart from 2006 to 2015**

Source: Republic of China (Taiwan), *2015 National Defense Report*, October 2015, p. 159.

Finally, the 2015 National Defense Report noted the following security challenges to Taiwan:<sup>875</sup>

### **Security Challenges of the ROC**

Growing uncertainty of global security situations means that Asia Pacific countries as well as the ROC will have to face more complex and severe security environments, with the leading challenge being military threats posed by the PRC. The PRC has yet to abandon military options against the ROC. Its increasing defense budget and rapid improvements to weapon and equipment R&D capabilities have fueled rapid growths in its military strength. Other grave security challenges and situations faced by the ROC include intensifying sovereignty disputes of island and territorial waters in the Asia Pacific region, growing concerns of unconventional security threats, changing demographic structure, attacks by network hackers, and weakening of national defense awareness amongst the country's citizens.

### **I. Rapid expansion of the Military Strength of the PRC**

Combined national strength of the PRC has grown tremendously in recent years, while its defense budget has achieved 2-digit growths for 5 consecutive years. Large, non-transparent defense investments made by the PRC allowed massive expansion of its armaments, leading to growing imbalance of military power between the PRC and the ROC. The PRC has also developed long-range precision weapon systems in order to extend the range of its force projection and strategic attacks, improve its integrated joint operational capacities, and reduce the willingness of other countries from intervening in the regional confrontation. This has posed a serious threat to national security of the ROC. Given that the PRC has not abandoned its threats to initiate operations against Taiwan, the major challenge faced by the ROC is to hasten the transformation of its armed forces and improve joint operational performance to develop a small but superb, strong, and smart defense force formidable enough for defending national sovereignty and interests.

### **II. Sovereignty Claims over Disputed Islands and Maritime Rights and Interests**

Complex regional confrontations due to island sovereignty and maritime rights disputes mainly involve the Diaoyutai Islands in the East China Sea and islands in the South China Sea. Such disputes have led to standoffs or even direct confrontation between government vessels dispatched from various countries. The PRC has unilaterally established an air defense identification zone in East China Sea and carried out land reclamation as well as construction of naval and air force facilities in the South China Sea, introducing new uncertainties to regional peace and stability.

The ROC Armed Forces shall comply with ROC's overall diplomatic policy and continue to expand practical relationships with friendly states, promote regional security dialogues and exchanges, and refer to the government's principles of safeguarding sovereignty, shelving disputes, pursuing peace and reciprocity, and promoting joint development to participate in multi-national security issues. The ROC Armed Forces shall continue to strengthen defensive operations of its Dongsha Islands (Pratas Islands) and Taiping Island as well as maritime defensive patrols. Military force serves as the support for defending the country's sovereignty over the islands, its maritime rights, and protect navigational freedom through international waters.

### **III. Defense Resource Constraints**

Despite having slowly recovered from the global financial crisis, the global economy is currently hampered by the European debt crisis and the stagnating global economy. These events have also led to sluggish growth of the ROC's overall economy. Additional challenges include decreasing work force and limited increases in government tax income, making it difficult to secure further increases to the defense budget. The ROC Armed Forces shall allocate and employ defense resources in a more optimal fashion in order to maximize its benefits. To achieve the mutually beneficial goals of self-reliant defense and encouraging the development of national economy, the ROC Armed Forces have been promoting the development of dual use technologies and allow tried and tested defense technologies to drive improvements of private enterprises and industries accordingly.

### **IV. Decreasing Proportions of Able-bodied Individuals**

Although national birth rates of the ROC have somewhat recuperated in the last 2 years, the size of the young and able-bodied population is still quite low. The number of individuals available for conscription as well as

national defense personnel will be less than ideal as a result. In order to maintain its military power, the ROC Armed Forces are reforming its conscription systems to establish a Volunteer Military System and recruit volunteers with higher quality and who are willing to commit to longer terms of service. Continuous adjustments have been made to the national defense organization, military structure, and size of the armed forces. Force streamlining as well as extensive mobilization and combat readiness systems have been implemented to achieve the concept of having a small standing army with the potential of drawing upon vast reserves during wartime and building an elite national defense force.

#### **V. Humanitarian Assistance and Disaster Relief**

Unconventional security threats, such as sudden natural disasters and complex disasters caused, have continued to increase. The severity of the threats posed by these disasters to national security is on par with that of war. The ROC Armed Forces, tasked with defending national security and protecting public welfare, have listed disaster prevention and relief as one of its core missions. The Armed Forces shall continue to establish units capable of disaster relief during peacetime and combat operations during wartime with quick response, disaster prevention, and contingency control capabilities. Systematic approaches as well as government-organized disaster prevention exercises, force streamlining, material mobilization, resource integration, and disaster hazard control systems have been carried out in order to support rapid deployment of local government in relevant relief operations and reduce national security threats posed by various disasters.

#### **VI. Diverse and Frequent Network Attacks**

As information technology (IT) continues to evolve, network vulnerabilities and threats have begun to invade and threaten countries with well-developed network connectivity. Recently, PRC cyber forces have used a variety of measures such as social network engineering, remote infiltration, virus (and malware) infections, theft, and surveillance to conduct a series of cyber invasions of government agency and private enterprise websites with grave consequences. The aim of such attacks is to disrupt the ROC Armed Forces command and control information system operations and delay its ability to respond in a timely manner to various incidents. The PLA may launch attacks against specified targets in the ROC through the Internet in the future with the aim of crippling national infrastructure system operations. Such attacks will pose severe threats to ROC military operational capabilities and national security.

The ROC Armed Forces are working with government networks, integrated information security and protection, and joint response to conduct routine security protection and monitoring of crucial IT systems. During wartime, the armed forces shall employ active network defenses against the enemy in order to continue enhancing information and network protection potential, train network protection professionals, and enhance overall information security robustness and capacities.

#### **VII. Challenges to Threat Awareness**

Although cross-Strait political relations seem calm, the PRC has yet to abandon preparations for military operations against Taiwan. The PRC is also conducting a unification war against Taiwan on the three fronts of psychology, public opinion, and law, and is creating an image of peace in order to alleviate hostility amongst the ROC citizens and dissolve national unity.

The MND has also been referring to the *All-out Defense Education Act* in order to conduct all-out defense education in 4 major categories of school education, on-the-job education for government agencies (institutions), social education, and national defense artifacts protection, awareness, and education. International situations, defense policy, all-out defense, defense mobilization, and defense technologies are established as the core educational subjects. Training courses have been arranged for various organizations such as relevant departments, different levels of governments, all-out defense mobilization systems, schools, and social groups, and course contents have integrated printed materials and a diverse selection of supporting activities in order to enhance training results and improve the sense of urgency and awareness for potential dangers amongst the general public. Various broadcasting channels are employed to integrate all-out defense concepts and knowledge into the lives of fellow citizens in order to achieve the educational goals of complete proliferation and extensiveness. It is hoped that such measures will improve all-out defense consciousness and ensure lasting peace and sustainable development of the country.

## *The US Perspective on the China-Taiwan Balance*

U.S. Department of Defense reporting notes the primacy that China continues to place on Taiwan. The *Military and Security Developments Involving the People's Republic of China 2016* states that:<sup>876</sup>

Preparing for a contingency to prevent formal Taiwan independence remains a top PLA mission. Last year's DWP noted both improvements in cross-strait relations and potential challenges. It praised "a sound momentum of peaceful development" in cross-strait relations, but echoed the previous DWP in warning against "the Taiwan independence separatist forces." Should conditions deteriorate, the PLA could be called upon to compel Taiwan to abandon possible moves toward independence or to re-unify Taiwan with the mainland by force while simultaneously deterring, delaying, or denying any third-party intervention on Taiwan's behalf.

In 2015, China and Taiwan continued to explore ways to make progress on contentious issues and to hold government-to-government consultations that began in 2014. In November 2015, President Xi Jinping met with President Ma Ying-jeou, the first such meeting since 1946, and reiterated the importance of maintaining the status quo.

Following Taiwan's January 2016 presidential and legislative elections, China has stressed that denying the "1992 Consensus"—which acknowledges China and Taiwan are part of "one China" but allows for different interpretations—would make peace and development impossible. President-elect Tsai Ing-wen of the Democratic Progressive Party has pledged to maintain the status quo in cross-strait relations, but has not endorsed Beijing's interpretation of the 1992 Consensus. Her position differs with the approach of the outgoing Kuomintang Party.

...China's overall strategy continues to incorporate elements of both persuasion and coercion to hinder the development of political attitudes in Taiwan favoring independence. In 2015, China's strategy toward Taiwan was influenced by what it saw as positive developments in Taiwan's political situation and approach to engagement with China. China and Taiwan have made progress in expanding cross-strait trade, economic links, and people-to-people contacts.

Despite positive developments last year—such as the cross-strait meeting between China's President Xi Jinping and Taiwan's President Ma Ying-jeou in November, the first such meeting since 1946—there have been no signs that China's military posture opposite Taiwan has changed significantly. The PLA continues to develop and deploy military capabilities intended to coerce Taiwan or to attempt an invasion, if necessary. These improvements pose major challenges to Taiwan's security, which has been based historically upon the PLA's inability to project power across the 100 nm Taiwan Strait, the natural geographic advantages of island defense, Taiwan's armed forces' technological superiority, and the possibility of U.S. intervention.

DoD reporting has consistently stressed the build-up of Chinese military capabilities relative to Taiwan. **Figure 15.7** shows a DoD estimate of the balance of forces in 2016. The *Military and Security Developments Involving the People's Republic of China 2016* report stresses that the PRC is prepared to "defer the use of force, as long as it believes that unification over the long term remains possible and the costs of conflict outweigh the benefits." It also summarizes U.S. policy towards Taiwan as follows:<sup>877</sup>

The United States maintains a One-China Policy that is based on the three Joint Communiqués and the Taiwan Relations Act (TRA). The United States opposes any unilateral change to the status quo in the Taiwan Strait by either side and does not support Taiwan independence. The United States continues to support the peaceful resolution of cross-strait issues in a manner, scope, and pace acceptable to the people on both sides.

Consistent with the TRA, the United States has contributed to peace, security, and stability in the Taiwan Strait, including by providing defense articles and services to enable Taiwan to maintain a sufficient self-defense capability. To this end, the United States has announced more than \$14 billion in arms sales to Taiwan since 2009.

At the same time, it describes the PLA's capabilities and options as follows:<sup>878</sup>

The PLA is capable of increasingly sophisticated military actions against Taiwan. It is possible China would first pursue a measured approach characterized by signaling its readiness to use force, followed by a deliberate buildup of force to optimize the speed of engagement rather than strategic deception. Another option is that China would sacrifice overt, large-scale preparations in favor of surprise to force a rapid military or political resolution before other countries could respond. If a quick resolution is not possible, China would seek to:

- deter potential U.S. intervention;
  - failing that, delay intervention and seek victory in an asymmetric, limited, quick war;
- or fight to a standstill and pursue a political settlement after a protracted conflict.

The 2016 DoD report also describes alternative courses of PLA action aside from direct military engagement against Taiwan.<sup>879</sup>

**Maritime Quarantine or Blockade.** In addition to direct military engagement, PLA writings describe potential alternative solutions—air blockades, missile attacks, and mining to force capitulation. China could declare that ships en route to Taiwan must stop in mainland ports for inspection and/or transshipment prior to transiting to Taiwan ports. China could also attempt the equivalent of a blockade by declaring exercise or missile closure areas in approaches to ports, in effect closing port access and diverting merchant traffic. The PLA employed this method during the 1995-96 missile firings and live-fire exercises. There is a risk, however, that any attempt to limit maritime traffic to and from Taiwan would trigger countervailing international pressure and military escalation.

The 2016 DoD report explains China's such military options in some detail, specifically limited force, air and missile campaigns, and amphibious invasion.<sup>880</sup>

**Limited Force or Coercive Options.** China might use a variety of disruptive, punitive, or lethal military actions in a limited campaign against Taiwan, probably in conjunction with overt and clandestine economic and political activities. Such a campaign could include computer network or limited kinetic attacks against Taiwan's political, military, and economic infrastructure to induce fear in Taiwan and to degrade the populace's confidence in Taiwan's leaders. Similarly, PLA special operations forces could infiltrate Taiwan and conduct attacks against infrastructure or leadership targets.

**Air and Missile Campaign.** China could use missile attacks and precision strikes against air defense systems, including air bases, radar sites, missiles, space assets, and communications facilities to degrade Taiwan's defenses, neutralize Taiwan's leadership, or break the Taiwan people's resolve.

**Amphibious Invasion.** Publicly available Chinese writings describe different operational concepts for amphibious invasion. The most prominent of these, the Joint Island Landing Campaign, envisions a complex operation relying on coordinated, interlocking campaigns for logistics, air, and naval support, and EW. The objective would be to break through or circumvent shore defenses, establish and build a beachhead, transport personnel and materiel to designated landing sites in the north or south of Taiwan's western coastline, and launch attacks to seize and to occupy key targets or the entire island.

Large-scale amphibious invasion is one of the most complicated and difficult military operations. Success depends upon air and sea superiority, the rapid buildup and sustainment of supplies onshore, and uninterrupted support. An attempt to invade Taiwan would strain China's armed forces and invite international intervention. These stresses, combined with China's combat force attrition and the complexity of urban warfare and counterinsurgency (assuming a successful landing and breakout), make an amphibious invasion of Taiwan a significant political and military risk. Taiwan's investments to harden infrastructure and strengthen defensive capabilities could also decrease China's ability to achieve its objectives.

The PLA is capable of accomplishing various amphibious operations short of a full-scale invasion of Taiwan. With few overt military preparations beyond routine training, China could launch an invasion of small Taiwan-held islands in the South China Sea such as Pratas or Itu Aba. A PLA invasion of a medium-sized, better-defended island such as Matsu or Jinmen is within China's capabilities. Such an invasion would

demonstrate military capability and political resolve while achieving tangible territorial gain and simultaneously showing some measure of restraint. However, this kind of operation includes significant, and possibly prohibitive, political risk because it could galvanize pro-independence sentiment on Taiwan and generate international opposition.

Finally, the DoD 2016 report explains that the PLA's preparation for a conflict with Taiwan and the possibility of US intervention is the prime reason for China's military modernization program. It continues to describe the Taiwan Strait balance as follows, beginning with PLA forces:<sup>881</sup>

**Missile Forces.** The PLA Rocket Force, formerly the PLASAF, is prepared to conduct missile attacks and precision strikes against Taiwan's air defense systems, air bases, radar sites, missiles, space assets, and C2 and communications facilities in an attempt to degrade Taiwan's defenses, neutralize Taiwan's leadership, or break the public's will to fight.

**Air Forces.** The PLAAF has maintained a force posture that provides it with a variety of capabilities to leverage against Taiwan in a contingency. First, it has stationed a large number of advanced aircraft within an unrefueled range of Taiwan, providing it with a significant capability to conduct air-superiority and ground-attack operations against Taiwan. Second, a number of long-range air defense systems provide a strong layer of defense of China's mainland against counterattack. Third, China's development of support aircraft provides the PLAAF with improved ISR capability to support PLA operations in a contingency.

**Navy Forces.** The PLAN is improving anti-air and anti-surface warfare capabilities, developing a credible at-sea nuclear deterrent, and introducing new platforms that are positioned to strike Taiwan in a cross-Strait conflict. The additional attack submarines, multi-mission surface combatants, and fourth-generation naval aircraft entering the force are designed to achieve sea superiority within the first island chain as well as to deter and counter any potential third party intervention in a Taiwan conflict.

**Ground Forces.** Increasingly armed with more modern systems such as attack helicopters, the PLAA is conducting joint training exercises that will prepare it for a Taiwan invasion scenario. The PLAA often conducts training, including amphibious landing training, under realistic conditions, including all-weather and at night. Improved networks provide real-time data transmissions within and between units, enabling better C2 during operations. Additionally, the PLAA's ongoing fielding of advanced air defense equipment is significantly enhancing the self-defense of key C2 elements and other critical assets believed to be tasked for potential use against Taiwan. As the number of these new systems grows in the PLAA, the ability of an amphibious invasion force to defend cross-Strait amphibious lodgments successfully against counterattacks by both legacy and advanced weaponry will inevitably increase.

The 2016 DoD report also highlights the key threats that PLA modernization poses to Taiwan's defensive capabilities and their attempts to counter:<sup>882</sup>

China's multi-decade military modernization effort has eroded or negated many of Taiwan's historical advantages in deterring PLA aggression, such as the PLA's inability to project sufficient power across the Taiwan Strait, the Taiwan military's technological superiority, and the inherent geographic advantages of island defense.

Taiwan is taking important steps to build its war reserve stocks, grow its defense-industrial base, improve joint operations and crisis response capabilities, and strengthen its officer and noncommissioned officer corps. These improvements partially address Taiwan's declining defensive advantages. Taiwan is following through with its transition to a volunteer military and reducing its active military end-strength from 300,000 to approximately 175,000 personnel to create a "small but smart and strong force." Under this plan, which is slated for full implementation in 2019, the cost savings from a smaller force will free up resources to increase volunteer salaries and benefits, although these savings will not be sufficient to cover the costs of volunteers. The transition has led to additional personnel costs needed to attract and retain personnel under the volunteer system, diverting funds from foreign and indigenous acquisition programs, as well as near-term training and readiness.

In addition, Taiwan's military spending has dropped to approximately 2 percent of its gross domestic product. Meanwhile, China's official defense budget has grown to roughly 14 times that of Taiwan's.

Recognizing China's continued growth in military spending, Taiwan is working to integrate innovative and asymmetric measures into its defense planning in order to counterbalance China's growing capabilities.

**Figure 15.7: The Balance in the Taiwan Straits in 2016: Ground Forces**

Taiwan Strait Military Balance in 2015, Ground Forces			
	China		Taiwan
	Total	Taiwan Strait Area	Total
<b>Personnel (Active)</b>	1.25 million	400,000	130,000
<b>Group Armies/Army Corps</b>	18	8	3
<i>Infantry Divisions</i>	12	4	0
<i>Infantry Brigades</i>	23	7	5
<i>Mechanized Infantry Divisions</i>	7	4	0
<i>Amphibious Mechanized Infantry Divisions</i>	2	2	0
<i>Mechanized Infantry Brigades</i>	25	8	3
<i>Armor Divisions</i>	1	0	0
<i>Armor Brigades</i>	17	7	4
<i>Amphibious Armor Brigades</i>	1	1	0
<i>Army Aviation Brigades and Regiments</i>	11	6	3
<i>Artillery Brigades</i>	22	9	5
<i>Airborne Divisions</i>	3	3	0
<i>Marine Brigades</i>	2	2	2
<b>Tanks</b>	7,000	2,800	1,100
<b>Artillery Pieces</b>	8,000	3,900	1,600
<b>Note:</b> In 2015, People's Liberation Army (PLA) active ground forces were organized into group armies and independent airborne and marine units deployed through seven military regions. (MRs). A significant portion of these assets were deployed in the Taiwan Strait area (the former Nanjing, Guangzhou and Jinan MRs), including coastal defense, border defense, headquarters, and administrative units reflected in the personnel total but not tabulated in detail. Taiwan has three army corps and four principle defense commands. Each army corps contains an artillery command roughly equivalent to a brigade plus. The numbers of specific systems are approximate.			

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2016, April 2016, 107-109.



**Figure 15.8: The Balance in the Taiwan Straits in 2016: Air Forces**

Taiwan Strait Military Balance in 2015, Air Forces			
China			Taiwan
	Total	Within range of Taiwan	Total
<b>Fighters</b>	1,700	130	384
<b>Bombers/Attack</b>	400	200	0
<b>Transport</b>	475	150	19
<b>Special Mission Aircraft</b>	115	75	25

**Note:** In 2015, the PLA Air Force and Navy had approximately 2,100 operational combat aircraft. These consisted of air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 1,450 older fighters, bombers, and trainers were employed for training and research and development. The PLA also possess approximately 475 transports and more than 100 surveillance and reconnaissance aircraft with intelligence, surface search, and airborne early warning capabilities. We expect the PLA Air Force would supplement its military transports with civilian aircraft in a combat scenario. The majority of PLA Air Force and PLA Navy aircraft are based in the eastern half of the country, and approximately 330 aircraft could conduct combat operations against Taiwan without refueling. However, this number could be significantly increased through any combination of aircraft forward deployment, decreased ordnance loads, or altered mission profiles. Taiwan Air Force figures do not indicate a significant change; they reflect a change in the categorization of some aircraft.

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2016*, April 2016, 107-109.

**Figure 15.9: The Balance in the Taiwan Straits in 2016: Naval Forces**

Taiwan Strait Military Balance in 2015, Naval Forces			
China			Taiwan
	Total	East and South Sea Fleets	Total
Aircraft Carriers	1	0	0
Destroyers	23	16	4
Frigates	52	40	22
Corvettes	23	14	1
Tank Landing Ships/ Amphibious Transport Dock	30	28	14
Medium Landing Ships	22	16	0
Diesel Attack Submarines	57	38	4
Nuclear Attack Submarines	5	2	0
Ballistic Missile Submarines	4	4	0
Coastal Patrol (Missile)	86	68	45
<b>Note:</b> In 2015, the PLA Navy had the largest force of principal combatants, submarines, and amphibious warfare ships in Asia. In the event of a major Taiwan conflict, the East and South Sea Fleets would be expected to participate in direct action against the Taiwan Navy. The North Sea Fleet would be responsible primarily for protecting Beijing and the northern coast, but could provide mission-critical assets to support other fleets.			

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2016*, April 2016, 107-109.

### ***The Japanese Perspective of the China-Taiwan Balance***

The Japanese 2014 defense white paper had a somewhat different perspective from that of the U.S.:<sup>883</sup>

On the military front, China has been strengthening its military forces broadly and rapidly by sustaining large increases in its defense budget. In particular, China gives priority to the Taiwan issue as a core issue of national sovereignty. It is deemed that China is strengthening its military forces for the time being with the aim of improving military capabilities to prevent Taiwan's independence. As part of such efforts, it is believed that China is enhancing its asymmetric military capabilities to deter military forces of other countries from approaching and advancing to China's surrounding region, and to inhibit their military activities in the region (so-called "Anti-Access/Area Denial" ["A2/AD"] capabilities). Additionally, China has been actively trying to acquire capabilities for missions other than for dealing with the Taiwan issue. With China now having considerable influence in the international community not only politically and economically but also militarily, other countries are closely watching China's military trends.

... China is believed to be strengthening its military forces with its top priority foremost in mind, namely, dealing with the Taiwan issue, more specifically, improving China's capabilities to hinder the independence of Taiwan and foreign military support for the independence of Taiwan. Furthermore, in recent years, China is working actively to acquire capabilities for missions other than dealing with the Taiwan issue, and stresses the use of the military in non-traditional security areas.

China upholds the principle that Taiwan is a part of China, and that the Taiwan issue is therefore a domestic issue. The country maintains that the "one-China" principle is the underlying premise and foundation for discussions between China and Taiwan. China also claims that it would never abandon its efforts for peaceful unification, and expresses that it will take up policies and measures to solve issues of Taiwanese people's interest and to protect their due authority. Meanwhile, China is strongly opposed to any foreign intervention in the unification of China as well as any move towards the independence of Taiwan, and on this basis, has repeatedly stated that it has not renounced the use of force. The Anti-Secession Law, enacted in March 2005, clearly lays out the non-renunciation of the use of military force by China.

Ma Ying-jeou (Kuoimintang), re-elected in the presidential election in January 2012, continues to advocate, in his second term, a policy of pursuing Taiwanese economic development by expanding economic exchanges with China and the status quo rather than independence. As exemplified by the entry into force of the Economic Cooperation Framework Agreement (ECFA), the bilateral relationship is deepening primarily along the economic realm.

In February 2014, the Minister of the Taiwan Affairs Office of the State Council of China and the Minister of the Mainland Affairs Council of Taiwan held the first ministerial meeting between China and Taiwan. On the security front, while China urged that the two countries make contact and hold exchanges over military issues at an appropriate time in order to explore the creation of mechanisms for building mutual trust over military security, Taiwan has shown a cautious stance, stating that the conditions are not yet met. Regarding the Senkaku Islands, China and Taiwan have their own assertions, and Taiwan has expressed reluctance to work with China. Attention will be paid to trends in the future relations between China and Taiwan including trends of political dialogues on military affairs.

Taiwan, under the guidance of building the "hard rock" defense advocated by President Ma Jeou Ying, identifies prevention of war, homeland defense, response to contingencies, deterrence of conflict, and regional stability as the strategic objectives, and takes the military strategy of "resolute defense and credible deterrence."

Taiwan, for improved expertise of its military personnel and other purposes, aims to transform its armed forces currently consisting of drafted personnel and volunteers into all-volunteer forces, while reducing the total forces from 275,000 to 215,000 personnel by the end of 2014. However, the Ministry of National Defense reportedly stated that the transformation into all-volunteer forces would not be feasible until 2016. At the same time, the Taiwanese armed forces attribute importance to the introduction of advanced technologies and improvement of joint operational capabilities. Additionally, in light of the serious damage that occurred from the typhoon in August 2009, the Taiwanese armed forces identify disaster prevention and relief as one of their major missions.

With regard to Taiwan's military power, at present, ground forces, including the Navy Marine Corps, have a total of approximately 215,000 personnel. In addition, it is believed that approximately 1.65 million reserve personnel of the air, naval, and ground forces would be available in case of war. Regarding naval capabilities, in addition to Kidd-class destroyers that were imported from the United States, Taiwan possesses relatively modern frigates and other vessels. Regarding air capabilities, Taiwan possesses F-16 A/B fighters, Mirage 2000 fighters, Jing Guo fighters, etc.

In view of the fact that the PLA is enhancing its missile, naval, and air forces, the Taiwanese military believes it still needs to modernize its equipment. The U.S. Department of Defense has notified Congress of possible arms sales to Taiwan based on the Taiwan Relations Act, but Taiwan also wishes to purchase the F-16C/D fighter aircraft and other arms from the United States. The issue is to be observed. Taiwan is also promoting the independent development of military equipment. The Tien Kung II surface-to-air missiles and Hsiung Feng II anti-ship missiles are deployed and it is believed that the Hsiung Feng IIE cruise missiles are being developed in order to acquire long-range attack capabilities, while the Tien Kung III surface-to-air missiles are being developed in order to ensure the capabilities to deal with ballistic missiles.

The military capabilities of China and Taiwan are generally characterized as follows:

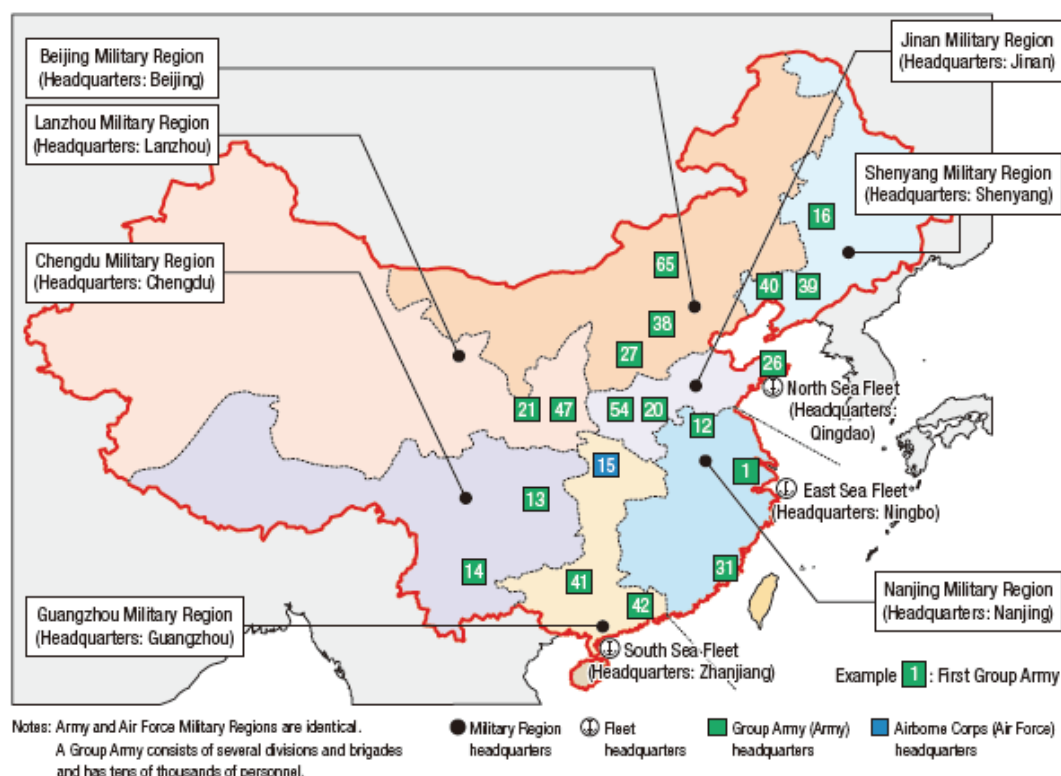
- 1) Regarding ground forces, China possesses an overwhelming number of troops; however, their capability of landing on and invading the island of Taiwan is limited. Nevertheless, China is making efforts to improve its landing and invasion capabilities in recent years, such as building large landing ships.
- 2) Regarding naval and air forces, China, which overwhelms Taiwan in terms of quantity, has also been steadily strengthening its naval and air forces in recent years in terms of quality, where Taiwan had superiority over China.
- 3) Regarding missile attack capabilities, China possesses numerous short-range ballistic missiles, etc. with a range that covers Taiwan, and Taiwan seems to have few effective countermeasures.

In addition to the sizes of forces and performance and quantity of military equipment, a comparison of military capabilities should take into account various factors such as the objectives and characteristics of envisioned military operations, the operational posture, proficiency in military personnel, and logistics. Nevertheless, as China is rapidly strengthening its military power, the overall military balance between China and Taiwan is shifting in favor of China. Attention should be paid to the strengthening of both the Chinese and Taiwanese military capabilities and U.S. weapon sales to Taiwan.

**Figure 15.10** shows a Japanese estimate of the PRC-ROC balance, issued in 2014, which covers a wider range of data, but with numbers that track broadly with the data in the DoD and IISS estimates that follow. **Figure 15.11** provides estimates of Taiwanese defense spending from the 2016 Japanese defense white paper.

**Figure 15.10: Japanese Ministry of Defense Summary of the PRC-ROC Military Balance**

**Fig. I-1-3-3** Deployment and Strength of the People's Liberation Army

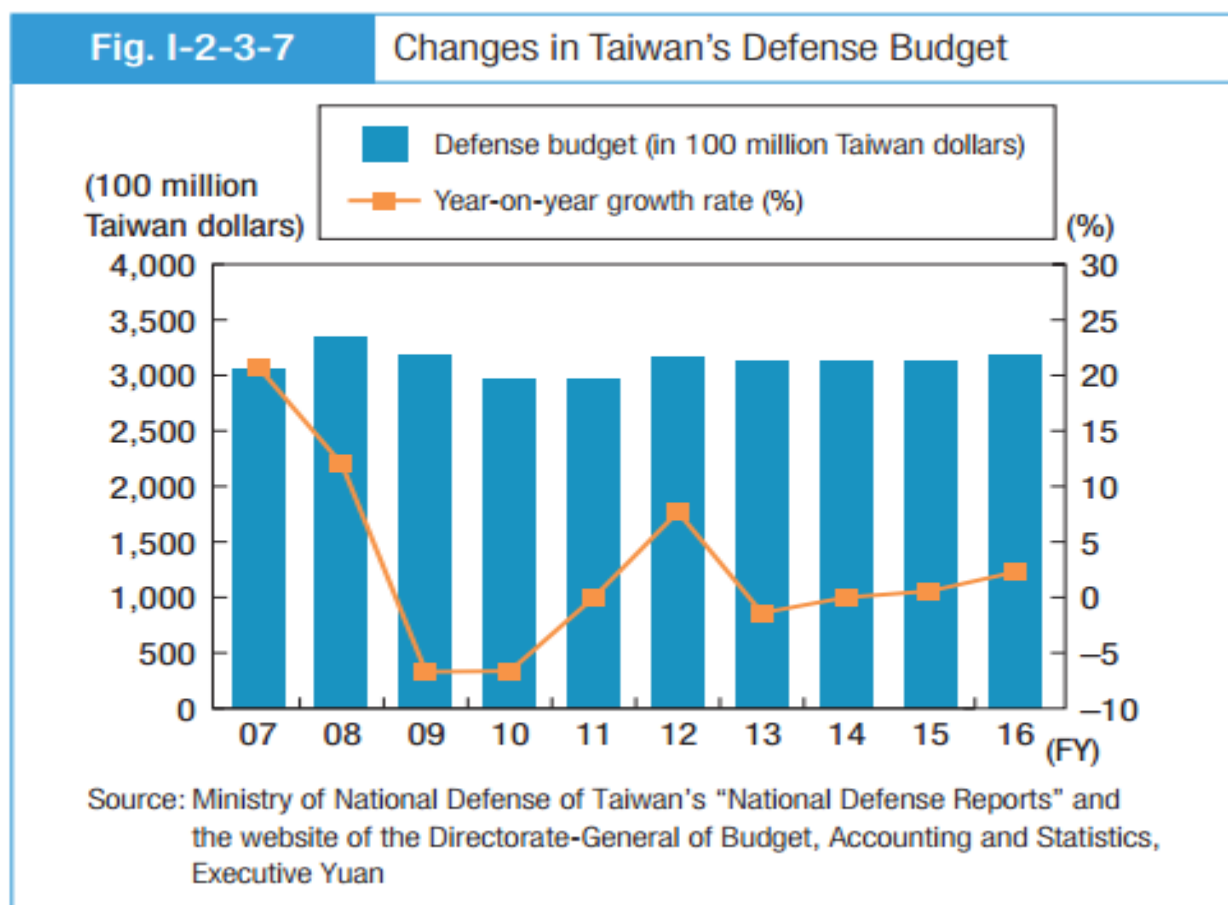


		China	Taiwan (Reference)
Total military forces		Approx. 2.3 million troops	Approx. 290,000 troops
Ground forces	Group troops	Approx. 1.6 million troops	Approx. 200,000 troops
	Tanks	Type-99/A, Type-98/A, Type-96/A, Type-88A/B and others Approx. 7,600 vehicles	M-60, M-48A/H and others Approx. 1,200 vehicles
Maritime forces	Warships	Approx. 890 vessels / 1,423 thousand tons	Approx. 410 vessels / 201,000 tons
	Destroyers & frigates	Approx. 70 vessels	Approx. 30 vessels
	Submarines	Approx. 60 vessels	4 vessels
	Marines	Approx. 10,000 troops	Approx. 15,000 troops
Air forces	Combat aircraft	Approx. 2,580 aircraft	Approx. 500 aircraft
	Modern fighters aircraft	J-10 x 264 Su-27/J-11 x 328 Su-30 x 97 (Fourth-generation fighters x 689)	Mirage 2000 x 56 F-16 x 145 F-CK-1 (IDF) x 128 (Fourth-generation fighters x 329)
Reference	Population	Approx. 1.360 billion	Approx. 23 million
	Term of service	2 years	1 year

Source: The Military Balance (2014) and others.

Source: Japanese Ministry of Defense, *Defense of Japan*, 2014.

*Figure 15.11: 2016 Japanese White Paper on Taiwan's Defense Budget*



Source: Japanese Ministry of Defense, *Defense of Japan*, 2016.

### ***U.S. Data on the Historical Trends in the Taiwan Strait Military Balance***

The US DoD has issued a wide range of unclassified reporting on the security situation in the Taiwan Strait and the US view of the changing balance of Chinese and Taiwanese forces in the Strait over the last decade.

**Figures 15.12 to 15.14** depict these DoD-reported data on the military forces of the PRC and ROC as well as a comparison of forces in the immediate vicinity of the Strait.<sup>884</sup> It is important to state that force numbers do not tell the whole story – differences in equipment quality, military doctrine, and personnel proficiency also influence the Taiwan Strait military balance. However, as the 2014 DoD report on China stated,<sup>885</sup>

Taiwan has historically relied upon multiple military variables to deter PLA aggression: the PLA's inability to project sufficient power across the 100 mile Taiwan Strait, the Taiwan military's technological superiority, and the inherent geographic advantages of island defense. China's increasingly modern weapons and platforms (more than 1,100 ballistic missiles, an anti-ship ballistic missile program, ships and submarines, combat aircraft, and improved C4ISR capabilities) have largely negated many of these factors.

China's ongoing military modernization, combined with the previously discussed improvements in human capital, training, and military exercises, are eroding the effectiveness of the ROC's prior

reliance on intangible factors. Thus, as intangible differences between the two forces are slowly decreasing, tangible factors such as force numbers are becoming more important indicators of the Taiwan Strait military balance.

As has been emphasized throughout this report, a military balance is inherently a dynamic and uncertain construct. While it is impossible to perfectly determine the magnitude of intangible variables and how they interact with the changes in force numbers, it is possible to determine the direction of the changing Taiwan Strait military balance. Given the changes in numbers, equipment, and training on both sides, it is possible to determine that the balance is shifting in the PRC's favor.

It is also important to again point out that a military balance is not a prediction of the outcome of a war. To say that trends are shifting in the PRC's favor does not indicate that the PRC could win a war with the ROC, that the PRC's combat power is greater than the ROC's, or that the ROC's weapons systems are qualitatively inferior to PRC weapons systems. What it does mean is that, regardless of the military balance in the past, the military balance between the two sides is currently becoming *relatively* more favorable to one side. Thus, a *relative* shift in the favor of one side could still occur in a situation in which that side is at a crushing disadvantage. It is important to remember this important distinction when examining the *relative* trends depicted in the following pages.

- **Figure 15.12** illustrates a brief summary of trends in force structure and strength of the PLA.
- **Figure 15.13** displays trends in PLA forces in the immediate vicinity of the Taiwan Strait.
- **Figure 15.14** shows trends in the force structure of the ROC armed forces.

These figures do not reflect the fact that additional PRC forces that are now deployed further away from the Strait could be committed to a Taiwan contingency.

*Figure 15.12: A Summary of Trends in the PLA: Part One*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Millions of Personnel	1.6	1.4	1.4	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Group Armies	18	18	18	18	18	18	18	18	18	18	18	18
Infantry Divisions	20	25	25	19	19	19	17	-	15	15	12	12
Infantry Brigades	20	33	33	24	24	25	22	-	16	16	23	23
Mot. Infantry Divisions	-	-	-	-	-	-	-	18	-	-	-	-
Mot. Infantry Brigades	-	-	-	-	-	-	-	22	-	-	-	-
Mech. Infantry Divisions	5	-	-	4	4	4	6	8	6	6	7	7
Mech. Infantry Brigades	5	-	-	5	5	5	6	6	17	17	25	25
Armor Divisions	10	9	9	9	9	9	9	9	1	1	1	1
Armor Brigades	10	11	11	8	8	8	8	9	16	16	17	17
Army Aviation Brigades/Regts											11	11
Artillery Divisions	5	3	3	2	2	2	2	2	2	2	-	-
Artillery Brigades	15	15	15	17	17	17	17	17	17	17	22	22
Airborne Divisions	*	3	3	3	3	3	3	3	3	3	3	3
Amphibious Divisions	-	-	-	2	2	2	2	-	2	2	2	2
Amphibious/Marine Brigades	2	2	2	3	3	3	3	2	3	3	3	3
Tanks	6500	7000	7000	6700	6700	7000	7000	7000	7000	7000	6947	7000
Artillery Pieces	11000	11000	11100	7400	7400	8000	8000	8000	8000	8000	7953	8000

Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.



**Figure 15.12: A Summary of Trends in the PLA: Part Two**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Aircraft Carriers	0	0	0	0	0	0	0	0	1	1	1	1
Destroyers	21	25	25	29	25	25	26	26	23	24	21	23
Frigates	43	45	47	45	48	49	53	53	52	49	52	52
Corvettes	-	-	-	-	-	-	-	-	-	8	15	23
Tank Landing Ship/Amphibious Transport Dock	20	25	25	26	27	27	27	28	29	29	29	30
Medium Landing Ships	23	25	25	28	28	28	28	23	26	28	28	22
Diesel Attack Submarines	51	50	53	54	54	54	49	48	49	51	53	57
Nuclear Attack Submarines	6	5	5	5	6	6	5	5	5	5	5	5
Ballistic Missile Submarines	-	-	-	-	-	-	-	-	-	-	-	4
Coastal Patrol (Missile)	51	45	41	45	70	85	86	86	85	85	86	86

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fighters	1500	1525	1550	1630	1655	1680	1680	1570	1700	1700	1700	1700
Bombers/Attack	780	775	775	620	645	620	620	550	600	400	400	400
Transport	500	450	450	450	450	450	450	300	475	475	475	475
Special Mission	-	-	-	-	-	-	-	-	-	-	115	115

Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

**Figure 15.13: Trends in PLA Forces Deployed in the Vicinity of the Taiwan Strait: Part One**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Personnel (Active)	375,000	400,000	400,000	440,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000	400,000
Group Armies	9	8	8	8	8	8	8	8	8	8	8	8
Infantry Divisions	9	9	9	8	8	6	5	-	5	5	3	4
Infantry Brigades	11	12	12	11	11	11	9	-	6	6	6	7
Mot. Infantry Divisions	-	-	-	-	-	-	-	5	-	-	-	-
Mot. Infantry Brigades	-	-	-	-	-	-	-	11	-	-	-	-
Mech. Infantry Divisions	3	-	-	1	1	1	2	4	2	2	3	4
Mech. Infantry Brigades	1	-	-	1	1	1	1	1	7	7	7	9
Armor Divisions	4	4	4	4	4	4	4	4	0	0	0	0
Armor Brigades	4	4	4	3	3	3	3	4	7	7	8	7
Army Aviation Brigades/Regts	-	-	-	-	-	-	-	-	-	-	6	6
Artillery Divisions	3	3	3	2	2	2	2	2	2	2	0	0
Artillery Brigades	5	5	5	6	6	6	6	6	6	6	10	9
Airborne Divisions	*	3	3	3	3	3	3	3	3	3	3	3
Amphibious Divisions	-	-	-	2	2	2	2	-	2	2	2	2
Amphibious/Marine Brigades	2	2	2	3	3	3	3	2	3	3	3	3
Tanks	2,500	2,700	2,700	2,800	2,800	3,100	3,100	3,100	3,000	3,000	2,758	2,800
Artillery Pieces	5,500	3,200	3,200	2,900	2,900	3,400	3,400	3,400	3,000	3,000	3,891	3,900

Source: DoD, *Military Power of the People's Republic of China* 2005-2008; *Military and Security Developments Involving the People's Republic of China* 2009-2016.

**Figure 15.13: Trends in PLA Forces Deployed in the Vicinity of the Taiwan Strait: Part Two**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Aircraft Carriers	0	0	0	0	0	0	0	0	0	0	0	0
Destroyers	13	16	16	17	17	15	16	16	16	14	14	16
Frigates	34	40	40	36	39	40	44	44	44	40	42	40
Corvettes	-	-	-	-	-	-	-	-	-	6	11	14
Tank Landing Ship/Amphibious Transport Dock	20	22	22	24	25	25	25	26	27	26	26	28
Medium Landing Ships	15	20	20	23	23	23	21	18	24	21	21	16
Diesel Attack Submarines	29	28	28	32	32	32	33	30	33	32	34	28
Nuclear Attack Submarines	-	-	-	1	1	2	2	2	2	2	5	2
Ballistic Missile Submarines	-	-	-	-	-	-	-	-	-	-	-	4
Coastal Patrol (Missile)	34	34	34	35	55	65	68	67	67	67	68	68

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fighters	425	425	425	330	330	330	330	310	330	130	130	130
Bombers/Attack	280	275	275	160	160	160	160	180	160	200	200	200
Transport	50	75	75	40	40	40	40	40	40	150	150	150
Special Mission	-	-	-	-	-	-	-	-	-	-	75	75

Source: DoD, *Military Power of the People's Republic of China* 2005-2008; *Military and Security Developments Involving the People's Republic of China* 2009-2016.

*Figure 15.14: Trends in the ROC Armed Forces: Part One*

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Personnel (Active)	200,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000	130,000
Group Armies	-	3	3	3	3	3	3	3	3	3	3	3
Infantry Divisions	-	-	-	-	-	-	-	-	0	0	0	0
Infantry Brigades	25	13	13	8	8	8	8	-	8	8	8	5
Mot. Infantry Divisions	-	-	-	-	-	-	-	-	-	-	-	-
Mot. Infantry Brigades	-	-	-	-	-	-	-	8	-	-	-	-
Mech. Infantry Divisions	-	-	-	-	-	-	-	-	0	0	0	0
Mech. Infantry Brigades	3	-	-	3	3	3	3	3	3	3	3	3
Armor Divisions	-	-	-	-	-	-	-	-	0	0	0	0
Armor Brigades	5	5	5	5	5	4	4	4	4	4	4	4
Army Aviation Brigades/Regts	-	-	-	-	-	-	-	-	-	-	3	3
Artillery Divisions	-	-	-	-	-	-	-	-	0	0	0	0
Artillery Brigades	-	3+	3+	5	5	5	5	5	5	5	5	5
Airborne Divisions	-	-	-	-	-	-	-	-	0	0	0	0
Amphibious Divisions	1	-	-	-	-	-	-	-	0	0	0	0
Amphibious/Marine Brigades	3	2	2	3	3	3	3	2	3	3	3	2
Tanks	1,900	1,800	1,800	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100	1,100
Artillery Pieces	4,400	3,200	3,200	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600	1,600

Source: DoD, *Military Power of the People's Republic of China* 2005-2008; *Military and Security Developments Involving the People's Republic of China* 2009-2016.

**Figure 15.14: Trends in the ROC Armed Forces: Part Two**

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Aircraft Carriers	0	0	0	0	0	0	0	0	0	0	0	0
Destroyers	6	2	4	4	4	4	4	4	4	4	4	4
Frigates	21	22	22	22	22	22	22	22	22	22	22	22
Corvettes	-	-	-	-	-	-	-	-	-	-	1	1
Tank Landing Ship/Amphibious Transport Dock	12	12	12	12	12	12	12	12	12	12	12	14
Medium Landing Ships	4	4	4	4	4	4	4	4	4	4	4	0
Diesel Attack Submarines	4	4	4	4	4	4	4	4	4	4	4	4
Nuclear Attack Submarines	-	-	-	-	-	-	-	-	-	-	-	0
Ballistic Missile Submarines	-	-	-	-	-	-	-	-	-	-	-	-
Coastal Patrol (Missile)	50	50	50	51	59	61	61	61	45	45	45	45

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fighters	420	330	330	390	390	388	388	388	388	388	388	384
Bombers/Attack	-	-	-	-	-	22	22	22	22	22	22	0
Transport	40	40	40	40	40	21	21	21	21	21	21	19
Special Mission	-	-	-	-	-	-	-	-	-	-	10	25

Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

## The Naval Balance

The numerical indicators presented in the previous figures have shown that the naval balance in the Taiwan Strait is shifting steadily favor of the PRC. These Figures indicate that Taiwan has kept its naval force numbers at a relatively stable level (with the exception of patrol craft), while the PRC has engaged in a constant, if moderate, increase in the number of naval forces allocated to the Taiwan Strait.

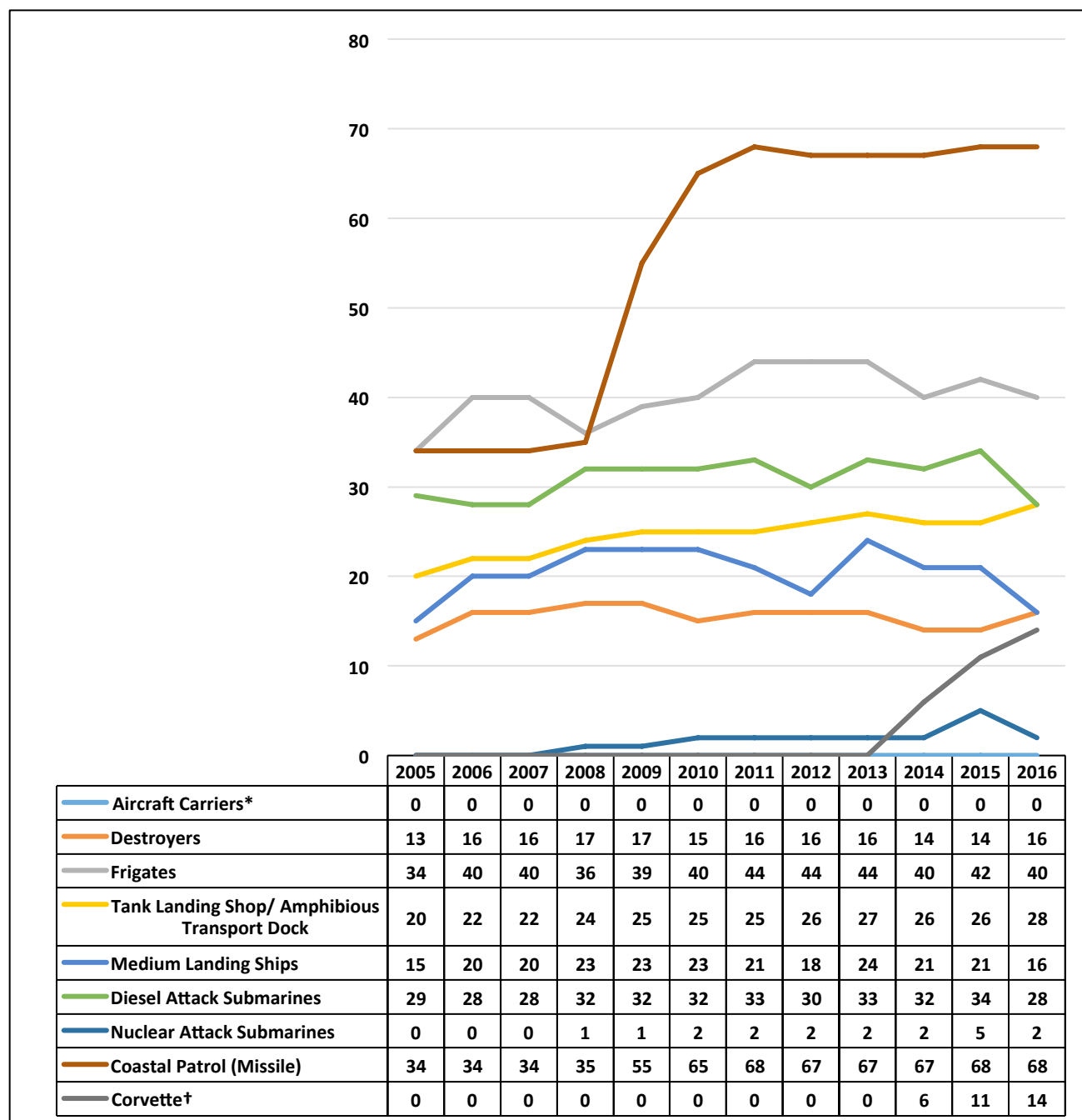
**Figures 15.15 and 15.16** illustrate the numerical changes in naval forces on both sides over time. They show that the PLAN has allocated significantly larger numbers of patrol craft, frigates, and tank landing ships to the East and South Sea Fleets. In addition, there were moderate increases in the number of destroyers and medium landing ships. Perhaps most significantly, the PLAN allocated five nuclear attack submarines (starting with one in 2008 and has increased to 5 in 2015), when historically all of the PLAN's SSNs have been concentrated in the North Sea Fleet.

In contrast, the ROC Navy deployed significantly more patrol craft but saw few increases in any other ship category. One additional frigate was deployed in the fleet, but two destroyers were decommissioned in turn. Furthermore, the 2015 balance shows a significant ROC reduction in coastal patrol boats. While the ROC has historically relied on quality, rather than quantity, to militarily balance the PRC, the increasing numerical advantage of the PLAN as well as the ongoing PLAN modernization program, which has resulted in advanced combatants such as the Luyang II DDG, indicate that the naval balance in the Strait is shifting in the favor of the PLAN.

It is important to note that the comparisons presented here only show part of the forces involved. Both sides operate land-based anti-ship cruise missiles, maritime strike aircraft, land-based artillery, and electronic and cyber warfare forces. Moreover, the PRC has a reportedly operational anti-ship ballistic missile. Successes or failures by either side in the air, space, land, and cyber domains, as well as the electro-magnetic spectrum, will have significant implications for any potential naval combat. In addition, both the PRC and the ROC are attempting to realize joint operations among their services.

All of these variables will influence any actual naval combat. However, the lack of reliable data on many of these variables and the intangible nature of others preclude effective comparison. Consequently, this study presents naval force numbers in the Strait in order to provide a quantitative analysis of one portion of the military balance.

**Figure 15.15: Absolute Trends in PLAN Deployments to the East and South Sea Fleets**

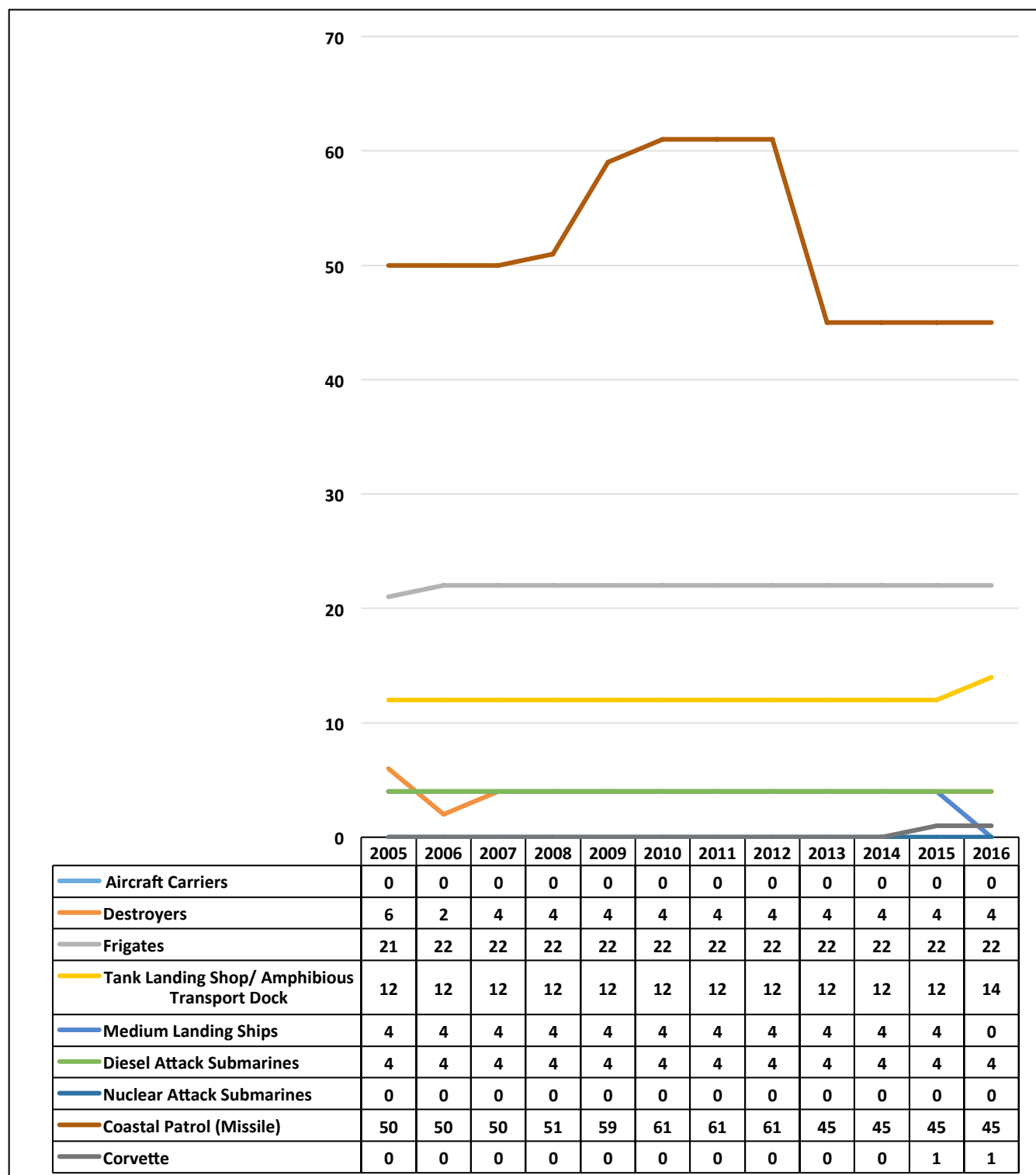


\*Aircraft carriers were recently introduced into the PLAN. Therefore, a comparison between current force levels and 2005 force levels could not be made. The carrier *Liaoning*, is currently deployed with the North Sea Fleet.

†The Type 056 *Jiangdao* class corvette entered service in 2012 and is currently the only class of corvette in the PLAN. Previous iterations of this report did not count corvettes; this is the first year corvettes were counted. The PLAN has a total of 8 Type 056 corvettes, 6 of which are in the East and South Sea fleets.

Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2015*.

*Figure 15.16: Absolute Trends in ROC Naval Forces*



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.



**Figures 15.15 and 15.16** indicate that, while the ROC's forces have been largely numerically stagnant or, in the case of coastal patrol boats, decreasing, the PLAN's deployments to the Taiwan Strait have been moderately – and in some cases, significantly – increasing.

However, the PRC and ROC are not engaging in a symmetric competition. The ROC has mostly based its defense strategy on assumptions of numerical inferiority, qualitative superiority, and asymmetric strategic imperatives. Consequently, a more meaningful assessment compares *relative* changes in the Taiwan Strait balance to compare the changing balance of forces. Thus, regardless of strategic assumptions, a changing relative balance indicates a meaningfully changing military balance and thus changing effects on bilateral relations.

**Figures 15.17 and 15.18** illustrate this changing balance by using 2005 as a baseline and charting relative increases in force numbers on both sides. **Figure 15.17** demonstrates the changing relative force strength of PLAN deployments to the Taiwan Strait while **Figure 15.18** shows the changing relative force strength of ROC naval deployments. Even assuming a ROC strategic posture based on operating against numerically larger forces, such a comparison enables an observer to identify a military balance in flux in the PRC's favor.

As the data in both Figures show, the ROC's naval forces are being forced to deter or defeat larger numbers of the PRC's forces *per individual ROC combatant*. This outcome is the result of numerous trends within both navies.

On the PLAN side, nearly every ship category has seen more than a 20% increase in force numbers since 2005. Importantly, nuclear submarines have been newly introduced into the region and so do not appear in the Figures below, because the PLAN's nuclear submarine force strength has increased by an infinite percentage. Also impressive, the PLAN's patrol craft force has increased by nearly 100% over the 2005 figure.

In contrast, the ROC's naval forces have experienced stagnant growth in naval force structure, with the 30% decrease in destroyers and the recent cuts to coastal patrol craft holdings being especially significant. These decreases have only been answered by a 5% increase in frigates and stagnant growth in other ship categories. As a result, the Taiwan Strait naval balance had already shifted significantly in the favor of the PRC by 2012.

These trends do not mean that the ROC cannot or will not engage in creative and asymmetric means of maintaining cross-strait deterrence in order to compensate for adversary trends in the Strait. However, these trends indicate that such asymmetric approaches are becoming necessary for the ROC: symmetric deterrence and war fighting is becoming less and less feasible for Taiwan's armed forces.

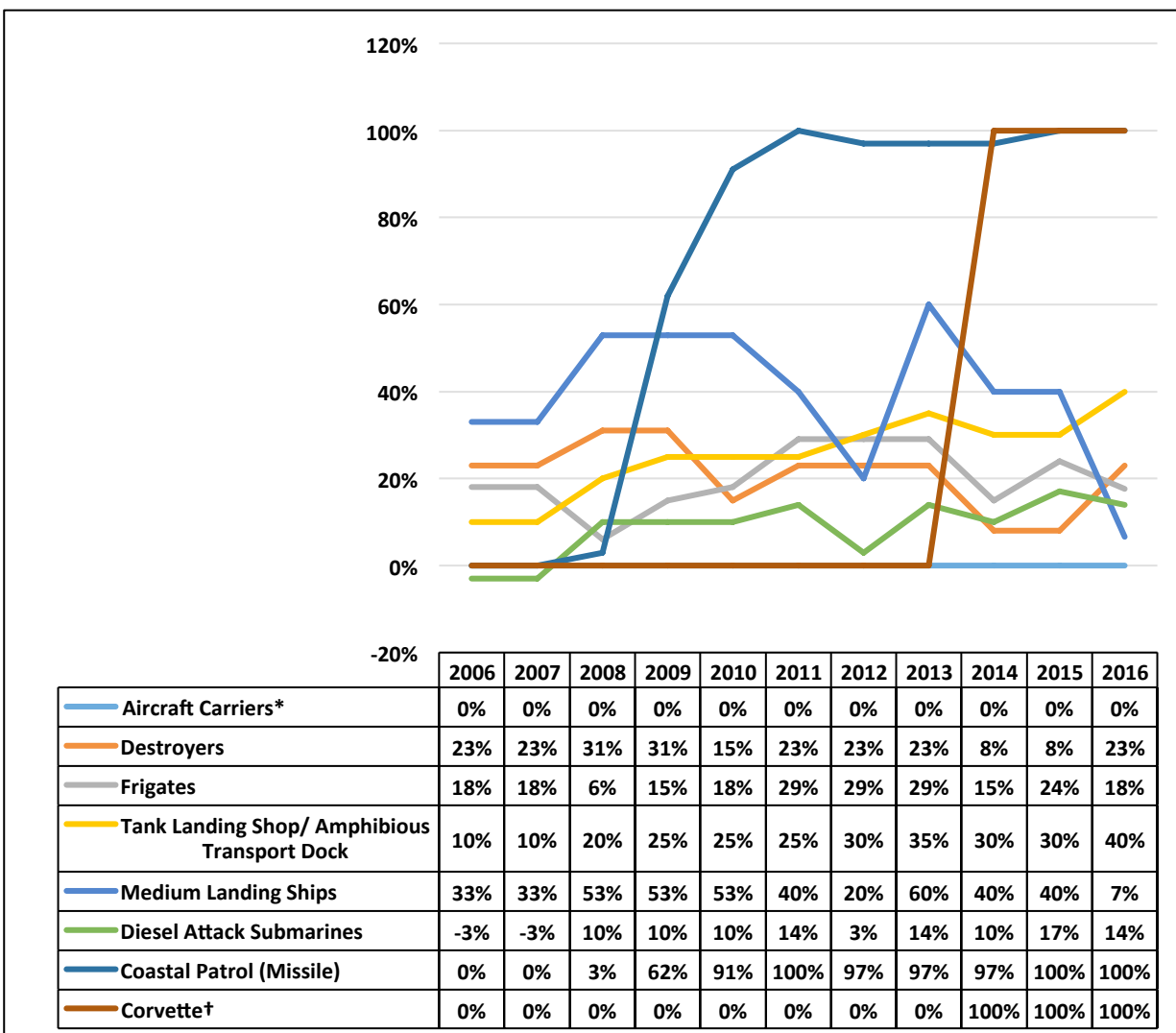
These trends also do not account for the myriad factors that would influence a PRC-ROC naval contest. Both sides operate numerous systems and forces not shown in the quantitative data below that would influence the naval contest. However, numbers do play a role in determining the outcome of combat.

It is interesting that the DoD report on *Military and Security Developments Involving the People's Republic of China for 2014* highlights the following largely naval scenario – one largely repeated in the 2015 and 2016 reports:<sup>886</sup>

In addition to direct military engagement, PLA writings describe potential alternative solutions—air blockades, missile attacks, and mining to force capitulation. China could declare that ships en route to Taiwan must stop in mainland ports for inspection and/or transshipment prior to transiting to Taiwan ports.

China could also attempt the equivalent of a blockade by declaring exercise or missile closure areas in approaches to ports, in effect closing port access and diverting merchant traffic. The PLA employed this method during the 1995-96 missile firings and live-fire exercises. There is a risk, however, that China would underestimate the degree to which any attempt to limit maritime traffic to and from Taiwan would trigger countervailing international pressure and military escalation. China today probably could not enforce a full military blockade, particularly if a major naval power intervened. However, its ability to do so will improve significantly over the next five to ten years.

**Figure 15.17: Relative Increases in PLAN Deployments to the East and South Sea Fleets since 2005 (percentage increase)**

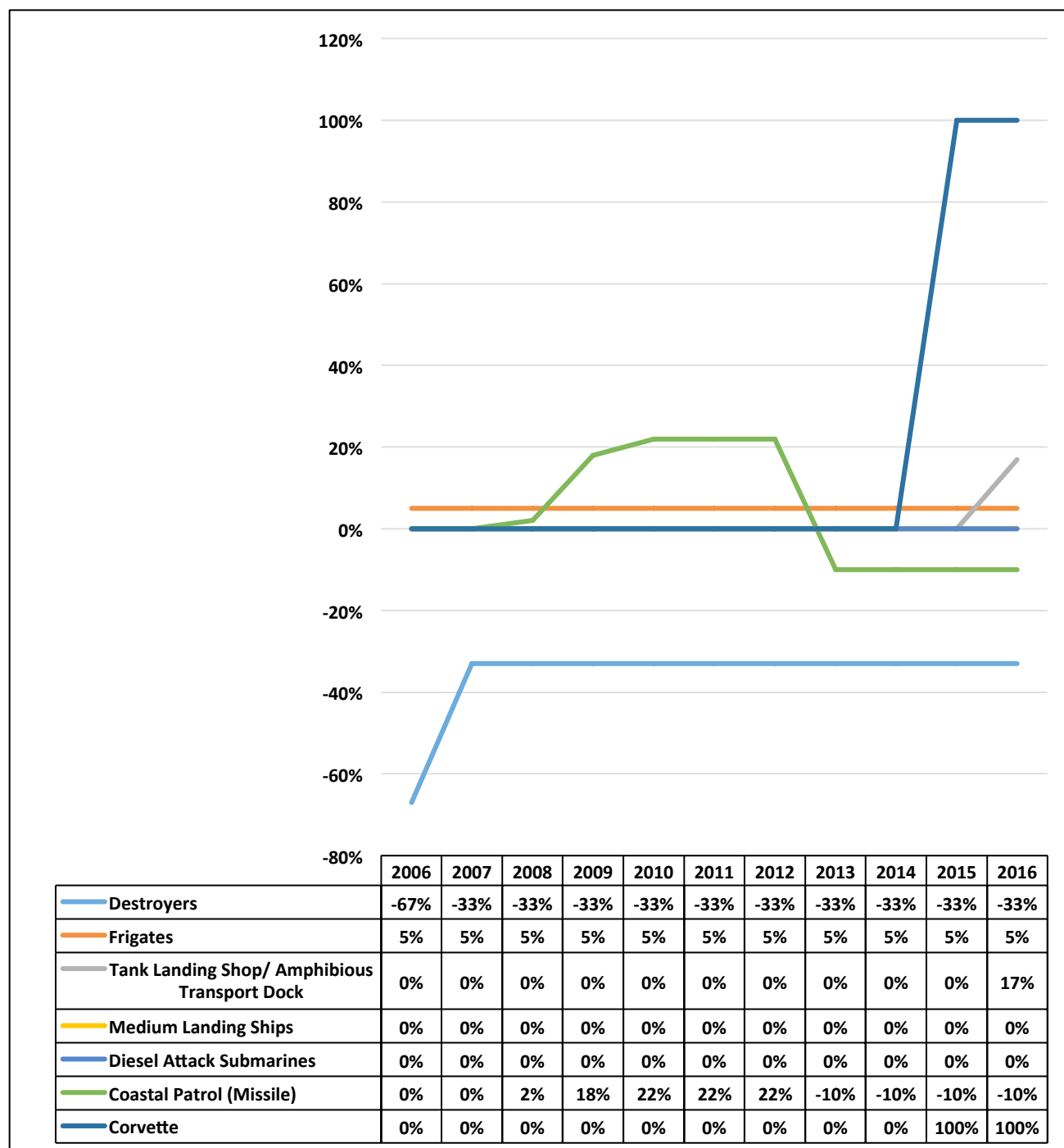


\*Aircraft carriers were recently introduced into the PLAN. Therefore, a comparison between current force levels and 2005 force levels could not be made. The carrier *Liaoning*, is currently deployed with the North Sea Fleet.

†The Type 056 *Jiangdao* class corvette entered service in 2012 and is currently the only class of corvette in the PLAN. Previous iterations before the 2014 report did not count corvettes which was the first year corvettes were counted. The PLAN has a total of 8 Type 056 corvettes, 6 of which are in the East and South Sea fleets.

Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

**Figure 15.18: Increases in ROC Naval Deployments since 2005 (percentage increase)**



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

## The Air and Missile Balance

The air and missile balance in the Taiwan Strait is changing in more complex ways than the naval balance, and aircraft numbers are only part of the story. Although the ROC Air Force (ROCAF) has introduced special mission aircraft as well as reduced its fighter holdings at roughly one-third the rate the PLAAF has, the PLAAF reductions coincide with the previously discussed introduction of modern aircraft into the PLAAF fleet.

Moreover, there are other key components of this aspect of the balance: long-range SAMs, SRBMs, naval forces, and long-range artillery all have the potential to influence any air and tactical missile combat over the Taiwan Strait. So do qualitative trends in training, skill, and leadership.

The air and missile balance interacts synergistically with the sea and land military balances. Changes in the air and missile balance especially affect the naval balance, and vice versa. The deployment of ASCM-capable fighters and bombers in Taiwan, as well as the relative increase in Taiwanese fighters compared to the PLAAF's holdings, may compensate for the shifting trends in the naval balance.

The steady deployment of more DDGs and guided missile frigates (FFGs) with more capable SAMs by the PLAN also has an effect on the balance. Moreover, other elements of the air forces have missions in addition to air superiority and close air support. For example, the number of PLAAF transport aircraft near the Strait show that tactical and operational airlift is an important mission for the PLAAF's Taiwan Strait forces. Thus, one aspect of the aerial balance could be the PLAAF's ability to land and supply ground forces on Taiwan and the ROCAF's ability to prevent such actions.

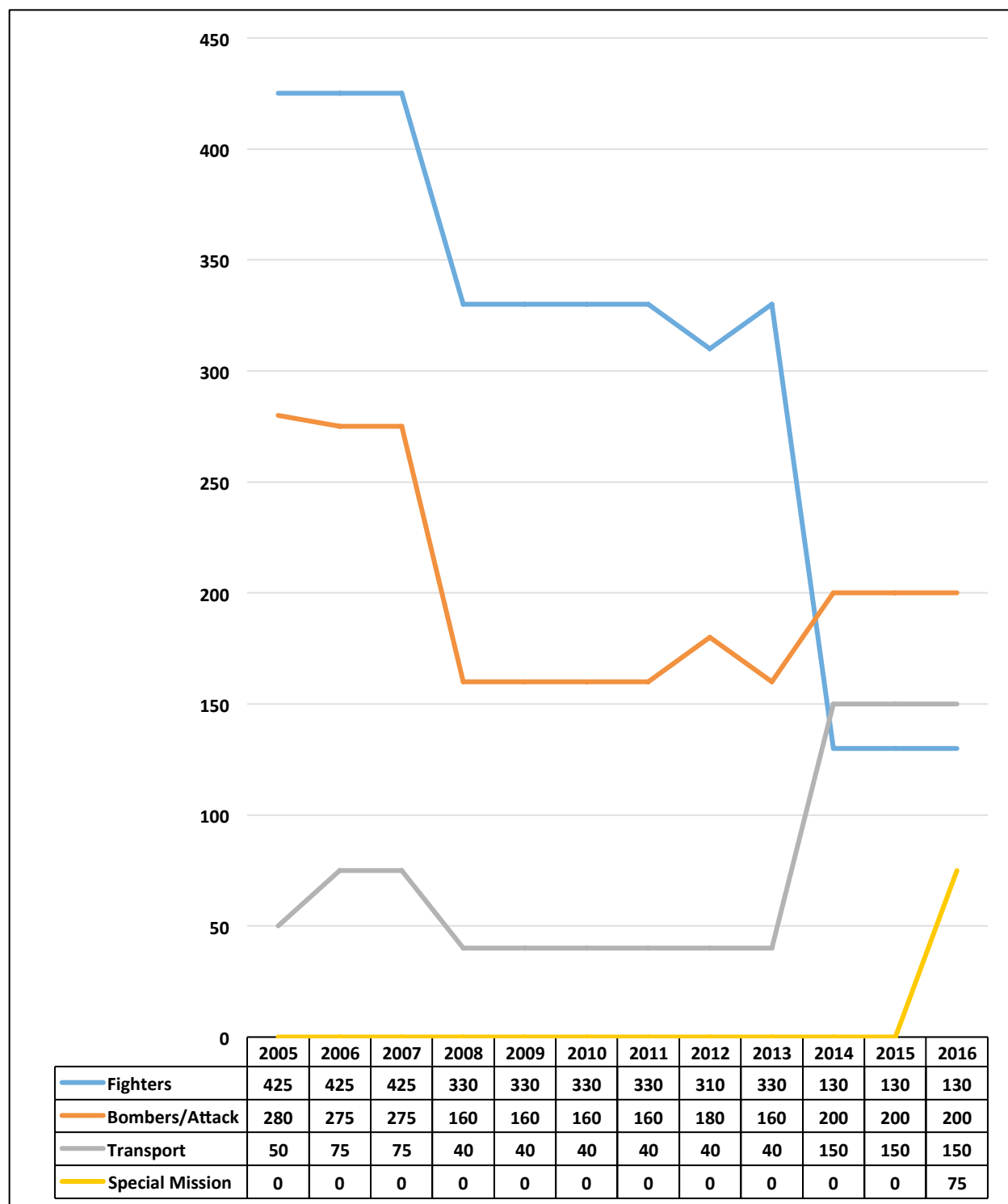
Most significantly, the DoD has reported that the SAF has over 1,200 SRBMs deployed opposite Taiwan.<sup>887</sup> these forces are capable of fulfilling a counter-air role, and the 2009 RAND report mentioned above documents how effectively a SRBM force of such a size and sophistication could significantly impede ROCAF air operations. To quote the RAND report:<sup>888</sup>

...if the entire first wave of missiles is devoted to air base attack, a greater than 90 percent chance of cutting all [ROCAF] runways could be achieved with 40m CEP missiles.

Complementing these SRBMs are PLAA MRLs that have ranges of up to 200 km.

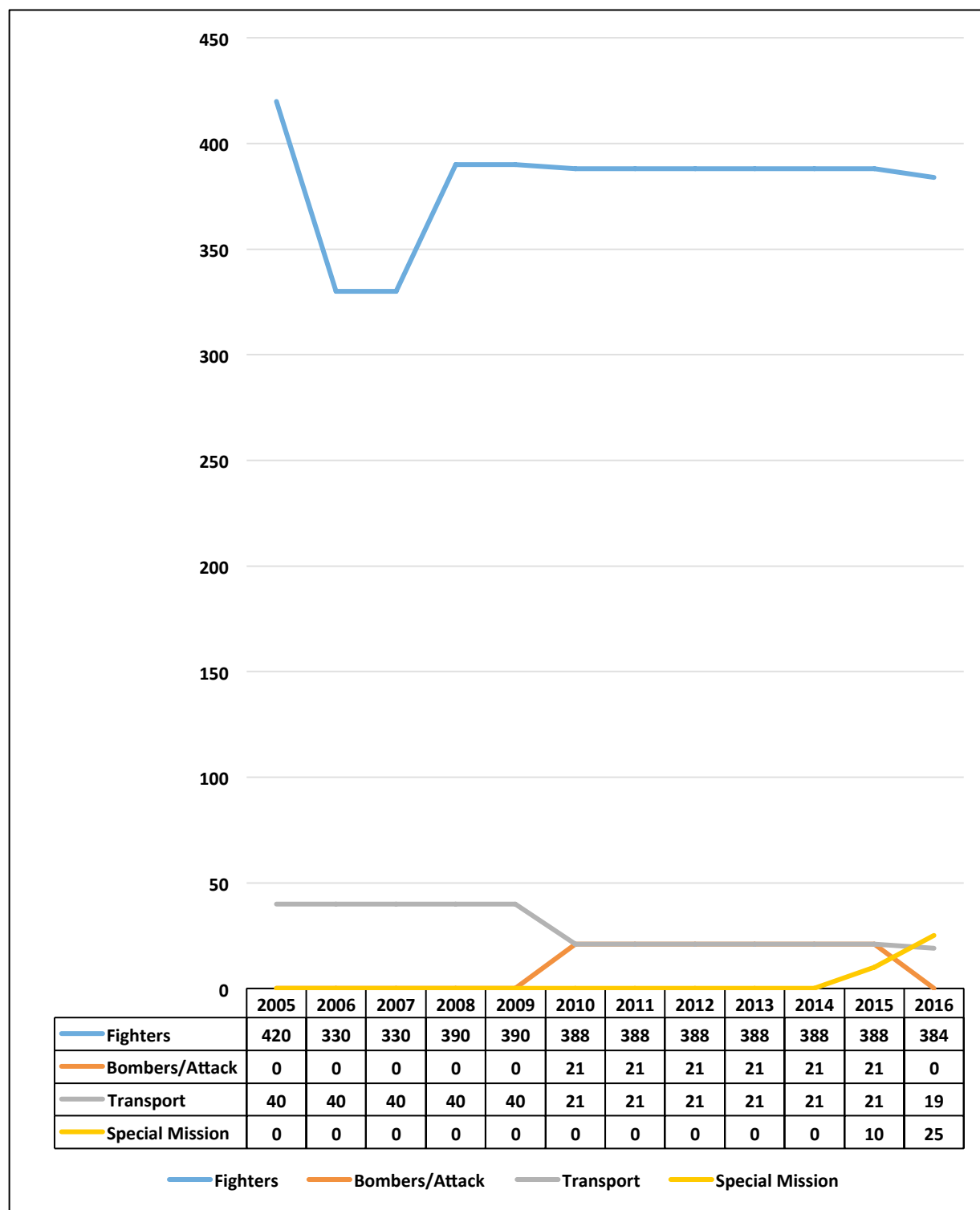
These caveats all affect **Figures 15.19 and 15.20**, which show the changing trends in the PLAAF and ROC Taiwan Strait air balance that affect deployments in the Taiwan Strait by individual country. These Figures show that both air forces have cut the number of fighter and transport aircraft. The ROCAF's fighter strength has still made a significant rebound since 2007. The ROC has made a moderate increase in bomber/attack aircraft from a baseline of zero, while the PLAAF made significant reductions in its bomber fleet. However, the PLAAF still holds roughly eight times as many bombers as the ROCAF in the Taiwan Strait area.

**Figure 15.19: Absolute Trends in PLAAF Forces Deployed Near the Taiwan Strait**



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2015*.

*Figure 15.20: Absolute Trends in the ROCAF Aircraft Inventory*



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

In order to put these nation-by-nation trends in context, **Figures 15.21 and 15.22** show the relative trends in the force numbers of both the PLAAF and ROCAF. **Figure 15.23** shows a Japanese Ministry of Defense comparison of the trend in modern fighters.

These Figures indicate that both air forces have engaged in significant numerical reductions in their respective force strengths. As mentioned earlier, these numbers must be placed in the context of dual modernization programs that augment the capabilities of each individual aircraft on both sides, and a smaller force may be more capable than a larger one.

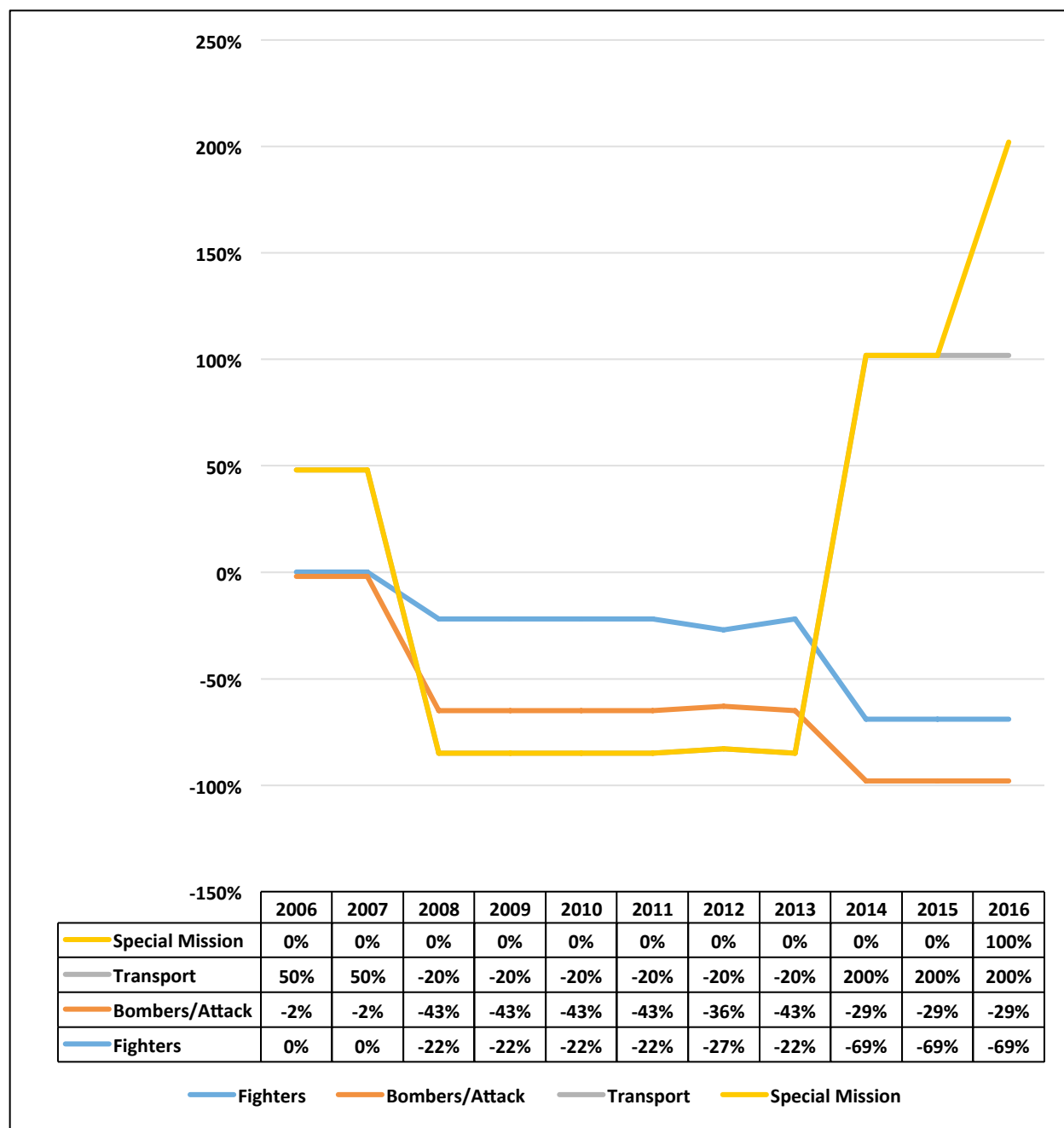
The relative numbers indicate that the PLAAF has reduced combat aircraft at a relatively higher pace than the ROCAF. Between 2005 and 2016, the ROCAF fighter arm decreased in number at approximately one-third the pace of the PLAAF's fighter strength deployed to the Taiwan Strait area. Moreover, the ROC's fighter forces have grown slightly in strength after 2008, and the culling during 2005-2007 often involved the replacement of obsolete aircraft with more advanced systems.

These relative numbers indicate a shift in the aerial balance in the favor of the ROCAF, but it is unclear how the ROCAF's relatively improving fighter force would perform against improving PLAA and PLAAF long-range SAMs as well as sea-based PLAN SAMs. As **Figure 15.24** illustrates, much would depend upon whether the ROC's air defense systems could provide the ROCAF with a relatively greater advantage than the PLA's air defense systems would give the PLAAF. The air balance could also be shaped – perhaps critically – by the PLA's use of PLA SAF's SRBMs and the ROC's cruise missile forces, as well as by both sides' electronic warfare and cyber warfare forces.

The DoD noted in its 2016 report that:<sup>889</sup>

China could use missile attacks and precision strikes against air defense systems, including air bases, radar sites, missiles, space assets, and communications facilities to degrade Taiwan's defenses, neutralize Taiwan's leadership, or break the Taiwan people's resolve.

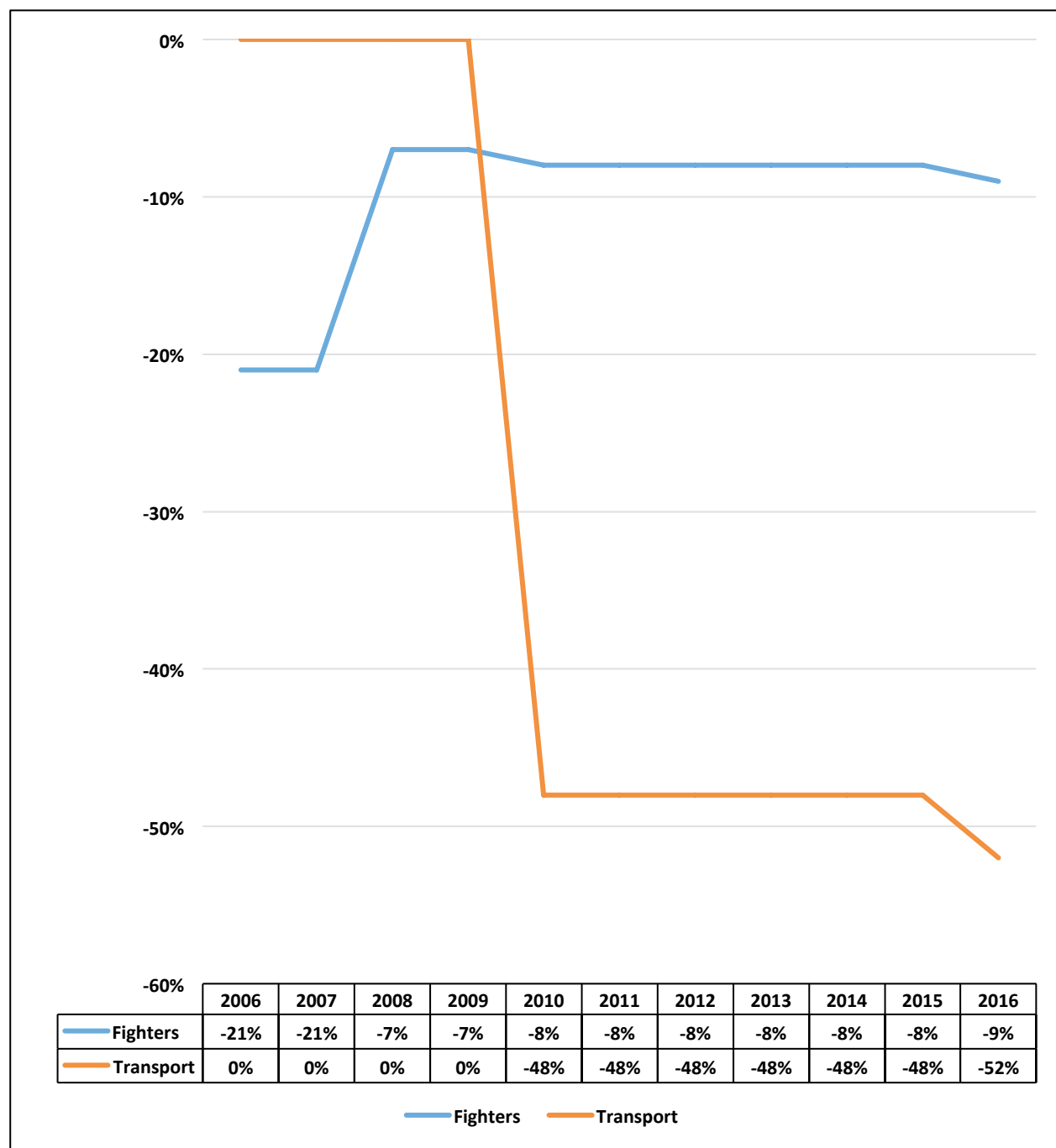
**Figure 15.21: Relative Changes in PLAAF Force Deployments to the Taiwan Strait, since 2005 (percentage increase)**



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

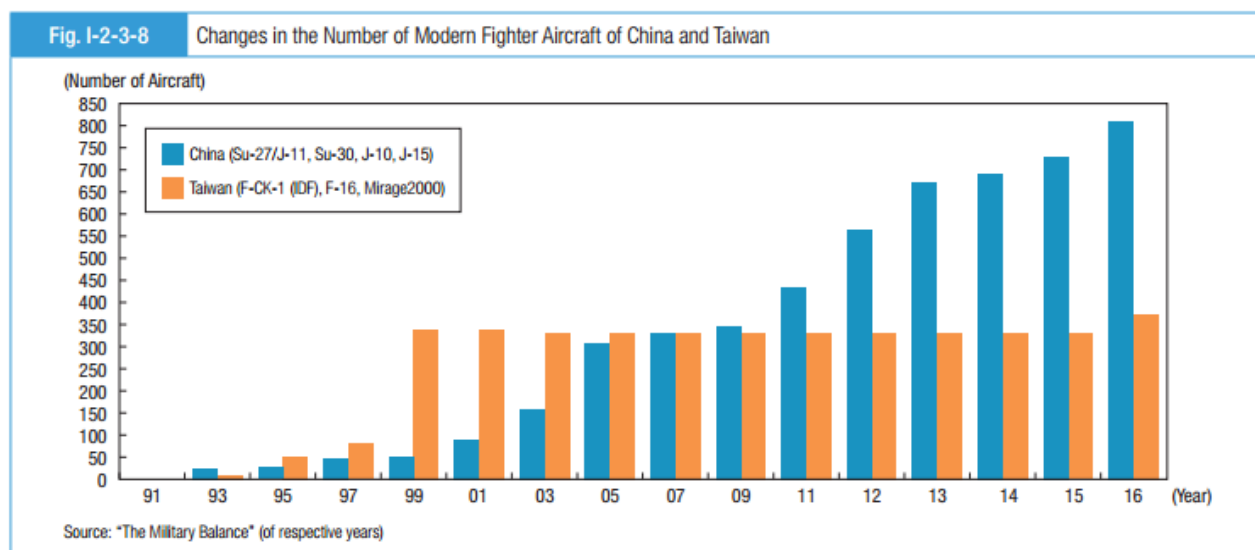


**Figure 15.22: Changes in ROCAF Force Numbers, since 2005 (percentage increase)**



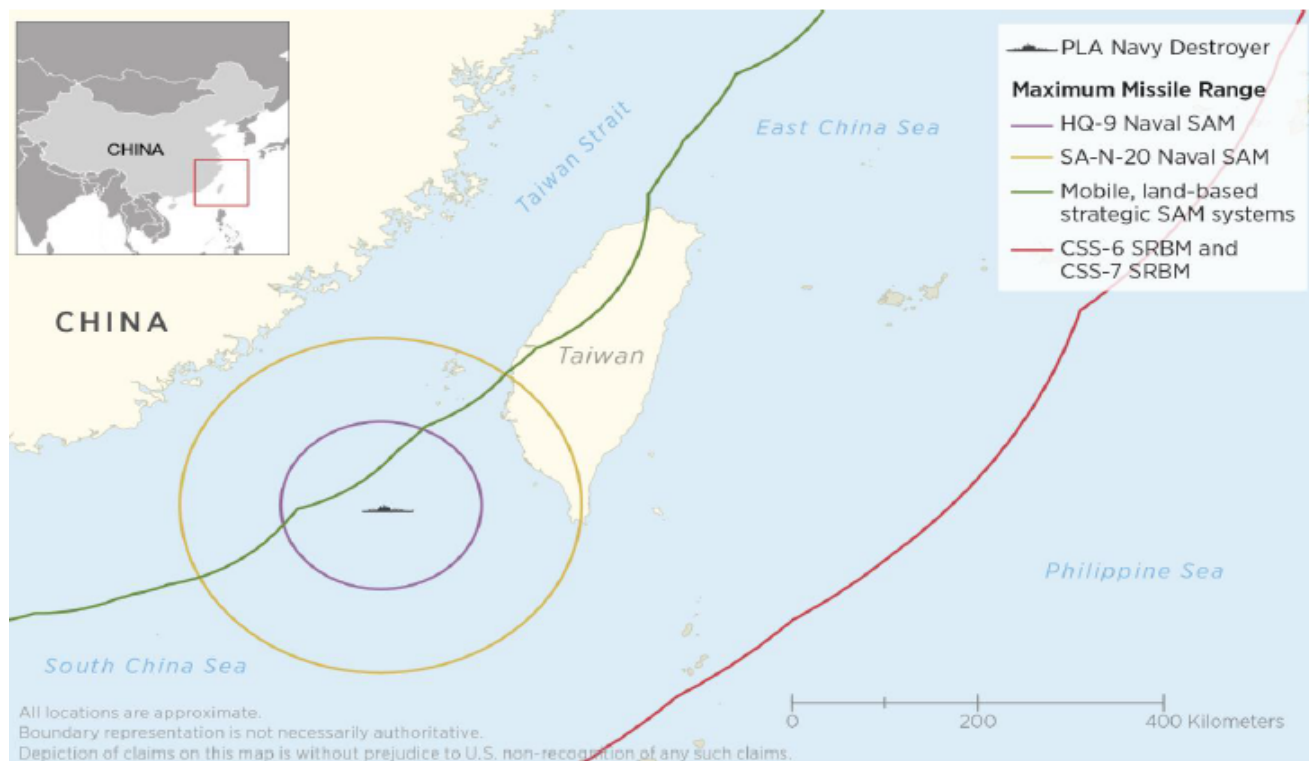
Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

**Figure 15.23: Japanese Ministry of Defense Summary of the Trends in the Balance of Modern PRC-ROC Fighter Aircraft**



Source: Japanese Ministry of Defense, *Defense of Japan*, 2016.

**Figure 15.24: Department of Defense Estimate of PLA SAM and SRBM Coverage**



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China* 2016, April 2016, 87.

## The Ground Force Balance

The ground force balance is even more difficult to extrapolate from force numbers. Taiwan's island geography, as well as the fact each side must rely on amphibious operations to conduct large-scale offensive ground operations, leads to extraordinary asymmetry in land operations.

The attacking side must cross 185 km of sea in the face of air and sea defenses, forcibly enter terrain in the face of reinforced defenses while vulnerable, establish a beachhead, and continuously supply a very large military force across the ocean despite adversary actions. In this context, the effect of numbers is highly scenario-dependent, and full numbers can only be brought to bear once the most difficult elements of amphibious operations have already succeeded.

In addition, every aspect of ground operations will be joint operations, and the outcome of the fighting in every other domain will have a critical influence the conduct and success of land operations. Furthermore, the need for reinforcements and resupply mean that an amphibious operation is *always* vulnerable to interdiction in *all* domains, regardless of the progress made by land forces.

The US DoD makes this clear in its 2015 report:<sup>890</sup>

Publicly available Chinese writings describe different operational concepts for amphibious invasion. The most prominent of these, the Joint Island Landing Campaign, envisions a complex operation relying on coordinated, interlocking campaigns for logistics, air, and naval support, and EW. The objective would be to break through or circumvent shore defenses, establish and build a beachhead, transport personnel and materiel to designated landing sites in the north or south of Taiwan's western coastline, and launch attacks to seize and occupy key targets and/or the entire island.

The PLA is capable of accomplishing various amphibious operations short of a full-scale invasion of Taiwan. With few overt military preparations beyond routine training, China could launch an invasion of small Taiwan-held islands in the South China Sea such as Pratas or Itu Aba. A PLA invasion of a medium-sized, better-defended offshore island such as Matsu or Jinmen is within China's capabilities. Such an invasion would demonstrate military capability and political resolve while achieving tangible territorial gain and simultaneously showing some measure of restraint. However, this kind of operation includes significant, if not prohibitive, political risk because it could galvanize pro-independence sentiment on Taiwan and generate international opposition.

Large-scale amphibious invasion is one of the most complicated and difficult military operations. Success depends upon air and sea superiority, rapid buildup and sustainment of supplies on shore, and uninterrupted support. An attempt to invade Taiwan would strain China's armed forces and invite international intervention. These stresses, combined with China's combat force attrition and the complexity of urban warfare and counterinsurgency (assuming a successful landing and breakout), make amphibious invasion of Taiwan a significant political and military risk. Taiwan's investments to harden infrastructure and strengthen defensive capabilities could also decrease China's ability to achieve its objectives. Moreover, China does not appear to be building the conventional amphibious lift required to support such a campaign.

**Figures 15.25 and 15.26** provide comparative data on the personnel and equipment strengths on both sides of the Taiwan Strait. As **Figure 15.25** indicates, the PLAA has moderately increased its Personnel levels in the Taiwan Strait area while the ROC has decreased the size of its army by over one-third. The ROC's Personnel reduction is likely a symptom of its transition to an all-volunteer, more modern force.

The PLA is making similar changes, and this increase in personnel levels may indicate that the PLA is increasing the relative resources dedicated to the Taiwan Theater. However, the moderate size of the increase, combined with discrepancies in year-on-year accounting in the DoD's annual

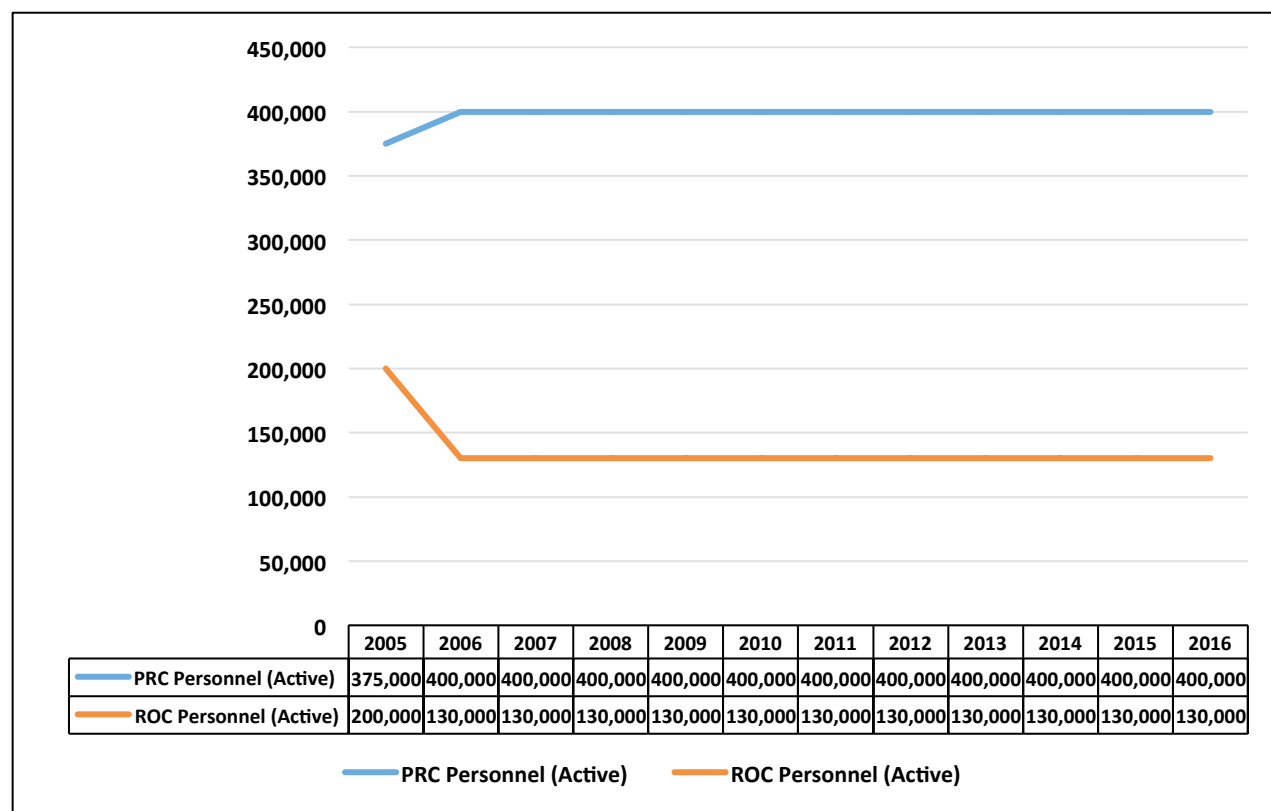
reports to Congress, may also mean that the increase may merely represent different DoD accounting practices.

**Figure 15.26** shows the comparative trends in main battle tank (MBT) and artillery holdings. As the Figure indicates, the ROC has made significant reductions in both MBTs and artillery systems. The PLAA has also decreased its artillery holdings, but at the same time it has deployed additional tanks to the Taiwan Strait region – even though both of these deployments increased the number over the 2005 levels, but decreased them relative to 2012.

Both forces have reduced their artillery system numbers. **Figure 15.27** shows the relative trend in artillery force numbers and the balance of artillery forces may have shifted in the PLAA's favor – there are more PLAA artillery pieces per ROC artillery piece in 2015 than in 2005, although such numbers cannot portray changes in lethality, range, rates of fire, and targeting capabilities.

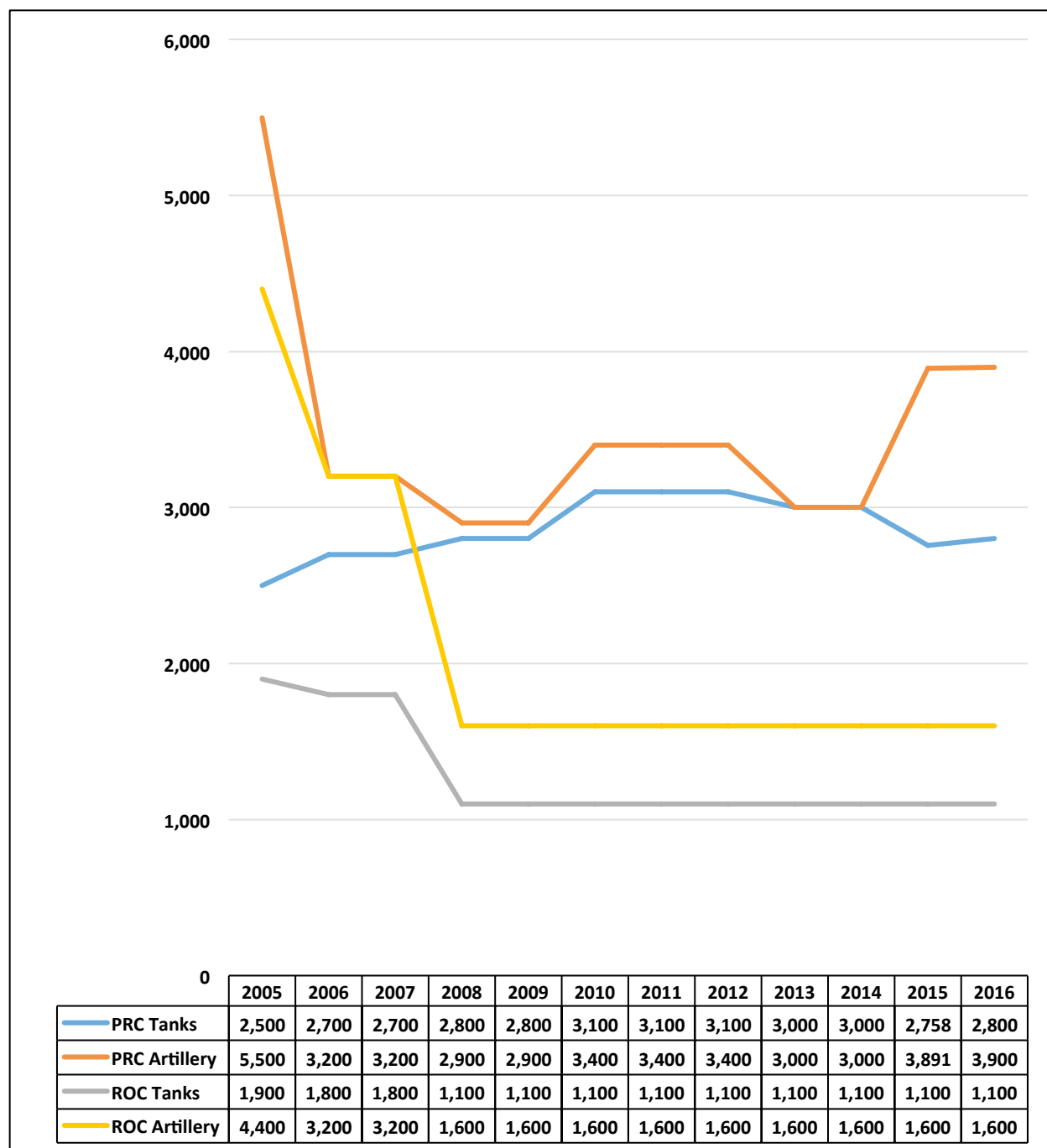
Finally, **Figure 15.28** provides the DoD's 2016 assessment of PRC forces arrayed near Taiwan, in graphical format.

**Figure 15.25: A Comparison of Personnel Trends in PLAA and ROC Army in the Taiwan Strait Region**



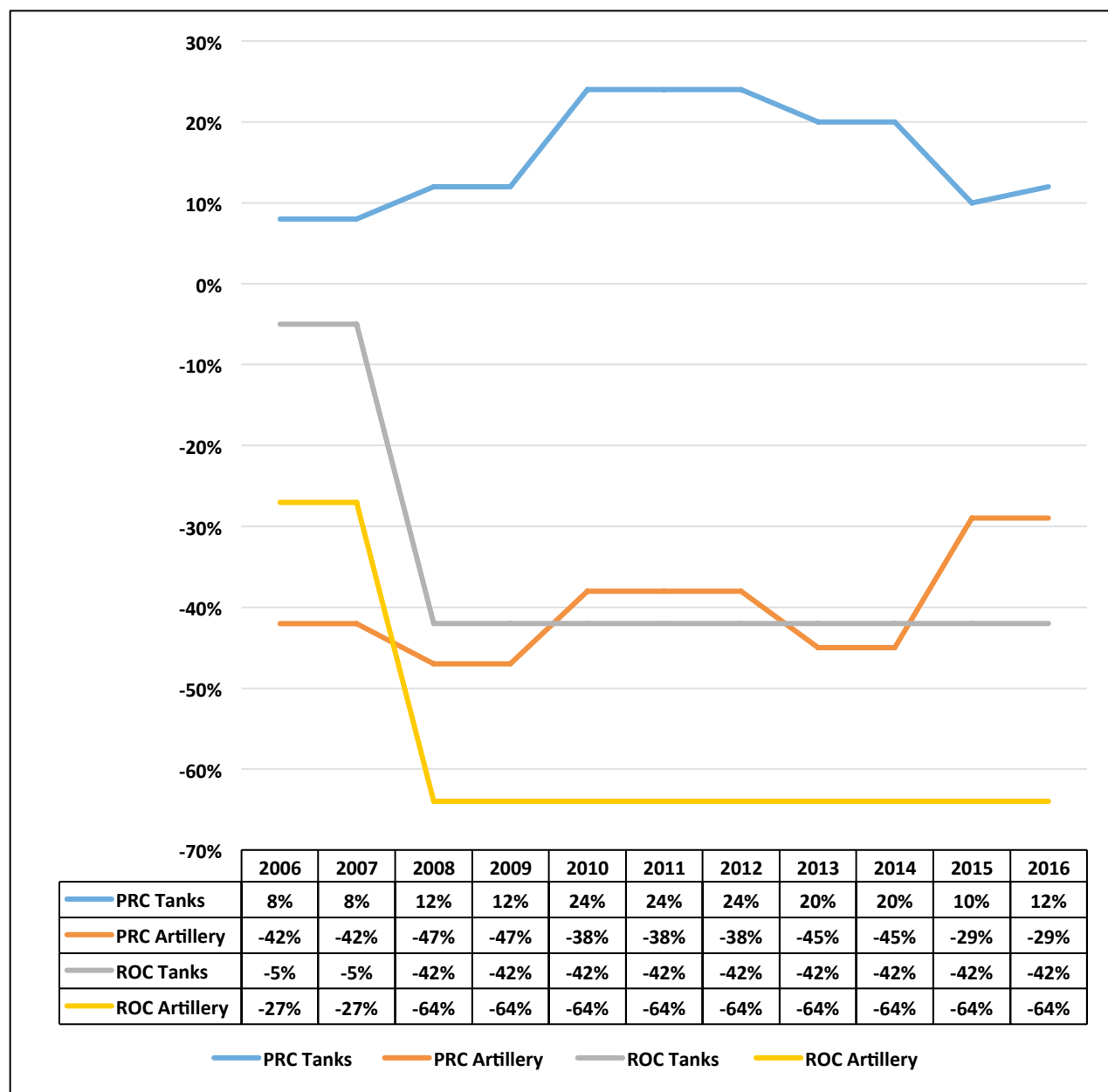
Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

**Figure 15.26: A Comparison of Trends in PLAA and ROC Equipment Holdings in the Taiwan Strait Region**



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

**Figure 15.27: A Comparison of Relative Trends in PRC and ROC Artillery Forces (percentage increase over 2005 levels)**



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2016*.

**Figure 15.28: PRC Force Deployment near Taiwan - Part One**



Source: DoD, *Military and Security Developments Involving the People's Republic of China* 2016, April 2016.

**Figure 15.28: PRC Force Deployment near Taiwan – Part Two**



Source: DoD, *Military and Security Developments Involving the People's Republic of China* 2016, April 2016.



## CHAPTER 16: U.S. AND CHINA: STRATEGIC COMPETITION OR COOPERATION IN THE PACIFIC, IOR, AND SOUTH CHINA SEA

The previous chapters have shown the extent to which China views the U.S. as its major strategic rival and the US views China as an emerging major regional power that the U.S. must seek to cooperate with when it can, but also treat as a competitor. Accordingly, the US continues to modify its force posture in Asia in reaction to China's actions just as China reacts to the US – as well as other regional powers.

The U.S. is only one of the states that affects China's choices in strategy and force development, but almost every aspect of China's military modernization, strategy, and trends in its armed forces is related to its view of the US as a strategic competitor and potential future threat. This is especially true in the Pacific, particularly in the case South China Sea, but – as the previous chapters have shown, it increasingly affects the Koreas, Japan, Taiwan, India, and the Indian Ocean.

This competition seems likely to increase as China emerges as steadily stronger military and economic power, but there are many areas where cooperation could serve the interest of both powers. They include counterterrorism, Afghanistan and Central Asia, and securing the stable flow of petroleum exports from the Gulf.

Both China and the United States also face the fact that the areas of competition between them are of limited strategic importance relative to the risk of a sustained or steadily increasing arms race, that any clash between them is likely to trigger increases in tension and an arms race that will be far costlier to both powers than the gains either power can win, and a major conflict would be vastly costlier to both powers than any potential strategic gains. Competition is one thing, conflict of any kind is quite another.

### *The Broader Context of China's Security and Strategic Interests*

The previous chapters have shown that China is already emerging as the world's second largest and most effective military power, and will almost certainly become a peer rival to the United States in Asia over the next ten to twenty years if it continues to successfully develop its economy. While Taiwan has been the litmus test of China's emerging military power in the past, China now looks far beyond Taiwan in shaping its strategy and forces.

Many of these issues have the same historical antecedents touched upon in the previous chapter, but they are taking on a very different character as China emerges as the equivalent of a regional superpower:

- Japan and South Korea are allies of the U.S. and partners in its effort to rebalance its forces in Asia. China's support of an erratic North Korea offers a partial counterbalance, but China is seeking to assert its presence in Northeast Asia, expand its air and naval operations, and assert claims in the Northeast Pacific. It is also seeking to counter U.S. influence by exploiting the tensions between South Korea and Japan growing out of Japan's occupation of South Korea and treatment of its population during the 1930s and World War II.

- Russia has changed from a Chinese ally, and then a major threat as a Soviet superpower, to an uncertain partner in seeking the stability of Central Asia, helping China to develop its military technology and force modernization, and acting as a source of energy. A diminished Russia, focused on its security position in Europe, no longer presents a major challenge and has strong interests in becoming a trading partner and avoiding tensions along the Sino-Russian border.
- Central Asia and Afghanistan are a source of trade and resources, there is no longer a major outside “great game,” and there is no meaningful regional military power. Its mix of corrupt and poorly governed authoritarian ethnic states does, however, present both China and Russia with the threat of Islamic extremism, and affect China’s Muslim minorities. China’s role in the Shanghai Cooperation Organization has become a symbol of its strategic interests in this area, along with its interest in mineral and energy resources.
- South Asia presents trading and resource opportunities, but China still has disputes with India over their border area, and India is the only potential nearby strategic rival to China in military and economic terms. China’s ties to Pakistan are a partial counterbalance to India, and China has also sought to expand its economic influence into Sri Lanka.
- Southeast Asia represents a key area of Chinese economic and strategic interest, and an area where China faces both U.S. rivalry for influence and a range of states seeking to maintain their independence and compete for resources and economic influence. While Vietnam has historically sought to maintain its independence, there are signs of deepening defense cooperation with the U.S. following the lifting of the arms embargo in May 2016. Singapore, Australia, New Zealand, Indonesia, Malaysia, Thailand and the Philippines have some form of security ties to the U.S. and/or have competing claims in the South China Sea and Southeastern Pacific, but most also have important economic ties to China. Myanmar has been an area of major Chinese economic influence but political reform and an economic opening have now increased its ties to the U.S. and other states.
- China is critically dependent on the flow of energy exports to fuel its economy and the most critical aspect of this flow now comes from Iran and the Arab Gulf states through the Indian Ocean and the Strait of Malacca. The stability of Gulf energy exports and trade is as vital a Chinese national security interest as it is to the U.S. and Europe, as are the shipping routes across the Indian Ocean, through the Straits of Malacca, and through the Southeastern Pacific. China has examined pipeline and port routes through Central Asia, Pakistan, and Myanmar that could reduce this dependence, but such options are uncertain at best. So far, increased energy exports from Russia have been the only major new source of energy that bypasses these chokepoints.
- China is seeking to push U.S. air and sea power as far away from China’s coastline and territory as possible. Its expanding missile forces, airpower, and “blue water” naval capabilities are steadily increasing its capabilities to rival and deter U.S. forces in the Eastern Pacific, and push U.S. basing and operation away from the mainland of China. The exploitation of claims to air defense zones, maritime rights, and islands all contribute to this end.
- China is also a major global trading and investment power with growing interests in Africa, Latin America, and the rest of the world. Its regional interests must be increasing balance off against its global interests, and dependence on the health of the global – rather than Chinese or regional economy. China’s internal stability is far more dependent on its economic security than the risks posed by any outside threat, and its geo-economic position is far more critical to China’s future.

### ***Strategic Rivalry versus Grand Strategy***

This latter point is critical, because it is far too easy to give military interests strategic priority over the broader range of grand strategic interests and economic power and development. The competition between European powers and the United States and Japan during the 20<sup>th</sup> century provides a grim warning of the cost of doing so.

The cost of the search for empire, to preserve colonies, and fighting two World Wars vastly exceeded the benefits of a focus on military power for virtually every power involved, no state that won a major conflict succeeded in achieving its wartime aims or controlling the near-term

outcome of the conflict, and the gap between military success and grand strategic success was almost invariably fatal for the losing regime and incredibly costly to all involved in the conflict.

### **Clashes and Conflict Will Cost Far More than the Potential Benefits to the “Winning” Side**

China’s status as an emerging power may make it a rival of the U.S. and its neighbors in some ways, but China’s strategic and economic interests often coincide with those of the U.S. and its Asian neighbors. China cannot ignore the importance of traditional geopolitics in terms of security and resources – or forget the history summarized in the previous chapter. China’s emerging power – and its impact on the regional balance and competition or cooperation with the U.S. and other regional states – must be interpreted in terms of all the issues and shifts discussed in this study.

China’s military strategy and force development area critical element of China’s status as a growing world power. *But*, a meaningful Chinese grand strategy – and U.S. grand strategy as well – requires China and the U.S. to find ways to both cooperate and compete in political, economic, and military terms without engaging in any serious military clashes – much less a major conflict.

Geoeconomics also trumps geopolitics for both powers, particularly China. China’s emergence as a global economic power not only has brought immense benefits to China, it has created a new structure of global economic interdependence and done much to stimulate the growth, economies, and development of other Asian states – as well as that of its major trading partners and suppliers of energy.

The choices that China and the U.S. make between military competition or cooperation must be seen from a grand strategic perspective in a world where geo-economics has become a more dominant strategic interest than geopolitics in the traditional sense of great power competition. Once again, there is no way that that any form of military victory can offset its strategic cost even if it is a limited victory and does not escalate to a major conflict. Any major crisis or confrontation – much less conflict – that stimulates an intense arms race over time is almost certain to be costlier to those involved than achieving some form of compromise and stability.

These realities shape Chinese and U.S. policy in Northeast Asia, and in dealing with Japan and the Koreans, their policy in Central and South Asia, and increasingly in the Indian Oceania Area, the greater Pacific region, the Gulf, and the rest of the world. They are, however, no guarantee against miscalculation and crises, clashes, limited conflicts, or more serious wars. Achieving any form of stability, and creating outcomes where all sides benefit rather than become locked into zero sum games requires compromise, transparency and dialogue on all sides.

The current lack of mutual transparency is particularly dangerous. The U.S. is forced into a high level of transparency by its political system – although not necessarily into a high level of predictability or consistency. At the same time, China’s political system allows it to avoid a similar level of transparency and China often deliberately obscures the details of its strategy, force plans, and modernization efforts. Once again, these actions to some extent reflect the legacy of China’s history since the Opium Wars. China has scarcely had reason to trust outside states over the last two centuries. At the same time, China almost certainly calculates that they serve China’s ability to achieve its strategic ambitions – a calculation that history shows can lead to serious miscalculations, crises, and conflicts.

## **The Challenges That Drive Competition**

The tensions that now affect China's dealings with Southeast Asia, and posture in the South China Sea, are only part of a broader pattern of strategic change in the Pacific and Indian Ocean region (IOR) that are shaped by regional debates over maritime territorial and Exclusive Economic Zones (EEZ) and by the changes in US, Chinese, and other Asian forces. Much of the future stability and security of the IOR and Pacific region will be determined by the level of forces the US continues to deploy in the region, the level of forces China deploys, and each country's evolving power projection capabilities and partnerships with local powers.

The end result is growing distrust, a growing emphasis on competition over cooperation, and mutual planning for "worst cases" that should never occur. Some Chinese strategists and military analysts do believe that the ability to conceal China's efforts help secure its emergence as a major military power, and quote Sun Tzu in defending this position. The fact is, however, that China already has emerged as a major military power. The challenge now for China, the U.S., and other states is to create a stable power structure based on mutual dialogue, transparency, and understanding.

At present, the United States dominates the overall naval and air balance outside the littoral areas. The US does not, however, plan to deploy large air-sea forces in the IOR on a permanent basis, and relies heavily on strategic partners for basing, support, and additional forces in the Pacific. China is an emerging air and sea power in the Pacific and already plays an anti-piracy role in the IOR.

China will almost certainly come to play a major role in the IOR in the future. China is still, however, focusing on the Pacific and developing the mix of naval, air, and sea power to help enforce its claims from the China Sea to the waters and air space of Korea and Japan. China is focusing on being able to deter and challenge US forces in the Pacific, and is at least five years – and probably ten years – away from the level of strength it will need to achieve parity with US air-sea forces.

Much will depend on the level of forces and the quality of the strategic partnerships the US can maintain in the Gulf, the IOR, and the Pacific over the next decade and the degree these are shaped to deter clash and conflict rather than contain China and its emergence as a major power. At the same time, much will also depend on China's focus on real strategic issues rather status and fears based on its past weakness.

At the same time, both powers face major constraints. The U.S. is a global power and must size its forces to deal with Russia and Europe, and the Middle East. It already faces real world constraints on its military spending and faces major domestic spending needs in education, job creation, medical care, and retirement costs. China faces equally serious problems in terms of the reaction of other states in Asia, demographic problems, regional development, and sustaining the economic growth that is the key to competing directly with the US.

Accordingly, the changing military balance between the US and China is not *the* key strategic issue. It is rather how each side's role in the Pacific and IOR will evolve over time, how its military capabilities and partnership will develop, and the extent to which both powers come to compete in terms that have a major impact.

## ***China's Declared Strategy and Competition with the U.S. Affecting the Pacific and the IOR***

The fact remains, however, that China is an emerging power that is fundamentally changing the balance in the Pacific and IOR. This makes it a key focus for both US strategic planning and that of the nations in East Asia, Oceania, and the IOR. At the same time, China's future strategic goals, force plans, and posture in the region are often hard to predict. As has been discussed in previous chapters, China does not publically declare its force modernization and deployment plans in detail.

China only declares its strategic goals in terms of fundamental principles and policies in issuing its defense white papers. The 2013 Chinese defense white paper mentions the following broad principles.<sup>891</sup>

- Safeguarding national sovereignty, security and territorial integrity, and supporting the country's peaceful development.
- Aiming to win local wars under the conditions of informationization and expanding and intensifying military preparedness.
- Formulating the concept of comprehensive security and effectively conducting military operations other than war (MOOTW).
- Deepening security cooperation and fulfilling international obligations.
- Acting in accordance with laws, policies and disciplines.

### **Chinese Defense White Paper Views of the Challenges from the U.S.**

China's public official discussions of the challenge the United State presents have varied over time. The 2013 Chinese defense white paper implicitly criticized the increasing presence of the U.S. in the Asia-Pacific and highlighted what it saw as an aggressive shift in the US strategy force posture.<sup>892</sup>

There are signs of increasing hegemonism, power politics and neo-interventionism. Local turmoils occur frequently. Hot-spot issues keep cropping up. Traditional and non-traditional security challenges interweave and interact. Competition is intensifying in the international military field. International security issues are growing noticeably more abrupt, interrelated and comprehensive. The Asia-Pacific region has become an increasingly significant stage for world economic development and strategic interaction between major powers. The US is adjusting its Asia-Pacific security strategy, and the regional landscape is undergoing profound changes.

...Some country has strengthened its Asia-Pacific military alliances, expanded its military presence in the region, and frequently makes the situation there tenser. On the issues concerning China's territorial sovereignty and maritime rights and interests, some neighboring countries are taking actions that complicate or exacerbate the situation.... Major powers are vigorously developing new and more sophisticated military technologies so as to ensure that they can maintain strategic superiorities in international competition in such areas as outer space and cyber space.

The 2015 version of China's white paper stressed the same strategic goals and fundamental principles and policies as the 2013 white paper, but highlighted the impact of the U.S. "rebalancing" strategy in Asia. It saw the US strategy of rebalancing to Asia as both a response to China's emergence as a military power, and to the rapid growth of the Asia-Pacific's economic strength.

In comparison, the 2015 defense white paper briefly mentioned the increasing US military presence in the region but later described the military cooperation that China seeks with the US.<sup>893</sup>

As the world economic and strategic center of gravity is shifting ever more rapidly to the Asia-Pacific region, the US carries on its "rebalancing" strategy and enhances its military presence and its military alliances in this region.

...China's armed forces will continue to foster a new model of military relationship with the US armed forces that conforms to the new model of major-country relations between the two countries, strengthen defense dialogues, exchanges and cooperation, and improve the CBM mechanism for the notification of major military activities as well as the rules of behavior for safety of air and maritime encounters, so as to strengthen mutual trust, prevent risks and manage crises.

Nevertheless, China also saw the US as a potential threat to its security and specifically mentioned how regional problems have "a negative impact on the security and stability along China's periphery".<sup>894</sup>

### **The Chinese Defense White Paper View of the Challenges in Asia**

Its 2015 defense white paper put the challenges China saw in the South China Sea and the rest of Asia in a broad context that only indirectly highlighted the role of the U.S.:<sup>895</sup>

Japan is sparing no effort to dodge the post-war mechanism, overhauling its military and security policies. Such development has caused grave concerns among other countries in the region. On the issues concerning China's territorial sovereignty and maritime rights and interests, some of its offshore neighbors take provocative actions and reinforce their military presence on China's reefs and islands that they have illegally occupied.

Some external countries are also busy meddling in South China Sea affairs; a tiny few maintain constant close-in air and sea surveillance and reconnaissance against China. It is thus a long-standing task for China to safeguard its maritime rights and interests. Certain disputes over land territory are still smoldering. The Korean Peninsula and Northeast Asia are shrouded in instability and uncertainty. Regional terrorism, separatism and extremism are rampant. All these have a negative impact on the security and stability along China's periphery.

The Taiwan issue bears on China's reunification and long-term development, and reunification is an inevitable trend in the course of national rejuvenation. In recent years, cross-Taiwan Straits relations have sustained a sound momentum of peaceful development, but the root cause of instability has not yet been removed, and the "Taiwan independence" separatist forces and their activities are still the biggest threat to the peaceful development of cross-Straits relations.

Further, China faces a formidable task to maintain political security and social stability. Separatist forces for "East Turkistan independence" and "Tibet independence" have inflicted serious damage, particularly with escalating violent terrorist activities by "East Turkistan independence" forces. Besides, anti-China forces have never given up their attempt to instigate a "color revolution" in this country. Consequently,

China faces more challenges in terms of national security and social stability. With the growth of China's national interests, its national security is more vulnerable to international and regional turmoil, terrorism, piracy, serious natural disasters and epidemics, and the security of overseas interests concerning energy and resources, strategic sea lines of communication (SLOCs), as well as institutions, personnel and assets abroad, has become an imminent issue.

The world revolution in military affairs (RMA) is proceeding to a new stage. Long-range, precise, smart, stealthy and unmanned weapons and equipment are becoming increasingly sophisticated. Outer space and cyber space have become new commanding heights in strategic competition among all parties. The form of war is accelerating its evolution to informationization.

World major powers are actively adjusting their national security strategies and defense policies, and speeding up their military transformation and force restructuring. The aforementioned revolutionary changes in military technologies and the form of war have not only had a significant impact on the international political and military landscapes, but also posed new and severe challenges to China's military security.

## The Strategic Impact of China's Dependence on Energy Imports

The 2015 white paper's focus on strategic sea lines of communication (SLOCs) is particularly important because it helps explain why China has put so much emphasis on the South China Sea. China's grand strategic interests in the Southeast Pacific and Indian Ocean Region center around China's need for major energy imports from the Gulf and its future need for new energy supplies. China recognizes this, and has long made it clear that its dependence on the security of the flow of overseas energy and resources – and specifically the petroleum from the Gulf to China – is a key security consideration.

**Figure 16.1** shows the patterns in China's import dependence. China's dependence on energy imports is steadily growing and does affect its policies toward maritime trade routes and the South China Sea. China has become the world's large consumer of oil imports, and the Gulf is its main source of such imports. The Energy Information Agency EIA of the US Department of Energy summarized the trends in China's energy dependence trends as follows in its May 2015 country analysis of China:<sup>896</sup>

China has quickly risen to the top ranks in global energy demand over the past few years. China became the largest global energy consumer in 2011 and is the world's second-largest oil consumer behind the United States. The country was a net oil exporter until the early 1990s and became the world's second-largest net importer of crude oil and petroleum products in 2009. The U.S. Energy Information Administration (EIA) reports that China surpassed the United States at the end of 2013 as the world's largest net importer of petroleum and other liquids, in part because of China's rising oil consumption.

Natural gas use in China has also increased rapidly over the past decade, and China's rising coal production is the key driver behind the country becoming the world's largest energy producer in 2009. China's sizeable industrialization and swiftly modernizing economy helped the country become the world's largest power generator in 2011.

...According to the *Oil & Gas Journal* (OGJ), released in January 2015, China holds 24.6 billion barrels of proved oil reserves, up almost 0.3 billion barrels from the 2014 level and the highest in the Asia-Pacific region (excluding Russia). China's total petroleum and other production, the fourth-largest in the world, has risen about 50% over the past two decades and serves only its domestic market. However, the production growth has not kept pace with demand growth during this period.

In 2014, China produced nearly 4.6 million barrels per day (bbl/d) of petroleum and other liquids, of which 92% was crude oil and the remainder was non-refining liquids and refining gain. EIA forecasts China's oil production will increase slightly to higher than 4.6 million bbl/d by the end of 2016. In the medium and long term, EIA predicts China's oil production will grow incrementally to 5.1 million bbl/d by 2020, 5.5 million bbl/d by 2030, and 5.7 million bbl/d by 2040, based on the *International Energy Outlook 2014* (IEO2014).

Long-term growth will require continued success of enhancing recovery at mature crude oil fields, greater investment to access more technically challenging plays such as shale oil, tight oil, and deepwater fields, and growth in non-petroleum liquids such as gas-to-liquids, coal-to-liquids, and biofuels.

China's annual growth in oil consumption has eased after a recent high of 11% in 2010, reflecting the effects of the most recent global financial and economic downturn as well as China's policies to reduce excessive investment and capacity overbuilding. Despite the slower growth, the country still accounted for more than one-third of global oil demand growth in 2014, according to EIA estimates. China consumed an estimated 10.7 million bbl/d of oil in 2014, up 370,000 bbl/d, or almost 4%, from 2013.

Notably, China became the largest global net importer of oil in the first quarter of 2014, surpassing the United States, and the country's average net total oil imports reached 6.1 million bbl/d in 2014. Significant U.S. oil production from shale oil plays and rapid Chinese oil demand growth occurring simultaneously over the past few years pushed China ahead of the United States as the largest importer. China's oil demand growth depends on several factors, such as domestic economic growth and trade, transportation sector shifts, refining capabilities, and inventory builds.

EIA forecasts that China's oil consumption will continue growing through 2016 at a moderate pace to approximately 11.3 million bbl/d. China's oil consumption growth is forecast in IEO2014 to rise by about 2.6% annually through 2040, reaching 13.1 million bbl/d in 2020, 16.9 million bbl/d in 2030, and 20.0 million bbl/d in 2040. EIA forecasts that China's oil consumption will exceed that of the United States by 2034.

China's demand growth for oil products has decelerated following a growth spike in 2010. Diesel (gasoil) is a key driver of China's oil products demand and accounted for an estimated 34% of total oil products demand in 2014. Diesel demand declined on an absolute level in 2014 for the first time in two decades, as a result of several factors—slower economic growth, decreased production from the coal and mining sectors that transport products via rail and trucks, greater efficiency in heavy-duty vehicles, and increased use of natural gas fired vehicles in recent years.

Gasoline, the second-largest consumed petroleum fuel in China with an estimated 23% share in 2014, is still experiencing robust demand growth as a result of high light-duty car sales.<sup>9</sup> China's middle class has expanded in the past decade, giving rise to high car sales. Future gasoline consumption will depend on the pace of economic development and income growth, fuel efficiency rates, and government regulations on passenger vehicle use in certain congested urban areas. Liquefied petroleum gas continues to experience some growth from the petrochemical industry, while fuel oil demand has weakened considerably.

...As China's oil demand continues to outstrip production at home and the country continues building its strategic petroleum reserves, oil imports have increased dramatically over the past decade, reaching record highs set in 2014. To ensure adequate oil supply and mitigate geopolitical uncertainties, China has diversified its sources of crude oil imports in recent years. China imported nearly 6.2 million bbl/d of crude oil on average in 2014, rising 9% from 5.6 million bbl/d in 2013, according to China's customs data and FGE.<sup>31</sup> China's crude oil imports continued to remain high in the first few months of 2015 and climbed to a record-high level of 7.4 million bbl/d in April 2015.

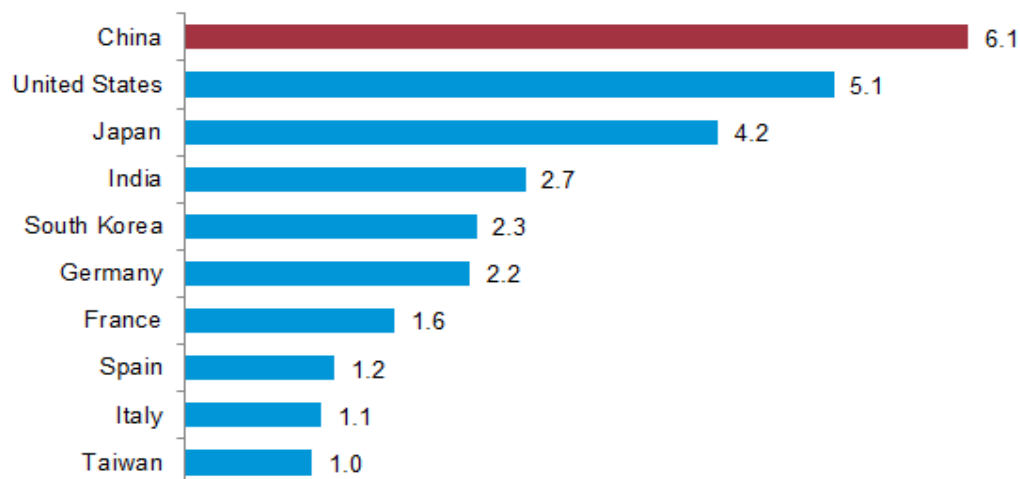
Total net oil imports, driven primarily by crude oil imports, now outweigh domestic supply, and oil import dependency has risen from 30% in 2000 to about 57% in 2014 by EIA estimates. The government's current Five-Year Plan targets oil imports reaching no more than 61% of its demand by the end of 2015.<sup>32</sup> China's dependence on crude oil imports in the longer term will be determined by the sustainability and growth of domestic oil production, the rate of oil consumption growth as the government aims to create more sustainable economic growth, the speed of strategic and commercial stock fill, the fuel efficiency gains in transportation, and any substitution of fuels such as natural gas for oil.



**Figure 16.1: China's Energy Import Dependence**

**Top ten annual net oil importers, 2014**

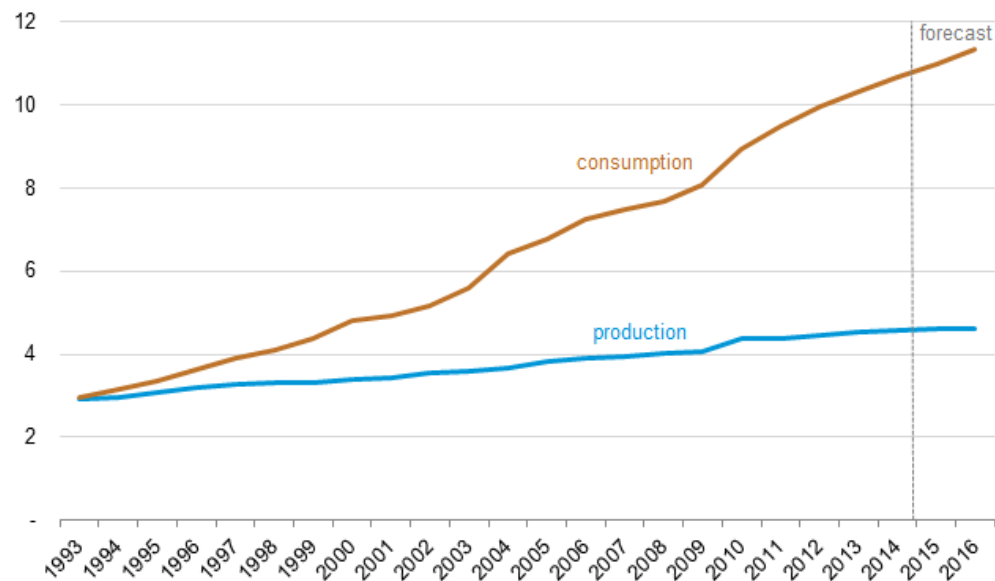
million barrels per day



Note: Estimates of total production less consumption. Does not account for stock build.  
Source: U.S. Energy Information Administration, *Short-Term Energy Outlook*, May 2015

**China's oil production and consumption, 1993-2016**

million barrels per day



Source: Energy Information Administration and *Short-Term Energy Outlook*, May 2015

Source: [http://www.eia.gov/beta/international/analysis\\_includes/countries\\_long/China/images/oil\\_production\\_consumption.png](http://www.eia.gov/beta/international/analysis_includes/countries_long/China/images/oil_production_consumption.png), accessed August 16, 2015.

## **Gulf Energy Exports are China's Main Strategic Interest**

The scale of Chinese need for Gulf petroleum exports varies according to its economic growth rate, but this variation does not affect its continuing strategic dependence in any broad way. At present, and for the foreseeable future, the security of Gulf oil and gas exports to China will be a critical strategic interest.

The 2015 report on China by the U.S. Energy Information Administration notes:<sup>897</sup>

The Middle East remains the largest source of China's crude oil imports, although African countries, particularly Angola, began contributing more to China's imports in the past decade. As part of China's energy supply security policy, the country's NOCs are attempting to diversify supply sources in various regions through overseas investments in upstream oil projects and long-term contracts. In 2014, the Middle East supplied China with 3.2 million bbl/d (52%). Other regions that export oil to China include Africa with 1.4 million bbl/d (22%), the Americas with 667,000 bbl/d (11%), Russia and the former Soviet Union with 778,000 bbl/d (13%), the Asia-Pacific region with 127,000 bbl/d (2%), and 27,300 bbl/d (<1%) from other countries. Saudi Arabia and Angola remain China's two largest sources of oil imports, and together they account for 29% of China's total crude oil imports.

Global oil supply disruptions in recent years have shifted China's crude oil supply portfolio and forced the country to diversify its sources. Sudan and South Sudan became significant oil exporters to China until production was shut in at the beginning of 2012, following political conflicts between the two African nations over their oil resources. Exports from Sudan and South Sudan to China dropped from 260,000 bbl/d in 2011 to zero by April 2012. As production in the two African countries returned, China resumed a reduced level of imports, reaching 164,000 bbl/d in 2014. The ensuing shut-in of some of Libya's oil production since political uprisings began in 2011 has also affected oil exports to China. Despite some Libyan exports that were brought back online in 2012, the political situation has deteriorated overall, and oil exports to China fell to just 19,000 bbl/d in 2014.

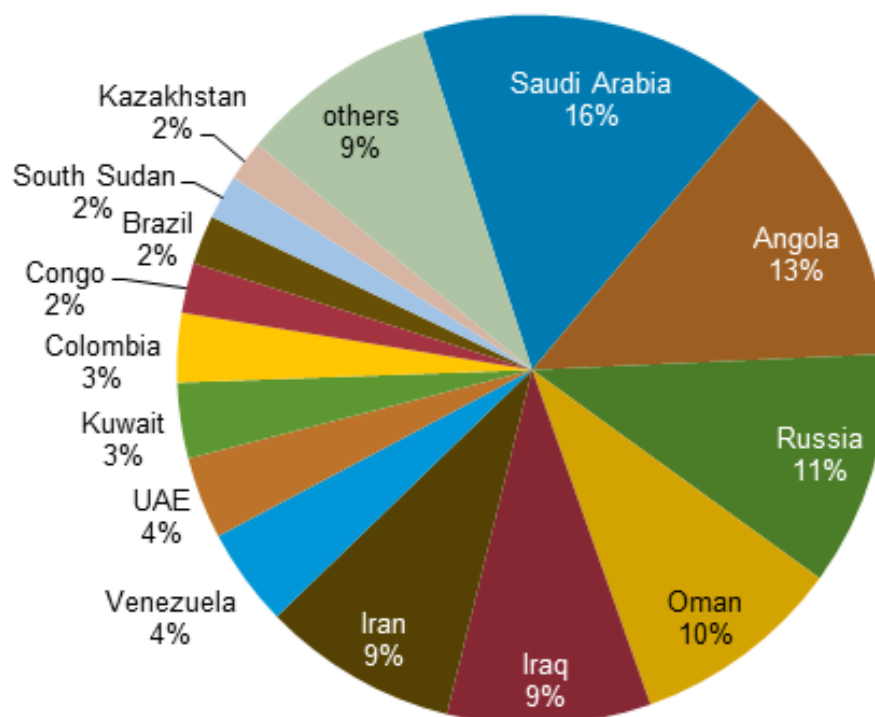
Historically, Iran was China's third-largest source of crude imports until 2012, when Russia surpassed it. Following U.S. and European sanctions on Iranian crude oil sales resulting from disagreements on Iran's nuclear program, China reduced its average annual oil import levels from Iran to maintain diplomatic ties with the United States and Europe. In 2012, China imported 439,000 bbl/d from Iran, or 20% less crude oil, from a high of 555,000 bbl/d in 2011. Iran constituted 8% of China's crude oil imports in 2012 and 2013 compared to 11% in 2011.

Negotiations between Iran and six countries, including the United States and China, at the end of 2013 allowed Chinese buyers to raise Iranian imports back to levels before the sanctions took effect. Future crude import levels from Iran hinge on the final outcome of the nuclear agreement that was forged in April 2015 and how quickly oil-related sanctions can be lifted. Even if production resumes to pre-disruption levels from these countries, most analysts expect that China will continue to diversify import sources to reduce geopolitical risks and oil supply uncertainties.

China replaced the share of oil lost from Iran, Sudan and South Sudan, and Libya with imports from other Middle Eastern countries (United Arab Emirates, Oman, and Iraq), Angola, Venezuela, and Russia. China and Russia have signed deals for Russia to send China up to 800,000 bbl/d of crude oil by 2018, mostly by pipeline. Currently, Russia sends oil to China via pipeline, ship, and rail, primarily from Russia's fields in East Siberia. To help meet its contract obligations to China, Russia holds a swap deal with Kazakhstan in 2013 and exports oil from its western Siberian fields through links to the currently underutilized Kazakhstan-to-China pipeline. China has significantly increased imports from Iraq, although future import growth is likely to depend on the pace of infrastructure development and the political situation in Iraq.

*Figure 16.2: China's Major Sources of Oil Imports*

### China's crude oil imports by source, 2014



Sources: FACTS Global Energy, Global Trade Information Services, Inc.

Source: [http://www.eia.gov/beta/international/analysis\\_includes/countries\\_long/China/images/oil\\_production\\_consumption.png](http://www.eia.gov/beta/international/analysis_includes/countries_long/China/images/oil_production_consumption.png), accessed August 16, 2015.

### China's Real World Strategic Interests in the South China Sea

These considerations not only affect China's calculations of the need to protect its critical lines of supply and particularly its maritime routes from the Gulf to China, they also affect its direct interests in developing the energy resources of the South China Sea and East China Sea. China is seeking to reduce its energy vulnerability by increasing the role of others sources of energy, using other ports and creating new and increase pipeline capacity, and a range of other measures.

At the same time, the tensions between Asian states, and the complex history of competing claims has led China and some of its neighbors to make claims about the energy resources in the South China Sea and East China Sea for which there is little or no material evidence.

In the case of the South China Sea, the EIA estimated in 2015 that:<sup>898</sup>

It is difficult to determine the amount of oil and natural gas in the South China Sea because of under-exploration and territorial disputes. Most current discovered fields cluster in uncontested parts of the sea, close to the shorelines of the coastal countries. EIA estimates there to be approximately 11 billion barrels (bbl) of oil reserves and 190 trillion cubic feet (Tcf) of natural gas reserves in the South China Sea. These numbers represent both proved and probable reserves, making them closer to a high-end estimate. Energy

consultancy Wood Mackenzie, for example, estimates the sea to contain only 2.5 billion barrels of oil equivalent in proved oil and gas reserves.

In addition to proved and probable reserves, the South China Sea may have additional hydrocarbons in underexplored areas. The U.S. Geological Survey (USGS) analyzed the potential for undiscovered conventional oil and gas fields within several geologic provinces of Southeast Asia in 2010 as part of its World Petroleum Resources Assessment Project. The study included a significant area of the South China Sea, which the USGS estimates may contain anywhere between 5 and 22 billion barrels of oil and between 70 and 290 trillion cubic feet of gas in as-yet undiscovered resources (not including the Gulf of Thailand and other areas adjacent to the South China Sea). These additional resources are not considered commercial reserves at this time because it is unclear how economically feasible it would be to extract them.

As the USGS assessment did not examine the entire area, undiscovered resources could be greater. In November 2012, the Chinese National Offshore Oil Company (CNOOC) estimated the area holds around 125 billion barrels of oil and 500 trillion cubic feet of natural gas in undiscovered resources, although independent studies have not confirmed this figure.

...The majority of current reserves exist in shallow water basins on the boundaries of the sea. This situation reflects limited exploration of deepwater areas. Vietnam, Malaysia, and Brunei have a long history of development in the South China Sea. Lacking significant onshore potential, they have invested in offshore technology, pipeline networks, and drilling; foreign partners often provide expertise. Consequently, these countries have the highest oil and gas reserves in the sea.

Over the past few years, however, companies have begun venturing farther offshore in an attempt to find new discoveries to compensate for declining fields. Relatively recent discoveries such as China's Liwan 3-1 gas field, discovered in 2006, demonstrate the potential of deepwater exploration. Chinese national oil companies have built on initial successes in the Pearl River Mouth Basin and are rapidly expanding offshore activity in an effort to find new reserves and increase production. Rather than attempting unilateral exploration and production (E&P) activities in disputed territory, several countries have opted to cooperate in the South China Sea. Malaysia and Brunei settled territorial disputes in 2009 and have partnered to explore offshore Brunei waters. Thailand and Vietnam have jointly developed areas of the Gulf of Thailand, despite ongoing territorial disputes. These success cases contrast with the parts of the South China Sea contested by multiple parties, which have seen little energy development.

The EIA also reported in 2015 that:<sup>899</sup>

Territorial disputes in the East China Sea to date have limited large-scale development of oil and gas fields in the region, where China and Japan compete for territorial claims. The two countries have held negotiations to resolve the disputes. In June 2008, the two countries reached an agreement to develop jointly the Chunxiao/Shirakaba and Longjing/Asurao gas fields. However, in early 2009, the agreement unraveled when China asserted sovereignty over the fields.

Since the agreement was signed, the countries have continued unilateral actions in attempts to develop the gas fields. Tensions escalated with territorial claims by Japan in 2012 over the Senkaku/Diaoyu Islands, China's installation of a production platform, CNOOC's proposal to develop several gas fields in the contested area in 2013, and China's claim to the air space above the islands in 2013. The two sides held talks at the end of 2014 to defuse some of the tension and improve relations over the territorial claims.

Continued territorial disagreements by countries bordering the South China Sea, including ownership of the Spratly and Paracel Islands, have hindered efforts for joint exploration of hydrocarbon resources in the area. ASEAN members signed the Declaration of Conduct in 2002 that encourages countries to use restraint and cooperate in the South China Sea, but no regulations were established. China stakes claims to the SCS using a "nine-dash line" to determine each country's maritime borders and resources. Increasing appetites for oil and natural gas have exacerbated tensions, particularly between China and Vietnam and between China and the Philippines, as hydrocarbon development has attracted interest in deepwater areas.

China has increased its naval activity in the contested areas, and CNOOC's June 2012 tender for nine offshore blocks in the disputed area overlaps several fields located within Vietnam's 200-nautical mile exclusive economic zone. China placed an oil rig in disputed waters near the Paracel islands for two months in 2014 and claimed the purpose was to explore for oil and gas in the area. This move caused serious clashes

with Vietnamese vessels and has increased tensions within the region. China's current policy is to forge JV partnerships with the other SCS countries to explore and develop untapped hydrocarbon resources in the sea. More details covering the disputes in these two regions can be found in EIA's East China Sea and South China Sea regional briefs.

## **China's Real World Strategic Interests in the East China Sea**

In the case of the East China Sea, the EIA estimated in 2015 that:<sup>900</sup>

Hydrocarbon reserves in the East China Sea are difficult to estimate. The area is underexplored, and the territorial and maritime claims in the area of potentially rich oil and natural gas deposits precluded further development.

EIA estimates that the East China Sea has about 200 million barrels of oil (MMbbl) in proved and probable reserves. Chinese sources claim that undiscovered resources can be as high as 70 to 160 billion barrels of oil for the entire East China Sea, mostly in the Okinawa trough. Other sources have not corroborated these reports. Moreover, undiscovered resources do not take into account economic factors relevant to bring them into production, unlike proved and probable reserves.

China had a total of 24,400 million barrels of oil in proved reserves as of January 2014, according to the *Oil & Gas Journal*. Japan had a total of 44 million barrels of oil in proved reserves as of January 2014.

China began exploration activities in the East China Sea in the 1980s, discovering the Pinghu oil and gas field in 1983. Japan cofinanced two oil and gas pipelines running from the Pinghu field to Shanghai and the Ningbo onshore terminal on the Chinese mainland through the Asian Development Bank and the Japanese Bank of International Cooperation (JBIC).

More recently, both China and Japan have concentrated their oil and gas extraction efforts in the Okinawa trough. Most fields are operated as a joint venture (JV) between the Chinese National Offshore Oil Corporation (CNOOC) and the China Petroleum & Chemical Corporation (Sinopec) with support from foreign firms and other partners, such as the Shanghai government. CNOOC listed its East China Sea proved oil reserves at 20 million barrels in 2013, according to an annual report, while other partners have not publicly released their reserve figures.

Only the Pinghu field, operational since 1998, has produced oil in significant quantities to date. Pinghu's production peaked at around 8,000 barrels per day (bbl/d) to 10,000 bbl/d of oil and condensate in the late 1990s, and leveled off at about 400 bbl/d in recent years, according to data from IHS Energy. In the medium term, EIA does not forecast the East China Sea to become a significant supplier of oil.... EIA estimates that the East China Sea has between 1 and 2 trillion cubic feet (Tcf) of proved and probable natural gas reserves. The region may also have significant upside potential in terms of natural gas. Chinese sources point to as much as 250 Tcf in undiscovered natural gas resources, mostly in the Okinawa trough, although these have not been independently verified.

China had a total of about 155,400 billion cubic feet (Bcf) of natural gas in proved reserves as of January 2014, according to the *Oil & Gas Journal*. Japan had a total of about 740 Bcf of natural gas proved reserves as of January 2014.

CNOOC listed its East China Sea proved gas reserves at 303 Bcf in 2013, according to an annual report. In 2012, an independent evaluation estimated probable reserves of 119 Bcf of natural gas in LS 36-1, a promising gas field north of Taiwan currently being developed as a joint venture between CNOOC and the UK firm Primeline Petroleum Corp. The uncontested Pinghu field began producing in 1998 and reached a peak of approximately 60 million cubic feet per day (MMcf/d) in 2005, according to IHS Energy. The field's output has declined in recent years to around 40 MMcf/d.

In 1995, Chinese companies discovered a significant group of oil and gas fields in the Okinawa trough. Chunxiao/Shirabaka is the largest gas field in this group and is used on occasion to reference the entire group of fields. China began producing at the contested Tianwaitian/Kashi field in 2006, claiming it as part of its Exclusive Economic Zone. China has not released production data from the Chunxiao/Shirabaka field, citing concerns about the unresolved territorial and maritime claims.

## **Chokepoints and Shipments from the Gulf are the Key Strategic Issue**

The history and validity of the various national claims in both regions often do more to reflect national prestige, and uncertain historical rationales dating back to a different era in each country's history, than present the kind of claims that reflect real strategic interests or are recognized under present international law.

What is clear from a strategic point of view is that the secure flow of crude oil and LNG flows from the Gulf and through the Strait of Malacca are far more important to China, Japan, South Korea, and most Southeast Asian states than the oil and gas reserves in the East China Sea and south China Sea can be for the next decade.

As EIA reporting on global chokepoints notes:<sup>901</sup>

The Strait of Malacca, located between Indonesia, Malaysia, and Singapore, links the Indian Ocean to the South China Sea and Pacific Ocean. The Strait of Malacca is the shortest sea route between Persian Gulf suppliers and the Asian markets—notably China, Japan, South Korea, and the Pacific Rim.

Oil shipments through the Strait of Malacca supply China and Indonesia, two of the world's fastest-growing economies. It is the key chokepoint in Asia, with an estimated 15.2 million bbl/d flow in 2013, compared with 13.5 million bbl/d in 2009. Crude oil generally makes up about 90% of total oil flows per year, and petroleum products make up about 10%...

At its narrowest point in the Phillips Channel of the Singapore Strait, the Strait of Malacca is only about 1.7 miles wide, creating a natural bottleneck with potential for collisions, grounding, or oil spills.<sup>9</sup> According to the International Maritime Bureau's Piracy Reporting Centre, piracy, including attempted theft and hijackings, is a threat to tankers in the Strait of Malacca, although the number of attacks has dropped since 2005 after nearby countries increased patrols in the area.<sup>10</sup>

If the Strait of Malacca were blocked, nearly half of the world's fleet would be required to reroute around the Indonesian archipelago, such as through the Lombok Strait between the Indonesian islands of Bali and Lombok, or the Sunda Strait between Java and Sumatra.<sup>11</sup> Rerouting would tie up global shipping capacity, adding to shipping costs and potentially having a significant impact on energy prices.

There have been several proposals to build bypass options and reduce tanker traffic through the Strait of Malacca. In particular, China and Burma (Myanmar) commissioned the Myanmar-China natural gas pipeline in 2013 that stretches from Myanmar's ports in the Bay of Bengal to the Yunnan province of China. The pipeline has a capacity of 424 billion cubic feet per year. The countries are constructing a parallel oil pipeline to serve as an alternative transport route for crude oil imports from the Middle East to potentially bypass the Strait of Malacca.<sup>12</sup> The oil pipeline was set to open in late 2014 and to have a capacity of about 440,000 bbl/d, according to IHS Energy.<sup>13</sup> However, political opposition in both countries to the pipeline may delay its opening until 2016.

The Strait of Malacca is also an important transit route for liquefied natural gas from Persian Gulf and African suppliers, particularly Qatar, to East Asian countries with growing LNG demand. The biggest importers of LNG in the region are Japan and South Korea.

From a real world strategic perspective, much of the current competition in both the East and South China Seas makes far less grand strategic sense than cooperation. Unfortunately, the history of the relation between existing and emerging powers is largely often the history of nationalism, rivalry, and a reaction to past history and perceived slights on all the side involved.

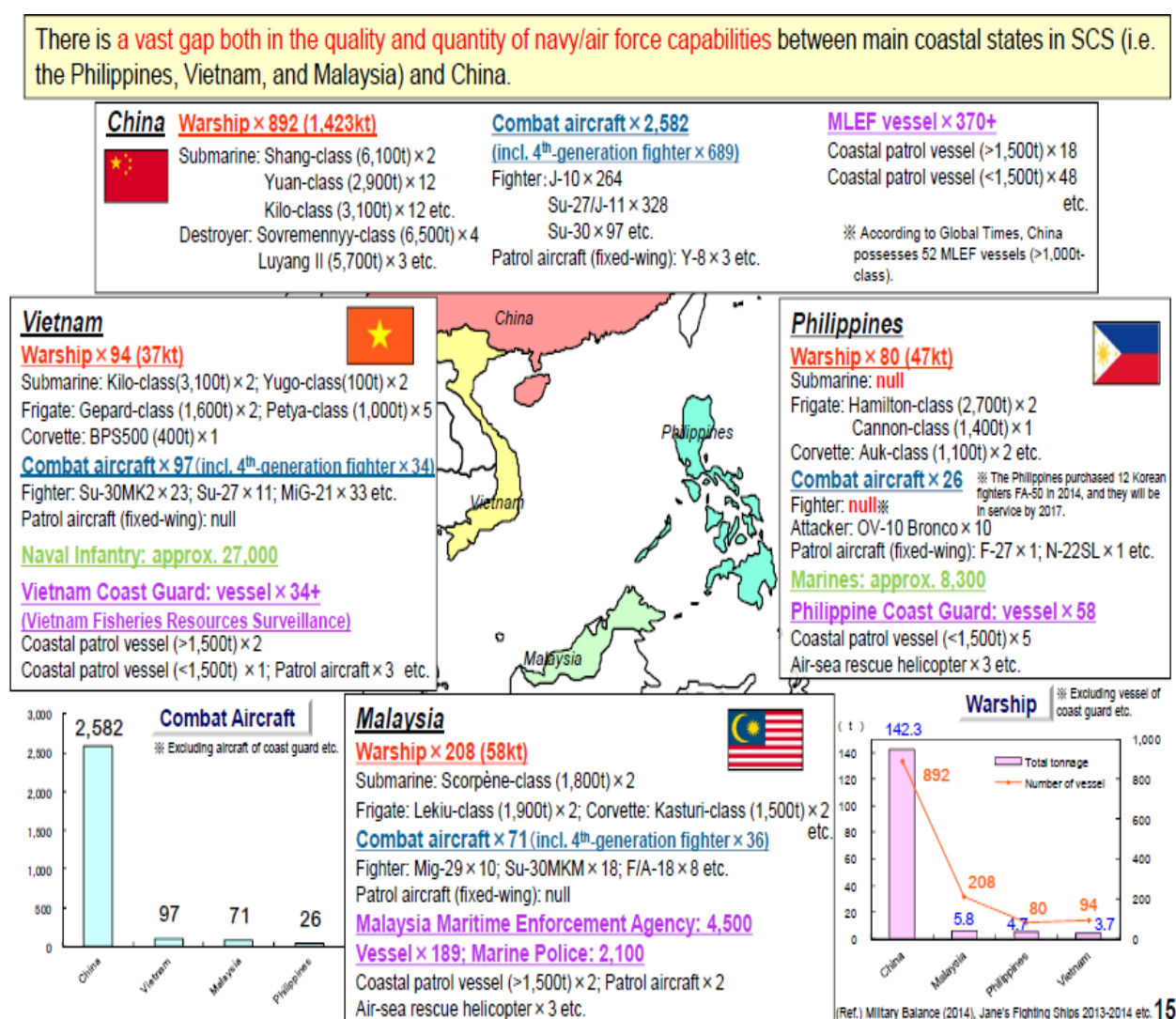
## **The Expanding Role of Chinese Forces**

The modernization and development of China's military forces play a critical role in all of the areas where China is emerging as a major military power, and the changes in China's strategic and land forces are critical in other areas.

In the Case of the East and South China Seas, China's steadily growing air-sea presence and power projection capability in the Pacific and a limited – but growing -- power projection capability in the IOR that shape its present and future capabilities. At present, this power projection capability consists of a fleet and air force that are still largely operating out of Chinese bases and in limited “blue water” and air space areas in the Pacific that count. China will need years to create a major capability to project sea and air power at the distances involved in any serious operations deep in the Indian Ocean, and outside East Asia.

An official Japanese estimate of the current balance is shown in **Figure 16.3**. This balance is changing on the part of all of the countries involved. China's growing role in the region, and claims, have led other powers into something approaching a regional naval and air arms race.

**Figure 16.3: South East Asia Navy and Air Force Capabilities**



Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

## **The Impact of China's Shift to a "Blue Water" Navy**

The present limits to China's power projections capabilities do much to explain why China is creating the kind of air power and "blue water" navy that will be able to deploy significant air and sea forces in the Pacific and IOR. It has steadily expanded the range and effectiveness of its air-sea forces in the Pacific and has already deployed limited anti-piracy forces in to the Western IOR, and while some reports that it is actively seeking naval bases in Burma and Pakistan – the so-called "string of pearls" – seem exaggerated, it is steadily increasing its naval activity.

The 2013 Chinese defense white paper highlighted the expanding "blue water" range of Chinese naval forces, improved readiness and training, and joint warfare capabilities – all of which increase Chinese capabilities to project power and execute area denial activities. If all of the various sections in the white paper that deal with the PLAN are assembled together, they provide a considerable amount of detail on both current PLAN capabilities and the trends in these forces that affect China's capabilities and intentions in the Eastern Pacific.<sup>902</sup>

The PLA Navy (PLAN) is China's mainstay for operations at sea, and is responsible for safeguarding its maritime security and maintaining its sovereignty over its territorial seas along with its maritime rights and interests. The PLAN is composed of the submarine, surface vessel, naval aviation, marine corps and coastal defense arms. In line with the requirements of its offshore defense strategy, the PLAN endeavors to accelerate the modernization of its forces for comprehensive offshore operations, develop advanced submarines, destroyers and frigates, and improve integrated electronic and information systems. Furthermore, it develops blue-water capabilities of conducting mobile operations, carrying out international cooperation, and countering non-traditional security threats, and enhances its capabilities of strategic deterrence and counterattack.

Currently, the PLAN has a total strength of 235,000 officers and men, and commands three fleets, namely, the Beihai Fleet, the Donghai Fleet and the Nanhai Fleet. Each fleet has fleet aviation headquarters, support bases, flotillas and maritime garrison commands, as well as aviation divisions and marine brigades. In September 2012, China's first aircraft carrier Liaoning was commissioned into the PLAN. China's development of an aircraft carrier has a profound impact on building a strong PLAN and safeguarding maritime security.

...The PLAN strengthens maritime control and management, systematically establishes patrol mechanisms, effectively enhances situational awareness in surrounding sea areas, tightly guards against various types of harassment, infiltration and sabotage activities, and copes promptly with maritime and air incidents and emergencies. It advances maritime security cooperation, and maintains maritime peace and stability, as well as free and safe navigation. Within the framework of the Military Maritime Consultative Agreement (MMCA), the Chinese and US navies regularly exchange maritime information to avoid accidents at sea. According to the Agreement on Joint Patrols by the Navies of China and Vietnam in the Beibu Gulf, the two navies have organized joint patrols twice a year since 2006.

...Intensifying blue water training...The PLAN is improving the training mode of task force formation in blue water. It organizes the training of different formations of combined task forces composed of new types of destroyers, frigates, ocean-going replenishment ships and shipborne helicopters. It is increasing its research and training on tasks in complex battlefield environments, highlighting the training of remote early warning, comprehensive control, open sea interception, long-range raid, anti-submarine warfare and vessel protection at distant sea.

The PLAN organizes relevant coastal forces to carry out live force-on-force training for air defense, anti-submarine, anti-mine, anti-terrorism, anti-piracy, coastal defense, and island and reef sabotage raids. Since 2007, the PLAN has conducted training in the distant sea waters of the Western Pacific involving over 90 ships in nearly 20 batches. During the training, the PLAN took effective measures to respond to foreign close-in reconnaissance and illegal interference activities by military ships and aircraft. From April to September 2012, the training vessel Zhenghe completed global-voyage training, paying port calls to 14 countries and regions.



To fulfill China's international obligations, the Chinese navy carries out regular escort missions in the Gulf of Aden and waters off Somalia. It conducts exchanges and cooperation with other escort forces to jointly safeguard the security of the international SLOCs. As of December 2012, Chinese navy task groups have provided protection for four WFP ships and 2,455 foreign ships, accounting for 49% of the total of escorted ships. They helped four foreign ships, recovered four ships released from captivity and saved 20 foreign ships from pursuit by pirates.

Chinese navy escort task forces have maintained smooth communication with other navies in the areas of joint escort, information sharing, coordination and liaison. They have conducted joint escorts with their Russian counterparts, carried out joint anti-piracy drills with naval ships of the ROK, Pakistan and the US, and coordinated with the European Union to protect WFP ships. It has exchanged boarding visits of commanders with task forces from the EU, NATO, the Combined Maritime Forces (CMF), the ROK, Japan and Singapore. It has exchanged officers for onboard observations with the navy of the Netherlands. China takes an active part in the conferences of the Contact Group on Piracy off the Coast of Somalia (CGPCS) and "Shared Awareness and Deconfliction" (SHADE) meetings on international merchant shipping protection.

Since January 2012, independent deployers such as China, India and Japan have strengthened their convoy coordination. They have adjusted their escort schedules on a quarterly basis, optimized available assets, and thereby enhanced escort efficiency. China, as the reference country for the first round of convoy coordination, submitted its escort timetable for the first quarter of 2012 in good time. India and Japan's escort task forces adjusted their convoy arrangements accordingly, thereby formulating a well-scheduled escort timetable. The ROK joined these efforts in the fourth quarter of 2012.

...The routine combat readiness work of the PLAN serves to safeguard national territorial sovereignty and maritime rights and interests. It carries out diversified patrols and provides whole-area surveillance in a cost-effective way. The PLAN organizes and performs regular combat readiness patrols, and maintains a military presence in relevant sea areas. All fleets maintain the necessary number of ships patrolling in areas under their respective command, beef up naval aviation reconnaissance patrols, and organize mobile forces to conduct patrols and surveillance in relevant sea areas, as required.

Joint maritime exercises and training are being expanded. In recent years, the Chinese navy has taken part in the "Peace-07," "Peace-09" and "Peace-11" multinational maritime exercises hosted by Pakistan on the Arabian Sea. The PLA and Russian navies held the "Maritime Cooperation-2012" military drill in the Yellow Sea off China's east coast focusing on joint defense of maritime traffic arteries. Chinese and Thai marine corps held the "Blue Strike-2010" and "Blue Strike-2012" joint training exercises. During mutual port calls and other activities, the Chinese navy also carried out bilateral or multilateral maritime exercises and training in such tasks as communications, formation movement, maritime replenishment, cross-deck helicopter landing, firing at surface, underwater and air targets, joint escort, boarding and inspection, joint search and rescue and diving with its counterparts of India, France, the UK, Australia, Thailand, the US, Russia, Japan, New Zealand and Vietnam.

...In combination with its routine combat readiness activities, the PLAN provides security support for China's maritime law enforcement, fisheries, and oil and gas exploitation. It has established mechanisms to coordinate and cooperate with law-enforcement organs of marine surveillance and fishery administration, as well as a joint military-police-civilian defense mechanism. Further, the PLAN has worked in coordination with relevant local departments to conduct maritime survey and scientific investigation; build systems of maritime meteorological observation, satellite navigation, radio navigation and navigation aids; release timely weather and sea traffic information; and ensure the safe flow of traffic in sea areas of responsibility.

Together with the marine surveillance and fishery administration departments, the PLAN has conducted joint maritime exercises and drills for protecting rights and enforcing laws, and enhanced its capabilities to coordinate command and respond to emergencies in joint military-civilian operations to safeguard maritime rights. The "Donghai Collaboration-2012" joint exercise was held in the East China Sea in October 2012, involving 11 ships and eight planes.

As an important armed maritime law-enforcement body, the border public security force exercises jurisdiction over both violations of laws, rules and regulations relating to public security administration and suspected crimes committed in China's internal waters, territorial seas, contiguous zones, exclusive economic zones and continental shelf. In recent years, the border public security force has endeavored to guarantee the

security of sea areas, strengthened patrols, surveillance and management along the sea boundary in the Beibu Gulf and around the Xisha sea areas, and effectively maintained maritime public order and stability.

In contrast, the 2015 Chinese defense white paper provided little information about these aspects of the PLAN:<sup>903</sup>

In line with the strategic requirement of offshore waters defense and open seas protection, the PLA Navy (PLAN) will gradually shift its focus from "offshore waters defense" to the combination of "offshore waters defense" with "open seas protection," and build a combined, multi-functional and efficient marine combat force structure. The PLAN will enhance its capabilities for strategic deterrence and counterattack, maritime maneuvers, joint operations at sea, comprehensive defense and comprehensive support.

This lack of detail may reflect the growing controversies and military rivalries that affect China and the nations in the Pacific – especially the South China Sea, which will be discussed later in this chapter – cannot be separated from operations in the Eastern IOR. Its concerns over the security of petroleum and maritime traffic in the Strait of Malacca have been a major focus of its security plans since at least the mid-2000s, and a cause of the naval build up – and submarine purchases by Singapore, Malaysia, and Indonesia.<sup>904</sup>

### **Chinese Naval Modernization and its Impact on Nearby Waters, the Pacific and the IOR**

The US, in turn, sees the modernization of Chinese seapower and the expansion of Chinese air, naval and missile power projection capability as critical developments in China's efforts to expand its role in Northeast Asia, the Taiwan Straits, and the South China Sea. It also sees it as part of the PLAN's slow conversion into a true blue water navy with carriers and extensive missile forces, which can play a major role in the Pacific and IOR.

As has been discussed in the chapter on the PLA Navy, the DoD report on *Military and Security Developments Involving the People's Republic of China* for 2016 described the current structure and trends in the PLAN as follows:<sup>905</sup>

Over the past 15 years, China's ambitious naval modernization program has produced a more technologically advanced and flexible force. The PLAN now possesses the largest number of vessels in Asia, with more than 300 surface ships, submarines, amphibious ships, and patrol craft. China is rapidly retiring legacy combatants in favor of larger, multi-mission ships equipped with advanced anti-ship, anti-air, and anti-submarine weapons and sensors. China continues its gradual shift from "near sea" defense to "far seas" protection as espoused in its most recent DWP, with the PLAN conducting operational tasks outside the so-called "first island chain" with multi-mission, long-range, sustainable naval platforms that have robust self-defense capabilities.

The PLAN places a high priority on the modernization of its submarine force and currently possesses five SSNs, four nuclear-powered ballistic missile submarines (SSBN), and 53 diesel-powered attack submarines (SS/SSP). By 2020, this force will likely grow to between 69 and 78 submarines. In addition to the 12 KILO-class SS units acquired from Russia in the 1990s and 2000s, China has built 13 SONG-class SS (Type 039) and 13 YUAN-class SSP (Type 039A) with a total of 20 YUANs planned for production. China continues to improve its SSN force, and four additional SHANG-class SSN (Type 093) will eventually join the two already in service. The SHANG SSN will replace the aging HAN-class SSN (Type 091). These improved SHANG SSNs feature a vertical launch system (VLS) and may be able to fire the YJ-18 advanced anti-ship cruise missile (ASCM). Over the next decade, China may construct a new Type 095 nuclear-powered, guided-missile attack submarine (SSGN), which not only would improve the PLAN's anti-surface warfare capability but might also provide it with a more clandestine land-attack option. Finally, China continues to produce the JIN-class SSBN (Type 094) with associated CSS-N-14 (JL-2) submarine-launched ballistic missiles (SLBM) that has an estimated range of 7,200 km. This platform represents China's first credible, sea-based nuclear deterrent. China will probably conduct its first SSBN nuclear deterrence patrol sometime

in 2016. Four JIN SSBNs are operational, and up to five may enter service before China begins developing and fielding its next-generation SSBN, the Type 096, over the coming decade. The Type 096 will reportedly be armed with a successor to the JL-2, the JL-3 SLBM.

Since 2008, the PLAN has continued a robust surface combatant construction program of various classes of ships, including guided-missile destroyers (DDG) and guided-missile frigates (FFG). During 2015, the final LUYANG II-class DDG (Type 052C) entered service, bringing the total number of ships of this class to six. Additionally, a second LUYANG III-class DDG (Type 052D) entered service in 2015. It has a multipurpose VLS capable of launching ASCMs, land-attack cruise missiles (LACM), surface-to-air missiles (SAM), and antisubmarine missiles. China has also probably begun construction of a larger Type 055 “destroyer,” a vessel better characterized as a guided-missile cruiser (CG) than a DDG. China has continued to produce the JIANGKAI II-class FFG (Type 054A), with 20 ships currently in the fleet and five in various stages of construction. These new DDGs and FFGs provide a significant upgrade to the PLAN’s air defense capability, which will be critical as it expands operations into distant seas beyond the range of shore-based air defense systems.

Augmenting the PLAN’s littoral warfare capabilities, especially in the South China Sea and East China Sea, is a new class of small combatant. Twenty-five JIANGDAO-class corvettes (FFL) (Type 056) are in service and the latest ships have been upgraded to anti-submarine warfare (ASW) variants with a towed array sonar. China may build more than 60 of this class, ultimately replacing older PLAN destroyers and frigates. China also has 60 HOUBEI-class wave-piercing catamaran guided-missile patrol boats (PTG) (Type 022) built for operations in China’s “near seas.”

The PLAN continues to emphasize anti-surface warfare (ASUW) as its primary focus, including modernizing its advanced ASCMs and associated over-the-horizon targeting systems. Older surface combatants carry variants of the YJ-83 ASCM (65 nm, 120 km), while newer surface combatants such as the LUYANG II are fitted with the YJ-62 (120 nm, 222 km). The LUYANG III and Type 055 CG will be fitted with a variant of China’s newest ASCM, the YJ-18 (290 nm, 537 km), which is a significant step forward in China’s surface ASUW capability. Eight of China’s 12 KILOs are equipped with the SS-N-27 ASCM (120 nm, 222 km), a system China acquired from Russia. China’s newest indigenous submarine-launched ASCM, the YJ-18 and its variants, represents an improvement over the SS-N-27, and will be fielded on SONG, YUAN, and SHANG submarines. China’s previously produced submarine-launched ASCM, the YJ-82, is a version of the C-801, which has a much shorter range. The PLAN recognizes that long-range ASCMs require a robust, over-the-horizon targeting capability to realize their full potential, and China is investing in reconnaissance, surveillance, command, control, and communications systems at the strategic, operational, and tactical levels to provide high-fidelity targeting information to surface and subsurface launch platforms.

China’s investments in its amphibious ship force signal China’s intent to develop an expeditionary and over-the-horizon amphibious assault capability as well as HA/DR and counterpiracy capabilities. Since 2005, China has built three large YUZHAO-class (Type 071) amphibious transport docks (LPD) with a fourth soon to enter service, providing considerably greater and more flexible capability for “far seas” operations than the older landing ships. The YUZHAO can carry up to four of the new YUYI-class air-cushion medium landing craft (LCMA) and four or more helicopters, as well as armored vehicles and marines for long-distance deployments. Additional YUZHAO construction is expected in the near-term, as is a follow-on amphibious assault ship that is not only larger, but incorporates a full flight deck for helicopters. Two YUTING II-class tank landing ships (LST) are currently being built to replace older LST units that are reaching the end of their service lives, and to support logistics operations, particularly in the South China Sea.

In 2015, the PLAN’s first aircraft carrier, LIAONING, certified its first cohort of domestically trained J-15 operational pilots. The air wing is expected to deploy on the carrier in 2016. China also began construction of its first domestic aircraft carrier and could build multiple aircraft carriers over the next 15 years. Even when fully operational, LIAONING will not enable long-range power projection similar to U.S. NIMITZ-class carriers. LIAONING’s smaller size limits the number of aircraft it can embark, while the ski-jump configuration limits aircraft fuel and ordnance loads. LIAONING will possibly be used for fleet air defense missions, extending air cover over a fleet operating far from land-based coverage. Although it possesses a full suite of weapons and combat systems, LIAONING will probably continue to play a significant role in training China’s carrier pilots, deck crews, and developing tactics that will be used with later, more capable carriers.

Experts like Andrew Erickson and Gabe Collins feel the PLAN has been developing two key layers, aside from homeland defense: high-end navy and “anti-Navy” capabilities as well as low-end capabilities. China is creating a limited out-of-area operational capability in order to protect its citizens abroad, extend political influence, and protect important vital economic interests. However, the majority of the PLAN’s focus is on areas closer to China, especially the contested claims in the South China, East China, and Yellow Seas.

The PRC is focusing on building a navy able to engage in a high-intensity conflict near its borders, where it has a large fleet of submarines and land-based missiles and aircraft. Conversely, there is not much evidence that China is building a blue-water capability to take on a modern navy beyond their home region.

As Erickson and Collins write:<sup>906</sup>

The PLAN is acquiring the hardware it needs to prosecute a major regional naval showdown. Simultaneously, an increasingly-capable, but still limited number, of vessels can fight pirates, rescue Chinese citizens trapped by violence abroad, and make “show-the-flag” visits around the world. But the PLAN is not set up to confront the U.S. at sea more than 1,000 miles from China. Even if the PLAN surged production of key vessels such as replenishment ships, the resources and steps needed to build a globally-operational navy leave Beijing well over a decade away from achieving such capability in hardware terms alone. Building the more complex human software and operational experience needed to become capable of conducting large-scale, high-end out-of-area deployments could require at least another decade. Meanwhile, however, China’s challenges at home and on its contested periphery remain so pressing as to preclude such focus for the foreseeable future.

The bottom line is that China’s present naval shipbuilding program aims to replace aging vessels and modernize the fleet, not to scale-up a modern fleet to the size and composition necessary to support and sustain high-end blue water power projection. China is building a two-layered navy with a high-end Near Seas component and a limited, low-end capability beyond, not the monolithic force that some assume.

The 2016 Japanese white paper provides a summary description of the PLAN that reinforces these analyses:<sup>907</sup>

The naval forces consist of three fleets: North Sea Fleet; East Sea Fleet; and South Sea Fleet. The Chinese Navy has approximately 880 ships (including approximately 60 submarines), with a total displacement of approximately 1.5 million tons. The Navy is in charge of maritime national defense and protection of the sovereignty of territorial waters and maritime rights and interests. The Chinese Navy mass produces the indigenous state-of-the-art Yuan-class submarines, as well as surface combatant ships with improved air defense and anti-ship attack capabilities. It is also suggested that the Navy is developing cruisers equipped with vertical launch systems (VLSs) capable of launching the latest YJ-18 anti-ship cruise missile. In addition, the Navy is increasing the number of large landing ships and supply ships. It commissioned a large hospital ship in October 2008.

With regard to aircraft carriers, China renovated the Varyag, an incomplete Kuznetsov-class aircraft carrier purchased from Ukraine. After trial navigations started in August 2011, the carrier was named “Liaoning” and was commissioned in September 2012. It is thought that even after the commission, China continues trainings of carrier-based aircraft pilots using domestic J-15 carrier-based fighters and takeoff and landing tests on the “Liaoning.” In November 2013, the carrier sailed in the South China Sea for the first time and conducted sea trials in this area. In late December 2015, the spokesperson of the Ministry of National Defense of China officially admitted the building of a domestic aircraft carrier for the first time, announcing that the aircraft carrier “is being built in Dalian. It has a conventional power plant with a displacement of 50,000 tons” and “will adopt ski-jump takeoff mode.”

In view of these developments concerning the strengthening of the naval forces, China likely aims to build capabilities for conducting operations in more distant waters in addition to near sea defense. It is necessary to continue to monitor the development of the Chinese naval forces.

With regard to aircraft carriers, China has renovated the Varyag, an incomplete Kuznetsov-class aircraft carrier purchased from Ukraine. China began trial navigations in August 2011, and named the carrier “Liaoning” and put it into commission in September 2012. Even after the carrier was commissioned, China seems to be continuing training of carrier-based aircraft pilots and research and development of necessary technologies including the development of a domestic carrier based fighter, J-15, such as its takeoff and landing tests on the “Liaoning.” In November 2013, the carrier sailed in the South China Sea for the first time and conducted sea trials in this sea area. Some analysts point out that China may also be constructing its first domestic aircraft carrier.

In view of these developments concerning the strengthening of the naval forces, it is believed that China is trying to build capabilities for conducting operations in more distant waters in addition to the near sea defense. It is necessary to continue to monitor the development of the Chinese naval forces.

### **Chinese Naval Forces in the IOR**

China has already shown its forces can operate effectively in a relatively permissive environment. It has deployed elements of its Navy into the IOR as part of the anti-piracy forces patrolling off Somalia, its increases in naval presence and visits in the region, and has expressed an interest in participating in naval exercises in the Gulf. It also has sent ships in the Strait of Malacca and in naval passages near Indonesia.<sup>908</sup>

In February 2014, for example, Chinese Navy conducted exercises in the in the Indian Ocean in the Lombok Strait, a narrow strip of water that runs from the Java Sea, near Indonesia, and north of Australia. Press reports indicate that China sent a three-ship flotilla of the South Sea fleet, including a large amphibious ship, the *Changbaishan* and two destroyers. They conducted some ten exercises, including anti-piracy, search and rescue, and damage control drills, over a five-day period that began in January 2014. China’s official Xinhua news agency reported on January 29, 2014, that the exercises also included simulations for warfare to test the response of command systems and soldiers’ “combat skills.”

China's People's Liberation Army Navy (PLAN) had previously carried out some 16-21 drills in the Indian Ocean, largely in the western Indian Ocean and near the Gulf of Aden – usually focusing on anti-piracy and search and rescue exercises. The January 2014 exercises were somewhat different, however, in that they were the first exercises on such a scale in the Lombok Strait, and the first time the PLAN had exercised a new route from the South China Sea to the Indian Ocean. In earlier drills, Chinese ships had always sailed through the Strait of Malacca Straits. The exercises also marked the first deployment of the *Changbaishan*, China's largest landing ship in an exercise of this kind.

An Indian newspaper, *The Hindu*, quotes Srikanth Kondapalli, an expert on the Chinese military at Jawaharlal Nehru University, as saying that the January exercise may have been a signal from China about the dispute over the South China Sea: “The drill took place in Lombok, which is beyond the nine-dotted line. This is something new,” and the PLAN may be showing it can reach the disputed region “from behind.”<sup>909</sup>

The paper also stated that:<sup>910</sup>

A second signal was tied to the Malacca Straits, which are a key route for China's energy imports. The dependence on the narrow strait led former leader Hu Jintao to warn of China's “Malacca dilemma,” triggering fresh initiatives by Beijing to establish alternate routes for imports, such as through ports in Myanmar and on-going projects in Bangladesh and Pakistan. “A third message,” Professor Kondapalli added, “is that they can come closer to the Andaman & Nicobar joint command through Lombok, and not just through Malacca.”

He said the drill could be seen as “a preliminary attempt” by the PLAN to see how they can fare in operations far away from China's borders in the Indian Ocean, where they lack bases for logistics and support. China has recently pushed commercial ties with several littoral states, and is also involved in port projects in a number of countries neighboring India.

US experts indicate that it is unclear from Chinese research studies and reports that China as yet has a clear strategy for the IOR, and one that will lead it to major exercise, basing, and air-sea deployments. Much will depend upon the rate and nature of the expansion of Chinese naval and air forces, and whether China can find partner nations in the IOR that will offer major basing facilities.

### **The Expanding Role of Chinese Air Forces**

As the previous chapters have shown, the Chinese Air Force or PLAAF is also a force in transition that is increasing China's capabilities in the East and South China Seas, and increasing its ability to project military power at longer distances in the future. For much of the Cold War, the PLAAF was designed to act as a mass air defense force flying second and third generation aircraft.

The PLAAF has fundamentally changed its force structure, composition, and personnel policies since 1985. Originally meant as a large air defense force, the PLAAF's force structure was made up primarily of obsolete interceptor aircraft. Its objective was largely to destroy aircraft attacking China and to maintain a small, air-based nuclear deterrent.

During the 1990s, however, the PLAAF began to shift to a more diversified force structure; since 2000, the PLAAF has fully embraced a shift from a singular focus on air defense and interceptor fighter aircraft to a multi-mission force, capable of carrying out AD, strike, transport, ISR, and most recently, electronic warfare missions.

### **Expanding PLAAF Strike and Power Projection Capabilities**

The promulgation of the Local Wars concept has also altered Chinese capabilities. The CMC had concluded that air power, especially when utilizing precision-guided munitions, would be decisive in future conflicts. Thus, the PLAAF was expected to obtain a long-range precision strike capability.<sup>911</sup> However, the PLAAF had a large inventory of second- and third-generation interceptor aircraft that lacked Beyond-Visual-Range (BVR) capability, advanced radar, and specialized electronic warfare (EW) support aircraft.

This meant that the PLAAF had to change fundamentally in order to successfully fight and win Local Wars. In particular, it had to be restructured to focus on strike, rather than interceptor, aircraft. Furthermore, it had to procure more advanced aircraft that were capable of carrying out these missions despite adversary defenses. Most importantly, the PLAAF had to develop the human capital needed to utilize advanced systems and operate according to the Local Wars doctrine.

The augmentation of the PLAAF's operational reach and ability to serve as a “strategic service” has become more evident with its modernization efforts and training exercises in the past 15 years. China's 2015 defense white paper briefly highlights some of the key operational aspects that will allow its air force to project power as it desires:<sup>912</sup>

In line with the strategic requirement of building air-space capabilities and conducting offensive and defensive operations, the PLA Air Force (PLAAF) will endeavor to shift its focus from territorial air defense to both defense and offense, and build an air-space defense force structure that can meet the requirements of informationized operations. The PLAAF will boost its capabilities for strategic early warning, air strike, air

and missile defense, information countermeasures, airborne operations, strategic projection and comprehensive support.

Between 1995 and 2015, roughly 3,000 fighter-interceptors were removed from the PLAAF's inventory: fighter-interceptor aircraft dropped from ~80% of the PLAAF to ~50%. Fighter-ground attack aircraft faced a different trend; overall numbers did not markedly increase but their relative share of the PLAAF's inventory increased by more than 2.5 times. Training and transport aircraft both increased in absolute numbers significantly, but their impact is best shown by their relative share of the PLAAF's aircraft holding.

The 2016 Japanese defense white paper summarized the modernization of Chinese air forces as follows:<sup>913</sup>

The Chinese Air Force and Navy have approximately 2,720 combat aircraft in total. The number of fourth generation modern fighters is rising steadily. China imported from Russia and produced under license the Su-27 fighter, and imported from Russia the Su-30 fighter equipped with anti-surface and anti-ship attack capabilities. China also mass produces the J-11B fighter, which is allegedly an imitation of the Su-27 fighter, and the domestic J-10 fighter. China's domestic J-15 carrier-based fighter thought to be modeled on Russia's Su-33 carrier-based fighter is also carried on the aircraft carrier Liaoning.

In November 2015, China reportedly signed an agreement with a Russian state-run military company to purchase 24 Su-35 fighters, which is considered the newest fourth generation fighter. Additionally, China is developing the J-20 and J-31 fighters, which are said to become next-generation fighters.

The Chinese Air Force has H-6 bombers that are thought to carry nuclear weapons as well as cruise missiles, including the state-of-the-art YJ-12 air-to-ship missile. China is also making continuous efforts to improve capabilities which are essential for operations of modern air forces by introducing the H-6U tanker and KJ-50060 and KJ-2000 Airborne Early Warning and Control system. Furthermore, it is reported that China is developing a new Y-20 large cargo aircraft in order to enhance its transportation capability.

In addition to domestically developing, producing and deploying a variety of aircraft and introducing them from Russia, China is developing its own variety of unmanned aerial vehicles (UAV), including those capable of long-hour flights at high altitude for reconnaissance and other purposes (high-altitude long endurance [HALE]) and those capable of carrying missiles and other weapons for attack purposes. Some of these are thought to be being produced and deployed.

Judging from the modernization of the air forces, it is believed that China is not only improving its air defense capabilities for its national territory, but also aiming to build up capabilities for air superiority and anti-surface and anti-ship attacks in areas which are further distant from China, and improving long-range transportation capabilities. Further attention needs to be paid to these activities conducted by the Chinese air forces.

As the PLAAF chapter has shown, the dominance of the fighter-interceptor in the PLAAF has eroded and other categories of aircraft are making up larger and larger portions of the PLAAF. This trend indicates a significant change in doctrine and military objectives: more specifically, the changing force structure indicates greater doctrinal emphasis on ground attack, transport, and training missions. All of these are in line with the Local Wars concept.

In addition to the previously-described changes in the numbers of fighter-interceptor, fighter-ground attack, transport, and training aircraft, changes in the other categories also have significance.

The decline and the steady plateau of PLAAF bombers, combined with small numbers of tanker aircraft, indicate that the PLAAF is limiting the majority of its strike missions to targets within the first island chain. The H-6K variant has the capability to carry six LACMs that will give the PLA a stand-off offensive air capability to use against distant targets.<sup>914</sup>

Even if one considers the number of cruise missiles they could potentially carry, the number of bombers is so limited relative to fighter-ground attack aircraft that it appears that the PLAAF has either decided to concentrate its scarce resources within the first island chain, has not identified many targets worth striking outside of the first island chain, or potentially has abdicated medium-range strike to the Second Artillery Force. Another possibility to consider is the use of H-6's to carry anti-ship cruise missiles in particular. The H-6G, in service with the PLA Navy Air Force, has four weapons pylons that are probably for anti-ship cruise missiles.<sup>915</sup>

Some American experts argue that the small number of tankers, EW, ELINT, AEW&C, and C2 aircraft indicates two things: first, that the PLAAF still does not function as effectively as the Western or Russian air forces, and also that the PLAAF has begun to plant the seeds of its own modernization and force development, and plans to develop similar capabilities as have the Western and Russian air forces.

### **A2/AD and Stealth Capabilities**

As has been discussed in earlier chapters, US and other outside reports on Chinese military power note that China is focusing on both A2/AD and stealth capabilities, as well as on precision strike capabilities and improved air defenses. The 2016 DoD report on Chinese military power described China's A2/AD capabilities:<sup>916</sup>

As China modernizes the PLA and prepares for various contingencies, it continues to develop capabilities that serve to dissuade, deter, or if ordered, defeat possible third-party intervention during a large-scale, theater campaign such as a Taiwan contingency. U.S. defense planners often refer to these collective PLA capabilities as A2/AD, though China does not use this term. China's military modernization plan includes the development of capabilities to attack, at long ranges, adversary forces that might deploy or operate within the western Pacific Ocean in the air, maritime, space, electromagnetic, and information domains. As the PLA Academy of Military Science 2013 *Science of Strategy* states, "we cannot count on luck and must keep a foothold at the foundation of having ample war preparations and powerful military capabilities of our own, rather than hold the assessment that the enemy will not come, intervene, or strike."

The Chinese development of stealth capabilities has been particularly striking. It became clear in early 2011 that China was developing its own "stealth" strike fighter, the J-20, although its capabilities and deployment schedule remain unknown.<sup>917</sup> DNI James R. Clapper described the US assessment of this development as follows in his testimony to the US Intelligence Community for the House Permanent Select Committee on Intelligence on February 10, 2011:<sup>918</sup>

China's ongoing military modernization program began in earnest in the late 1990s, after Beijing observed the threat posed by long-range precision guided warfare in DESERT STORM and the Balkans. China's defense policies—initially aimed at creating credible options to forcibly bring Taiwan under Beijing's authority and developing the corresponding capabilities to prevent US intervention in a cross-Strait conflict—led Beijing to invest heavily in short- and medium-range ballistic missiles, modern naval platforms, improved air and air defense systems, counterspace capabilities, and an Intelligence, Surveillance, and Reconnaissance (ISR) system. For example, the Chinese have recently conducted the first flight test of what we refer to as a fifth-generation fighter, the J-20. We have known about this program for a long time and the flight test was not a surprise. We judge that this event is another indication of China's aspiration to develop a world-class military, and it is a capability we take seriously. But this program, like others in China, will have to overcome a number of hurdles before reaching its full potential.

The J-20 underwent its first test flight in January 2011, while more recently China test flew a second prototype stealth fighter model, the J-31 Falcon Eagle, on October 31, 2012. The J-31 appears to be a smaller version of the J-20. The J-31 looks similar in size and shape to Lockheed Martin's F-35 and F-22 fighters. It has been reported that Chinese hackers stole data on the design, performance, and other characteristics of the F-35 from the British defense firm BAE Systems.



Though both Chinese planes display stealth design features, their true capabilities in terms of radar-absorbing coatings, sensors, and other stealth attributes remain unknown. It is also unknown when or if either plan will enter production.<sup>919</sup>

It was also reported in March 2013 that China's second stealth fighter, the J-31, could be developed into an aircraft carrier-borne fighter. It is the smaller of the two, resembles the F-25, and has two wheels on its nose landing gear. Meanwhile, the larger J-20 is likely to be a multi-role fighter designed to attack both ground and air targets, a stealthy interceptor like the USSR's MiG-25 Foxbat able to shoot down incoming fleets of attack plans, or a stealth bomb truck designed to speedily evade enemy radars and attack ships and bases with bombs and cruise missiles.<sup>920</sup>

Chinese manufacturers have unveiled the two next-generation fighter aircraft prototypes, the J-20 and J-31, as well as the J-15 carrier-based fighter and the accelerated modernization of Shenyang J-11 and Chengdu J-10 fleets. The Chinese defense industry has clearly been developing a diverse portfolio of new aircraft designs, including modernizing its traditional fighters and developing indigenous fourth generation – and potentially fifth generation – fighters.<sup>921</sup>

These important advances owe to the implementation of a multi-pronged strategy across the sector's largest defense-industrial group, Aviation Industry Corporation of China (AVIC) and its five core prime contractors: Chengdu Aircraft Industry Corporation, Shenyang Aircraft Corporation, Hongdu Aviation Industry Group, Xi'an Aircraft Company and Changhe/Hafei Aviation. This strategy has included corporate reforms and organizational restructuring, coupled with sustained investment and expansion. China's aeronautic development strategy has also focused on key projects, such as indigenous platform and critical sub-system programs, and on building research, development and innovation capacity. Finally, this strategy has aimed to integrate civil and military aircraft manufacturing and leverage international commercial partnerships and acquisitions.

As AVIC upgrades its existing third- and fourth-generation fighters, it is also focusing on next-generation stealth fighters (J-31) and strategic transport aircraft (Y-20), designed to complement the PLA's long-term military transformation. These programs are currently in their development stages and have yet to overcome technical hurdles — AVIC is finding it particularly difficult to integrate reliable high-performance power plants. Nevertheless, these programs represent the Chinese defence industry's growing potential for innovation.

China does still lack the sophisticated technology required for highly advanced innovation in military equipment — in particular, advanced capabilities in material selection, process standardization, quality control, and ensuring structural strength. When combined with integration, systems design, and management problems, the result has been cost overruns, extensive testing and delays, and many modifications of the design. Furthermore, the fragmented corporate structure of AVIC makes it difficult for the group to gain compliance from its sub-units.<sup>922</sup>

China is, however, making major progress. Analyst Andrew S. Erickson has assessed China's stealth prototype developments in further depth. In particular, Chengdu Aircraft Corporation's (CAC's) production and design abilities are growing, and the company's Project 718 J-20 could become the PRC's first fifth generation (or, in Chinese terminology, fourth generation) aircraft — meaning it would include high maneuverability, supercruise, helmet-mounted sights, thrust vectoring, low observability, and sensor fusion characteristics. The J-20 prototype — which resembles the F-22 — is also large and has a significant weapons bay; when combined with China's strategic goals (as discussed in Chapter 2), it is likely that the plane could have several different applications, especially important to attack aircraft and strike fighter missions.<sup>923</sup>

China is now the only country in the world, other than the US, to have two concurrent stealth fighter programs. The DoD 2016 report stated:<sup>924</sup>

China has been pursuing fifth-generation fighter capabilities since at least 2009 and is the only country other than the United States to have two concurrent stealth fighter programs. China seeks to develop these advanced aircraft to improve its regional power projection capabilities and to strengthen its ability to strike regional airbases and facilities. The PLAAF has observed foreign military employment of stealth aircraft and views this technology as a core capability in its transformation from a predominantly territorial air force to one capable of conducting both offensive and defensive operations. PLAAF leaders believe stealth aircraft provide an offensive operational advantage that denies an adversary the time to mobilize and to conduct defensive operations. In 2015, China began flight testing its fifth and sixth J-20 stealth fighter prototypes. Within two years of the J-20's first flight in January 2011, China tested a second next-generation fighter prototype. The prototype, referred to as the FC-31 (and unofficially as the J-31), is similar in size to a U.S. F-35 fighter and appears to incorporate design characteristics similar to the J-20. The FC-31 conducted its first flight on October 31, 2012, and debuted at China's 10th China International Aviation & Aerospace Exhibition in Zhuhai in November 2014. The Aviation Industry Corporation of China (AVIC) is actively marketing the FC-31 as an export fifth-generation multirole fighter to compete with the F-35 for foreign sales. AVIC is reportedly in negotiations with the PLAAF to sell the FC-31 for domestic use. In addition to manned fighter aircraft, the PLAAF also views stealth technology as integral to unmanned aircraft, specifically those with an air-to-ground role, as this technology would improve that system's ability to penetrate heavily protected targets.

China is also working on the development of unmanned aerial vehicles. One Chinese newspaper reported that the *Lijian* weaponized stealth drone, designed jointly by the Hongdu Aviation Industry Group and Shenyang Aviation Corporation, completed taxi tests in December of 2012 and then it was reported by the BBC that it made its maiden flight in November 2013.<sup>925</sup> The drone is similar to the US X-47B and the European nEUROn. The *Lijian* is meant to replace the PLA's current slow, low-flying, propeller-driven UAVs.<sup>926</sup>

### **Expanding Chinese Naval, Air, and Land-based Missile Forces**

Two other elements of Chinese power are having a growing impact. One is the mix of China's capabilities for indirect and asymmetric power described in earlier chapters. These range from political efforts like exploiting the fault lines between Japan and South Korea to cyberwarfare. While Sun Tzu is only one of many influences on modern Chinese strategy, Chinese military thought clearly draws on several key quotes in the *Art of War* in shaping its approach to modern strategy.<sup>927</sup>

The supreme art of war is to subdue the enemy without fighting... Supreme excellence consists of breaking the enemy's resistance without fighting... Victorious warriors win first and then go to war, while defeated warriors go to war first and then seek to win.

...All warfare is based on deception. Hence, when we are able to attack, we must seem unable; when using our forces, we must appear inactive; when we are near, we must make the enemy believe we are far away; when far away, we must make him believe we are near.

...If your enemy is secure at all points, be prepared for him. If he is in superior strength, evade him. If your opponent is temperamental, seek to irritate him. Pretend to be weak, that he may grow arrogant. If he is taking his ease, give him no rest. If his forces are united, separate them. If sovereign and subject are in accord, put division between them. Attack him where he is unprepared, appear where you are not expected

China has placed more emphasis on sea, air, and land-launched missiles for power projection than the U.S. As the previous chapters have shown, these include a mix of surface-to-surface, and air, sea, and land-launched anti-ship missiles, as well as a range of both ballistic and cruise missiles.

Testimony before the China Economic & Security Review Commission in 2014 described the goals behind the PLA's modernization of its land-attack ballistic and cruise missiles:<sup>928</sup>

The PLA is expanding its conventional medium range ballistic missiles (MRBMs) to increase the range at which it can conduct precision strikes against land targets and naval ships (including aircraft carriers) operating far from China's shores out to the first island chain. The PLA is developing conventional intermediate-range ballistic missiles (IRBM) at a steady pace, to increase its capability for near-precision strike out to the second island chain.

The PLA also continues to field air and ground-launched land attack cruise missiles (LACMs) for standoff, precision strikes at a steady pace. Air-launched cruise missiles include the YJ-63, KD-88, and the CJ-20. In the sense that China is developing a large number of new precision guided weapons, whereas 10 years ago they had very few, there has been an acceleration in modernization. New precision guided munitions and conventional missiles continue to emerge and will continue for the foreseeable future as Chinese investment in these technologies remains high. Nevertheless, the pace of development of individual systems has not accelerated.

Further testimony before the U.S.-China Economic and Security Review Commission in 2015 also helps explain China's reliance on ballistic and cruise missiles:<sup>929</sup>

According to the U.S. Department of Defense, China possesses up to 1,800 theater-range land based ballistic and cruise missiles, most of which are mounted on road-mobile transporter erector-launchers and are thus capable of hiding and relocating in China's complex terrain. The revolution in missile and sensor technology has greatly increased the accuracy of ballistic and cruise missiles and lowered the relative cost of these munitions. Finally, China is assembling a multi-dimensional sensor, command, and communications network that by next decade should allow it to effectively employ the platforms and munitions in its inventory. It should be unsurprising that China is exploiting its continental position and the missile and sensor revolution to craft a cost-imposing strategy on the United States in the Western Pacific.

In contrast to China's continental position and its wide-ranging missile forces, the United States faces the burden of operating largely as an expeditionary power, which increases its costs and thus makes it harder to compete with the expansion of China's forces. Further, the 1987 Intermediate Nuclear Forces treaty prohibits the United States from matching China's comparatively economical land-based theater missile strategy.

These land attack options interact with a growing range of high performance anti-ship missiles. PLA forces have invested heavily in ASCMs that can be launched from surface ships, aircraft, and submarines. All modern PLAN surface combatants and submarines and a majority of the PLAAF's combat aircraft can or will be able to deploy highly lethal and long range cruise missiles. Chinese ASCMs include a range of systems like those shown in **Figure 16.4**.

**Figure 16.4: Illustrative Chinese Anti-Ship Missile Designs**

Chinese Anti-Ship Cruise Missiles					
Type	Launch Platform	Range (km)	Payload	Speed	Guidance (inertial/terminal)
YJ-7 (C-701)	Ground, Ship, Air	25	30.5	Subsonic	Electro-optical/active radar
YJ-62 (C-602) and YJ-62A	Ship (Luyang II), Ground	280 400 (YJ-62A)	210	Subsonic	Inertial/active terminal guidance
YJ-8 series (CSS-N-4 Sardine/C-801)	Ship, Submarine (YJ-82), Air (YJ-81)	42	165	Subsonic	Inertial/active terminal guidance
YJ-83 (CSS-N-8 Saccade/C-802) multiple variants	Ship, Ground, Air	120 (Ground/Ship) 130 (Air)	165	Subsonic	Inertial/active radar
YJ-83A/J (C-802A) multiple variants	Ship, Submarine (?), Ground, Air	180 (Ground/Ship) 250 (Air)	165	Supersonic	Inertial/active radar
YJ-91/KR-1 (Kh- 31P)	Ship, Air	15-110	87-90kg HE blast/frag	Supersonic	Passive/Anti-radiation
AS-13 Kingbolt (Kh- 59MK)	Air (PLAAF Su-30MKK)	45-115	320 kg AP HE 280 kg cluster	Subsonic	Inertial and TV/electro-optical
SS-N-22/Sunburn 3M80E Moskit; 3M80MVE (improved variant)	Ship (Sovremenny destroyers)	120 240 (3M80MVE)	300	Supersonic	Inertial/active/passive
SS-N-27B/Sizzler	Submarine (Kilo)	200	200	Supersonic	INS/active
CH-SS-NX-13	Submarine (Song, Yuan, Shang, Tang)	?	?	?	?

Source: Dennis M. Gormley, Andrew S. Erickson, and Jingdong Yuan, *A Low-Visibility Force Multiplier: Assessing China's Cruise Missile Ambitions* (Washington, DC: NDU Press, 2014), 18–19.

Furthermore, China's development of ASBMs complements its existing ASCM inventory, introducing the DF-21D, the world's first operational ballistic missile that may be capable of reliably homing in on a carrier-sized target. The DF-21D provides China with a ballistic missile that can hit ships at a range of over 1,500 km. This system has the potential to significantly alter the calculus of US naval forces operating in Asia by directly threatening US aircraft carriers.

A Congressional Research Service study highlighted the threat posed by the DF-21D as follows:<sup>930</sup>

Observers have expressed strong concern about the DF-21D, because such missiles, in combination with broad-area maritime surveillance and targeting systems, would permit China to attack aircraft carriers, other U.S. Navy ships, or ships of allied or partner navies operating in the Western Pacific. The U.S. Navy has not previously faced a threat from highly accurate ballistic missiles capable of hitting moving ships at sea. For this reason, some observers have referred to the DF-21 as a “game-changing” weapon. Due to their ability to change course, the MaRVs on an ASBM would be more difficult to intercept than non-maneuvering ballistic missile reentry vehicles.

Missiles provide China with a cost-effective way to project power, and China's emphasis on power projection in areas relatively close to home also makes the acquisition of other new systems like long-range bombers less important. Missiles are also more survivable and harder to detect.

It will be years before China can match the U.S. in military power on a theater level, but this does not have to be China's objective or basis for acting. Much depends on the perceived value of the political and military objective. Both the U.S. and China's neighbors may not be willing to engage China militarily if they see the cost of such engagement as too high, their strategic partners will not engage, and/or China can create political or military “facts” before its opponents can organize and effectively react.

Missiles do not have to be fired to be effective as threats and deterrents, and provide the ability to quickly seize the initiative in a limited conflict. China does not have to “win” a limited war in a classic military sense if it can deter the U.S. and push it further and further away from China while

increasing the risk in any U.S. response. Similarly, missiles both intimidate and threaten China's neighbors since many still lack the missile defenses and other retaliatory capabilities to deal with them. Missiles also provide an "instant" ability to escalate that the U.S. may find difficult to react too quickly and effectively, and have a political and terror effect even if they lack the accuracy, reliability, and lethality to destroy key military and economic targets.

The dual utility of missiles as both military weapons and political tools is a part of the Second Artillery Force's doctrine, particularly with regards to a possible Taiwan Strait scenario. This was demonstrated in 1995 and 1996 when the Second Artillery Force had "show-of-force" launches before Taiwan's first presidential election. The Second Artillery envisions their non-military uses in a Taiwan Strait Crisis as such:<sup>931</sup>

Two types of missile operations can be employed in crises: missile "deterrence" and the threat or use of missiles in a "surgical strike." The PLA defines "deterrence fire support" as the use of firepower assets, including conventional missiles, in activities designed to "instill fear in our adversary by a show of force or by demonstrating our resolve and readiness to use our fire support forces" in a "war of nerves between the enemy and us."<sup>48</sup> The goal of instilling fear is to "coerce" the adversary into refraining from taking hostile actions or into abandoning its military objectives. Actions the PLA would consider include a show of force—drawing pointed attention to the "physical existence of fire support"—or execution of "a small portion" of fire-support operations, short of full-scale fire-support attacks.

The strategic flexibility provided by cruise and ballistic missiles make them a key tool of Chinese power projection. Moreover, they fit the operational requirements of the PLA for deployment around China. Their technical limitations do not necessarily hinder the implementation of China's regional strategy.

### ***Chinese Claims to the South China Sea***

China's claims in the Pacific are not a key aspect of this analysis but they are critical to understanding its view of both competition and cooperation with the U.S. and other regional powers. They are complex, and have a range of different rationales, but it is clear that like Taiwan, they are tied in part to China's history and Chinese nationalism as much as China's strategic interests.

The core of these claims derives from China's evolving claims to the South China Sea, although disputes also exist in the East China Sea. These claims are based on what China calls a *nine-dash line*. This originally was an eleven-dotted line, was officially drawn on the Chinese map in 1947 by the Chinese Nationalist Government. It should be noted that it is loosely based on China's maximum period of maritime influence—which ended with the arrival of the Portuguese in the 15<sup>th</sup> Century, and was made at a time when European powers were just asserting their colonial presence in Southeast Asia. China had no meaningful sea or air power and China's claims gained no outside acceptance.

When the Chinese Communist Party formed the Republic of China in 1949, the line was adopted and Zhou Enlai endorsed a revised nine-dash line in 1953. The line, called by China a "traditional maritime boundary line," encloses many key features of the South China Sea—the Paracel Islands, the Pratas Islands, the Spratly Islands, the Macclesfield Bank, and the Scarborough Shoal. Features in the South China Sea claimed by China appear in historical documents dating back centuries.<sup>932</sup>

## Defining the Nine Dash Line and China's Claims

In 1992, Taiwan gave the status of historic water to the maritime areas within the nine-dash line. Most Chinese scholars today support some version of the nine-dash line by arguing for historic rights within this line, sovereignty over all features within the line, and sovereign right and jurisdiction as defined by the UN Convention on the Law of the Sea.

However, UNCLOS does not mention “historic rights,” but refers to “historic title.” UNCLOS does not explicitly define what “historic title” is, nor does it give details as to what “historic title” entails.<sup>933</sup> According to China foreign policy expert Sun Yun, the ambiguity about the exact details of China's claims allow it to satisfy domestic public opinion and safeguard the government's legitimacy.<sup>934</sup>

In May 2009, the Chinese government responded to claims made by Vietnam and Malaysia in the South China Sea by submitting two Notes Verbales to the UN Secretary General by stating the following:<sup>935</sup>

China has indisputable sovereignty over the islands in the South China Sea and the adjacent waters, and enjoys sovereign rights and jurisdiction over the relevant waters as well as the seabed and subsoil thereof (see attached map). The above position is consistently held by the Chinese government, and is widely known by the international community.

The US Department of State reproduced the map containing China's claims to the South China Sea, seen in **Figure 16.5**, which shows its original 9-dash line encircling many conflicting maritime and land claims. China later reiterated their claims in this region and added that “China's sovereignty and related rights and jurisdiction in the South China Sea are supported by abundant historical and legal evidence.”<sup>936</sup> However, China has not demonstrated any legal basis to its claims, according to international law and its maritime developments and land reclamations in 2015 have increased tensions between China and the US, with other South East Asian states.

It should also be noted that a 10<sup>th</sup> line near the northeastern part of Taiwan was added in an official Chinese map published in 2013. This has raised questions as to how this affects China's claims in the South China Sea, if at all. One view is that it is an attempt to “highlight the mirror-image symmetry of its own maritime territorial claims with those of Taiwan, as a means of further narrowing the cross-strait gap.”<sup>937</sup> However, the addition of this line has not raised much attention and many news outlets continue to refer to the line as the “Nine-Dash Line.”

The potential for conflict in the South China Sea became significant in 2012 and has increased since then. As Bonnie S. Glaser of CSIS noted in 2012,<sup>938</sup>

The risk of conflict in the South China Sea is significant. China, Taiwan, Vietnam, Malaysia, Brunei, and the Philippines have competing territorial and jurisdictional claims, particularly over rights to exploit the region's possibly extensive reserves of oil and gas. Freedom of navigation in the region is also a contentious issue, especially between the United States and China over the right of U.S. military vessels to operate in China's two-hundred-mile exclusive economic zone (EEZ). These tensions are shaping—and being shaped by—rising apprehensions about the growth of China's military power and its regional intentions. China has embarked on a substantial modernization of its maritime paramilitary forces as well as naval capabilities to enforce its sovereignty and jurisdiction claims by force if necessary. At the same time, it is developing capabilities that would put U.S. forces in the region at risk in a conflict, thus potentially denying access to the U.S. Navy in the western Pacific.

Furthermore, China has been increasing its sovereignty claims over territory and waters within and beyond the nine-dash lines:<sup>939</sup>

China's policy of strategic ambiguity, as it has been euphemistically called, serves its purposes well. It allows China the flexibility to interpret its position to serve the audience at hand. This is why the Ministry of Foreign Affairs was able to issue its well-publicized statement in February 2012 stating that no nation claims sovereignty over the entire South China Sea and that the dispute is only about the "islands and adjacent waters." This raised hopes in the United States and among the other Asian claimants that China was backing away from the 9-dash lines claim and moving to bring its claims in line with international law.

That, however, has clearly not been the case. This year's tensions in the sea started with a two-month standoff between Chinese and Philippine ships at Scarborough Shoal. That confrontation, despite pronouncements to the contrary from Beijing, served as an example of a creeping evolution in Beijing's claims. For years the Chinese territorial claims in the South China Sea extended only to the Spratlys (Nansha, or "South Banks") and Paracels (Xisha, or "West Banks"). Any claim to other features, like Scarborough Shoal, was only implied in so far as they fell within the ambiguous 9-dash lines. Then China extended its claim to the entirely submerged Macclesfield Bank via the imaginary Zhongsha, or "Middle Banks," despite there being no way under international law to claim title over a submerged feature as if it were an island. Further, in recent years, as Beijing has tried to move beyond an overreliance on the indefensible 9-dash lines, Scarborough Shoal has been incorporated as part of Zhongsha. The fact that it lies hundreds of miles from Macclesfield Bank or that it appears on none of the historical documents China puts forth to prove its title to the Spratlys and Paracels seemingly does not matter.

Beijing showed similar disregard for the policy put forth in its February Ministry of Foreign Affairs statement when in early May it reinstated its annual unilateral fishing ban for all of the South China Sea above the 12th parallel. Such a ban would be possible only if China were claiming all the waters within the 9-dash lines, not only its "islands and adjacent waters." Then in late June, the China National Offshore Oil Corporation (CNOOC) fired a shot across Vietnam's bow by announcing the company would open nine oil and gas blocks in the South China Sea to foreign bids. The catch was that all nine blocks lie within the 200-nautical-mile exclusive economic zone (EEZ) of Vietnam, and many in fact overlap with existing blocks already leased by Vietnam, including those committed to Exxon-Mobil. More importantly, CNOOC's blocks are not defensible under a claim to the "islands and adjacent waters" of the South China Sea because there is no island within 200 nautical miles (the maximum allowable EEZ) of all the blocks.

This has led to growing tension between China and some of its neighbors. For example, Vietnamese and Chinese relations became more tense when the China National Offshore Oil Corporation (CNOOC) placed an oil rig south of the disputed Paracel Islands in early May 2014. Over 80 ships were dispatched by China to support and protect the rig; warships were allegedly part of this group of vessels. Vietnam responded by sending 29 ships of its own, which then led to boat rammings and water cannon firing. One Vietnamese fishing boat was sunk and several Vietnamese were injured.<sup>940</sup>

These controversial actions also led to anti-Chinese riots in Vietnam that injured many Chinese factory workers and even led to a number of deaths. Following difficult talks between China and Vietnam that did not make any progress towards resolving the situation, China sent four more rigs the South China Sea, three rigs closer to the Chinese coast and one just outside the Vietnamese EEZ.<sup>941</sup>

In addition to the tensions surrounding the oil rig, China was also undertaking land reclamation projects in the disputed Spratly Islands that could form islands large enough to construct buildings.<sup>942</sup> Although international concern and regional protest regarding China's actions has been sharp, the Chinese view such actions as normal activity, underscoring their territorial claims.<sup>943,944</sup>

These tensions have also reinforced China's generally negative view of the US 'pivot' to Asia. For example, one Chinese newspaper called for the US "to rein in its unruly allies in the region including Japan and the Philippines," in direct reference to the recent island disputes. Further,

because the US has a “responsibility for sowing the seeds of conflict,” it “shoulders certain responsibilities for the chronic disputes.”<sup>945</sup>

**Figure 16.5: China’s Dashed Line Map from 2009**



Source: Department of State, *Limits in the Seas Report No. 143 China: Maritime Claims in the South China Sea*, December 5, 2014.

## **Land Reclamation Operations and Increasing Tensions in the South China Sea**

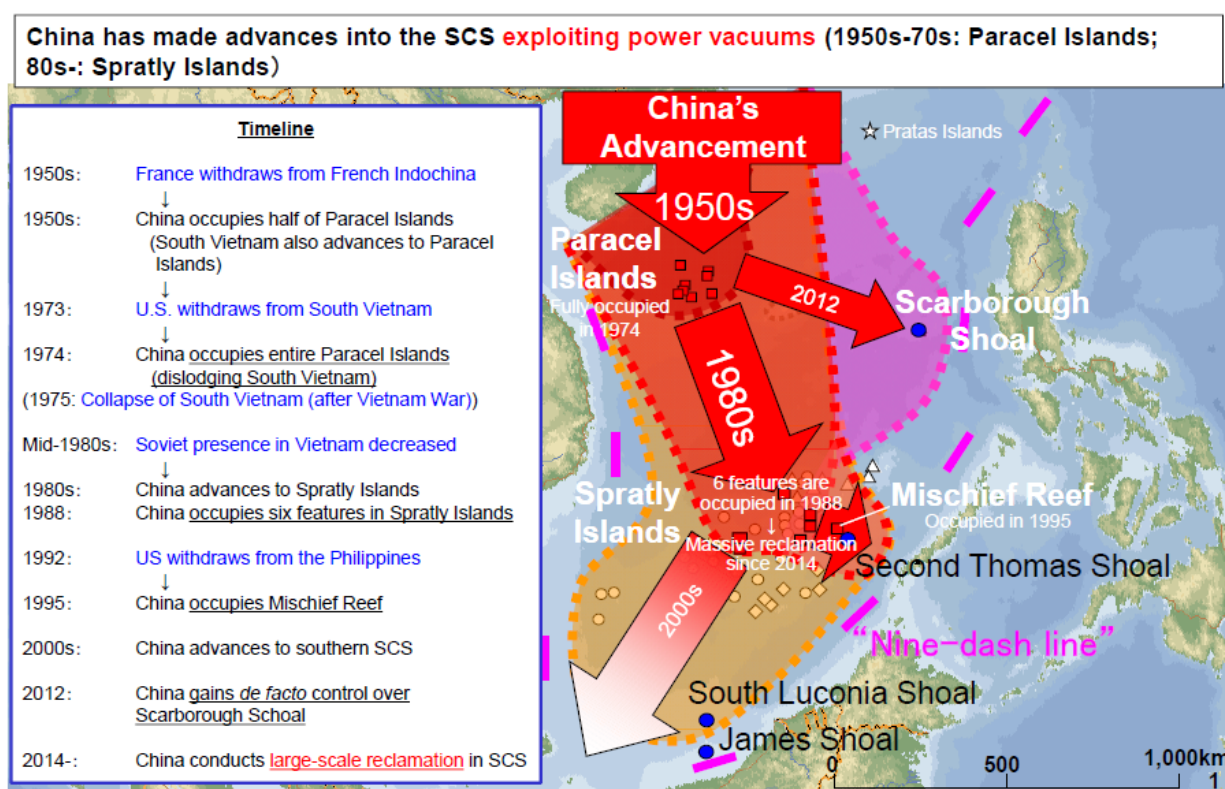
Tensions between China and the US increased in early 2015 when Chinese land reclamation in the South China Sea rapidly developed after China had been increasing its maritime modernization programs and become more strategically ambiguous. As mentioned by the US State Department in



its December 2014 report, China's claims in the South China Sea could have some merit but its claims to reefs and newly engineered islands have no merit in international law and as has been apparent in 2015, only increased the military competition and risk of conflict with the US and South East Asian countries.

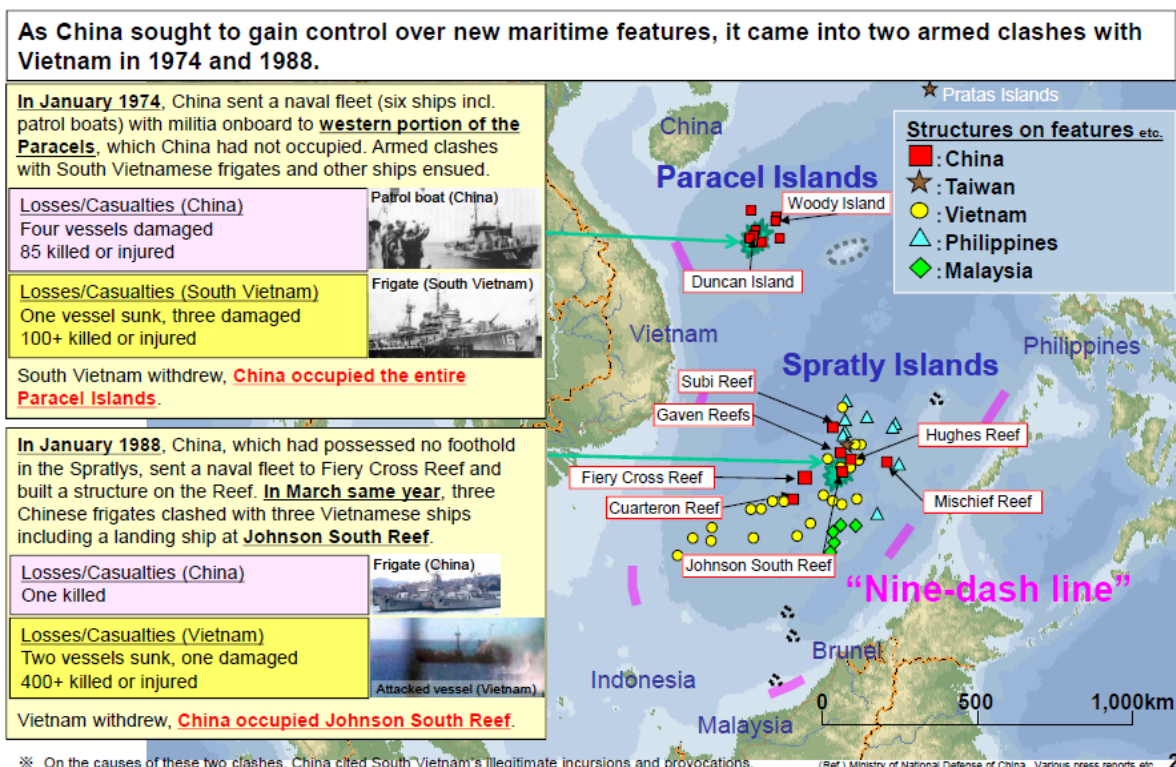
The results have been a complex mix of actions and confrontations that are difficult to summarize. In July 2015, however, the Japanese Ministry of Defense published a briefing on China's activities in the South China Sea with an historical context and developments in China's land reclamation activities that is shown in **Figure 16.6** through **Figure 16.11**, and provides a quick overview of the actions and issues involved. Additionally, **Figures 16.12-16.14** are from the 2016 Department of Defense report and depict Chinese development and building on disputed territory.

**Figure 16.6: Historical Context of China's Advances into the South China Sea**



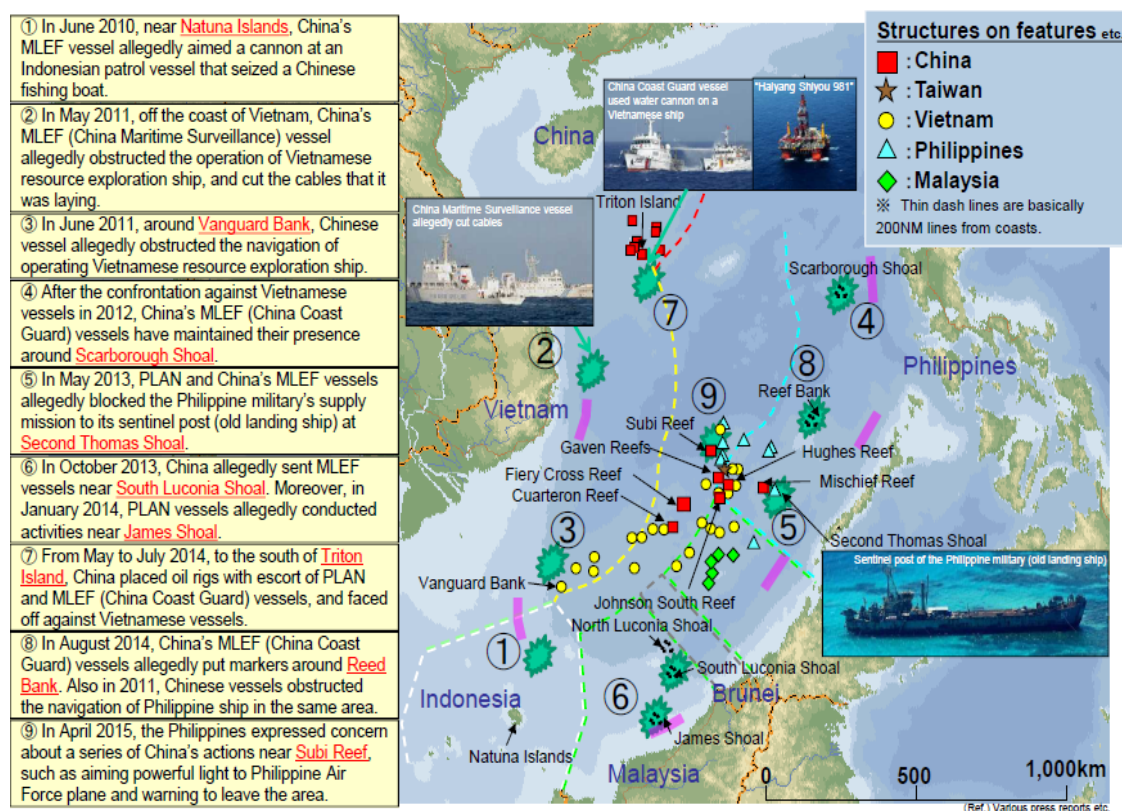
Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

**Figure 16.7: South China Sea Conflicts Between China and Vietnam**



Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

**Figure 16.8: Chinese Activities in South China Sea since 2010**

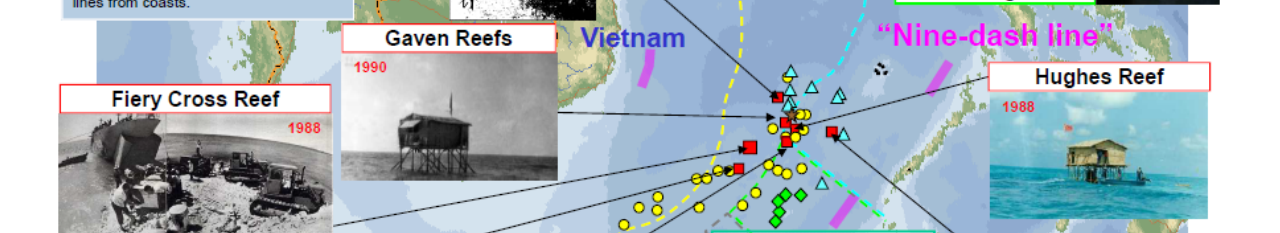
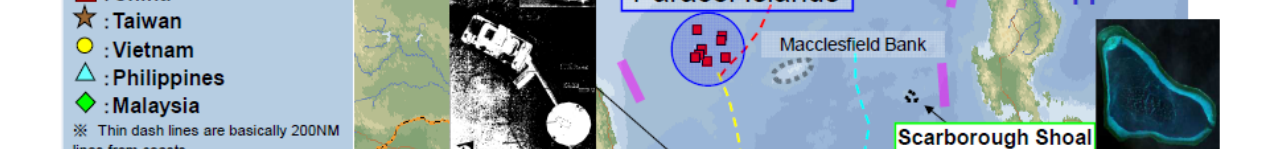


Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.



- China gained *de facto* control over seven maritime features in the Spratlys and built structures at all of the

- Structures on features etc.  
 : China  
 Subi Reef  
 1993  
 Parcel Islands  
 Philippines



Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

**Figure 16.10: China's Increasing Presence after Spratly's Militarization**

In general terms, China's possible construction of military facilities in the Spratly Islands would have the following ramifications.

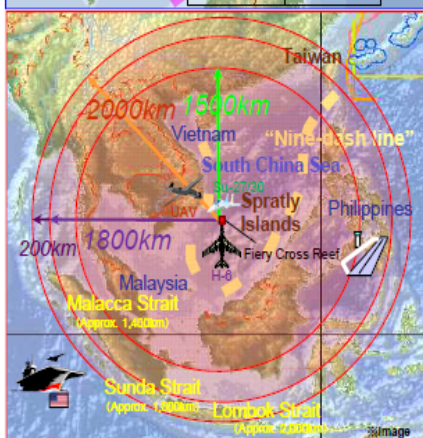


### Effects of Port Construction

- Building port facilities of certain size capable of berthing, resupply and maintenance would enable China to maintain more robust naval and maritime law enforcement presence in the entire SCS.
- ⇒ Some observers suggest considerable impact on coastal states of the SCS.

### Effects of Runway Construction

- Fiery Cross Reef with an airstrip and support facilities would enable China to forward-deploy various aerial platforms (incl. fighters, bombers and UAVs). Its ramifications may include:
  - ① China's improved air power-projection capability over the entire SCS;
  - ② enhanced air superiority over the SCS;
  - ③ improved A2/AD capabilities against U.S. intervention; and,
  - ④ possible declaration of an "SCS Air Defense Identification Zone".
- Reclamation is also being done at large-scale features such as Subi Reef, leading some observers to suggest possible construction of multiple airstrips in the Spratly Islands and attendant increase in China's air force presence.



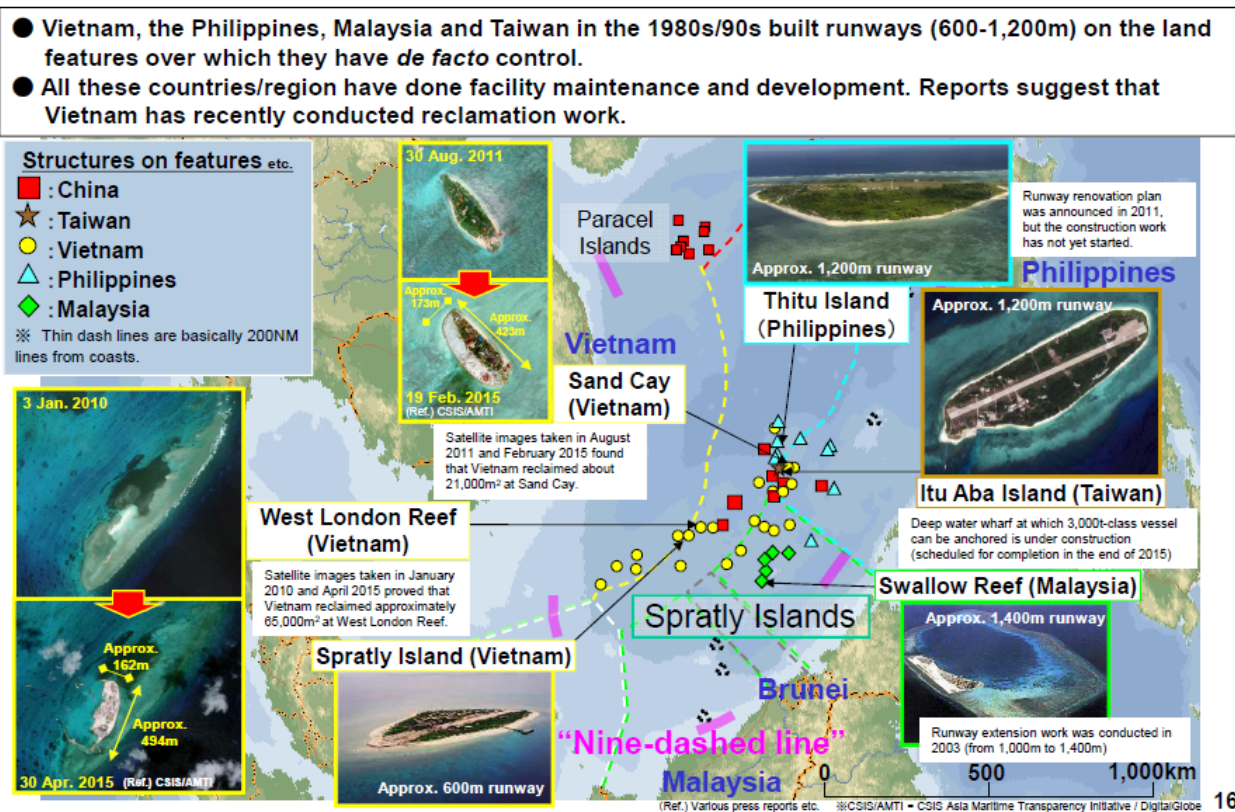
### Effects of Increasing Air/Maritime Presence

- Sustained deployment of various platforms including naval and law enforcement ships as well as aircraft enabled by military base construction would dramatically improve China's ISR and other mission capabilities in the central and southern portions of the SCS.
- Some observers express concern over China's achieving further *fait accompli* in the maritime domain, if China showcases the viability of these "islands" to sustain economic life by, for example, promoting civilian settlement (e.g. fishermen).

14

Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

**Figure 16.11: Development Trends of Other Countries in South China Sea**

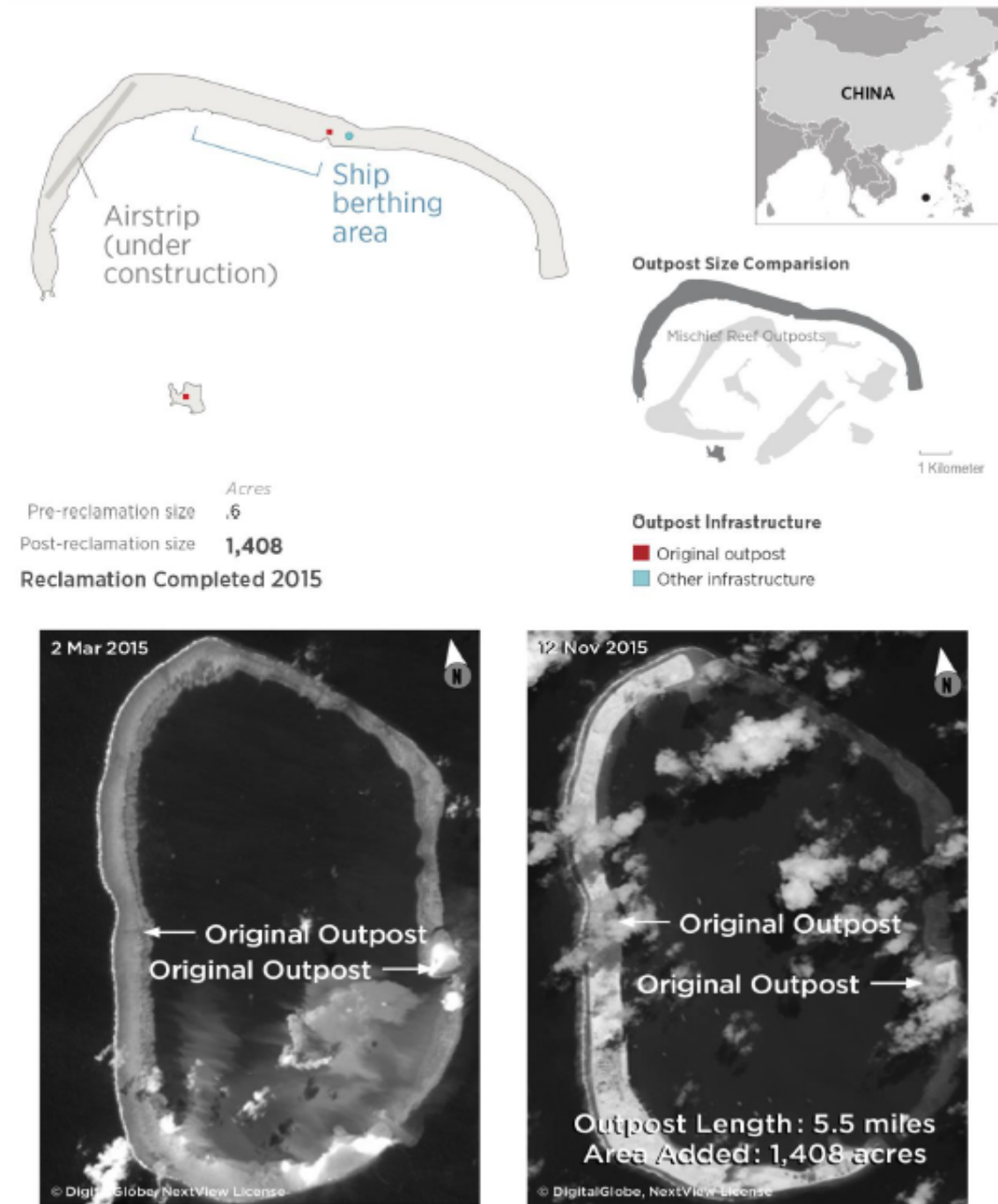


Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.



**Figure 16.12: Mischief Reef Outpost in South China Sea**

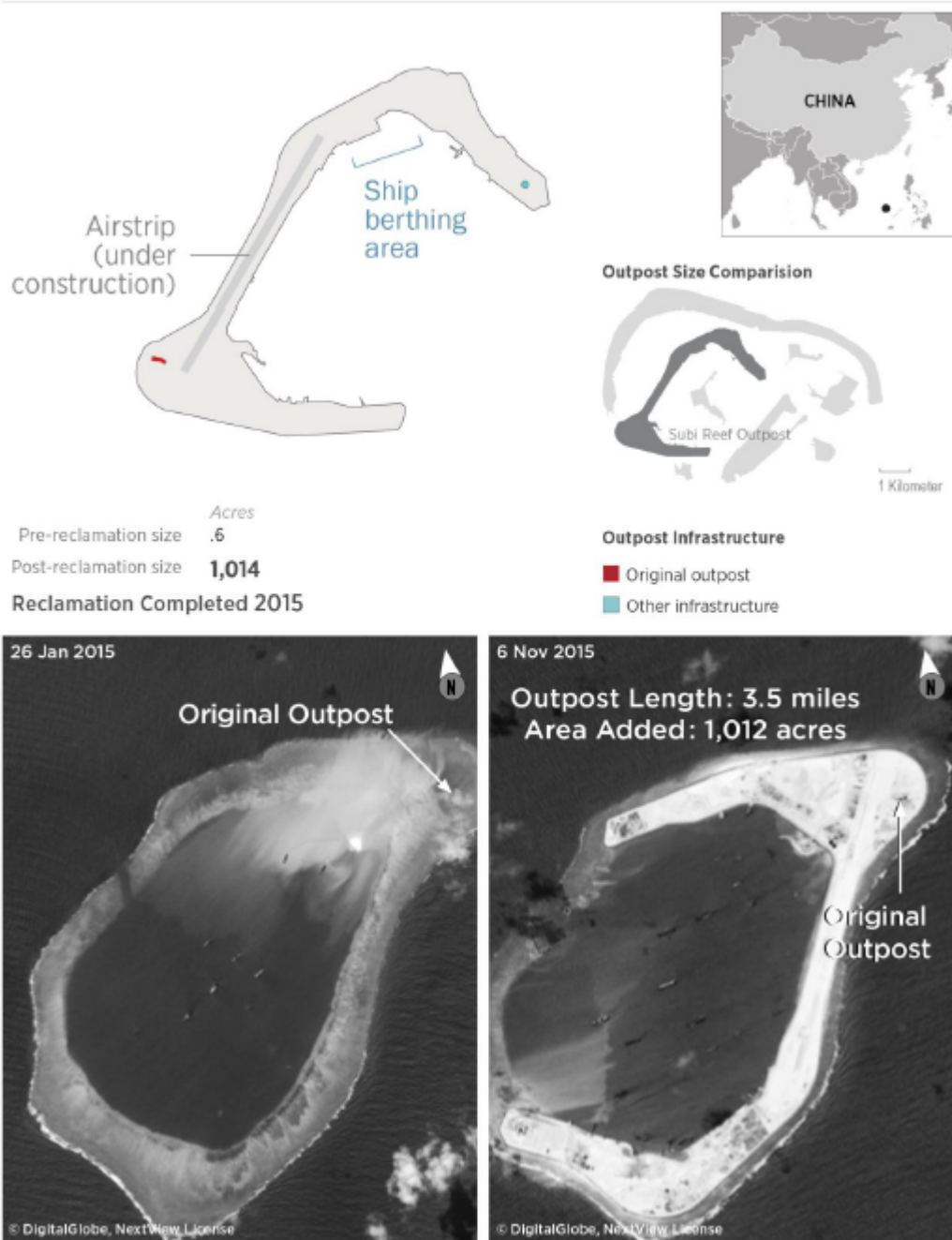
**Mischief Reef Outposts (North and South)**



Source: Department of Defense, *Military and Security Developments Involving the People's Republic of China* 2016, April 2016, p. 14.

**Figure 16.13: Subi Reef Outpost in South China Sea**

### Subi Reef Outpost

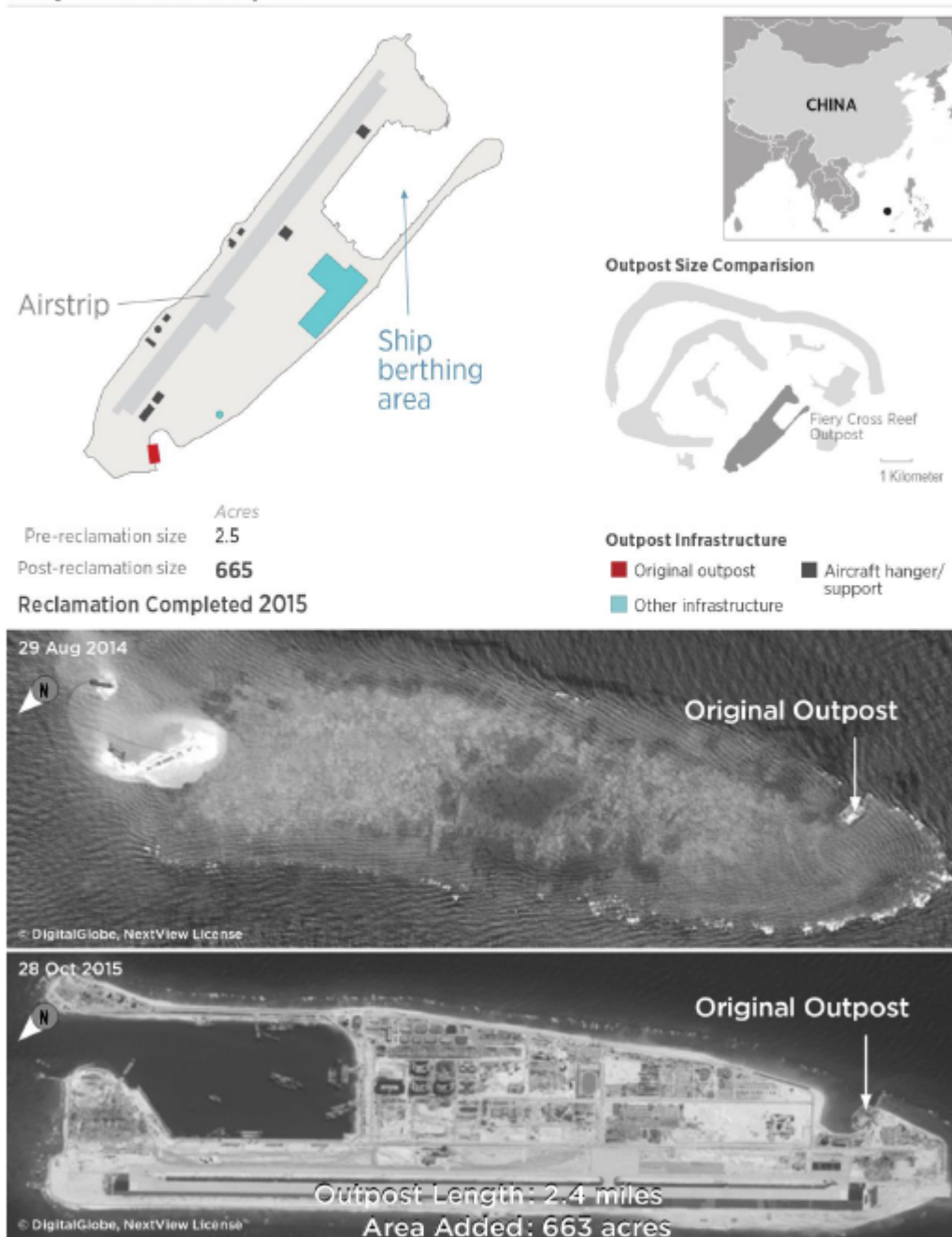


Source: Department of Defense, *Military and Security Developments Involving the People's Republic of China 2016*, April 2016, p. 17.



**Figure 16.14: Subi Reef Outpost in South China Sea**

**Fiery Cross Reef Outpost**



Source: Department of Defense, *Military and Security Developments Involving the People's Republic of China* 2016, April 2016, p. 19.

## **China's State Oceanic Administration**

China also uses paramilitary and law enforcement forces – in particular, the Coast Guard – to patrol the waters within the nine-dash line. The PLAN uses maritime tensions to justify modernization, while growing numbers of paramilitary and law enforcement vessels are playing an increased role in disputed territories and have been involved in many of the recent incidents.

Until March 2013, the major maritime law enforcement actors were collectively known as the “Five Dragons.” These were the State and General Administration of Customs, Fisheries Law Enforcement Command (FLEC), the Maritime Safety Administration (MSA), the China Maritime Surveillance (CMS), and the Chinese Coast Guard (CCG). These actors were domestically oriented and did not have experience in foreign affairs.

The Ministry of Foreign Affairs (MFA), which is the only agency that has extensive experience in dealing with diplomatic affairs, could not check these organizations. Although the MFA was authorized to negotiate with neighboring countries over the South China Sea disputes, it had been largely side-stepped by domestic actors, severely limiting the amount of influence the MFA could have on Chinese action in the South China Sea.

As the International Crisis Group noted in 2010,<sup>946</sup>

...the extensive use of paramilitary and law enforcement forces in sovereignty disputes also lowers the threshold of entry into confrontation. Naval vessels are likely to behave with more restraint than domestic actors with a limited understanding of foreign policy implications, while paramilitary agencies often tend to take more assertive actions precisely due to the lesser political ramifications of incidents in which they are involved. Moreover, civilian vessels, such as fishing boats, are more willing to retaliate against paramilitary than military vessels, thus increasing the risk of violence. On the other hand, a study conducted by Chinese scholars at the Ningbo Coast Guard Academy proposed that creating an enlarged, unified maritime security apparatus would strengthen flexibility in maritime conflicts. They concluded that relying on the navy to resolve disputes runs the risk of dangerous escalation, while the current model of fragmented law enforcement agencies lacks coherence and thus can lead to unpredictable risks of conflict.

Furthermore, when China sends law enforcement vessels to patrol all of the waters within the nine-dashed line, sometimes even entering into the economic zones of Vietnam and the Philippines, it appears to be exerting authority over areas claimed by other countries and to which it may not have a claim under UNCLOS. At the 2012 National People's Congress session, Liu Cigui, director of the State Oceanic Administration, indicated that China was serious about carrying out law enforcement activities in the South China Sea. He said that regular patrol activities would cover all the maritime zones under its jurisdiction. This could potentially include the entire nine-dashed line region, thus causing further confusion and anxiety among the other claimants.

In March 2013, all of the “dragons” were consolidated under the Chinese Coast Guard, except the Maritime Safety Administration. The Coast Guard, in turn, would be commanded by the State Oceanic Administration (SOA). This was done ostensibly in order to more efficiently conduct maritime enforcement. This may also “strengthen China's ability at controlling escalation, should deliberate incidents occur at sea, by consolidating bureaucratic control.” However, it is still unclear what the bounds of the SOA's authority are and what involvement the military will have in the new organization.<sup>947</sup>

## **Chinese Actions to Establish Control within the First Island Chain**

In addition to achieving its security objectives in the first island chain – stretching from the Aleutians to the Philippines and containing Taiwan and Okinawa – China also wants control over the second island chain. This is a series of island groups running from the Japanese archipelago to

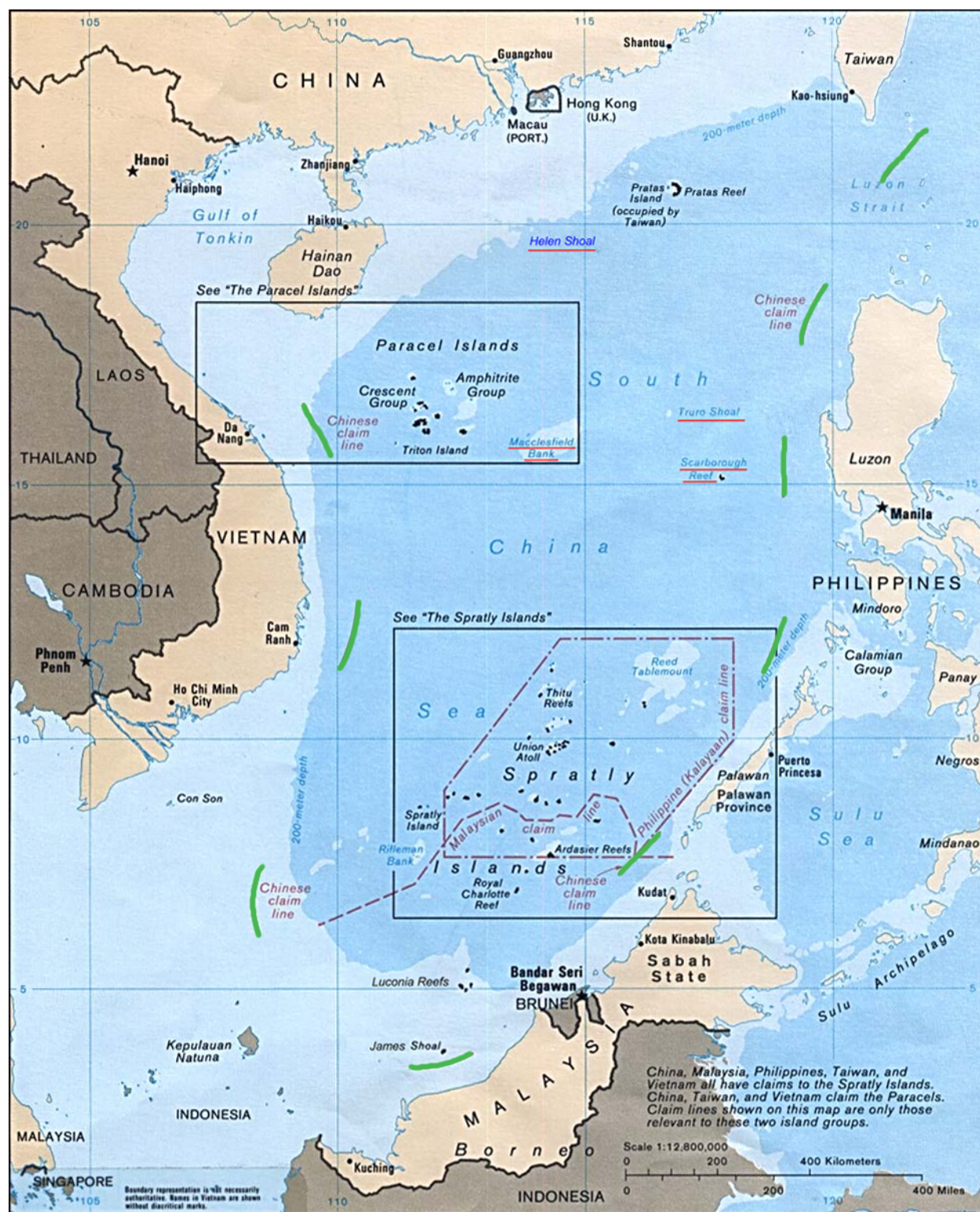
the Bonin and Marshall Islands. The US control of La Perouse Strait, Tsugaru Strait, and Tsushima Strait allows the US military the capacity to react quickly to a North Korean provocation as well as defend the key naval and air base of Guam. **Figures 16.15 to Figure 16.20** depict these disputes and maritime, island, and air claims in map form.

In 1982, Chinese Admiral Liu Huaqing, the mastermind of China's modern naval strategy and the former PLAN commander, said it would be necessary for China to control the first island chain by 2010 and the second island chain by 2020. Further, the PLAN should be ready to challenge US dominance over the Indian Ocean and Western Pacific in 2040.<sup>948</sup> As one US military analyst noted in 2011,<sup>949</sup>

China's active defense strategy has a maritime component that aligns with the PRC's 1982 naval maritime plan outlined by then-Vice Chairman of the Military Commission, Liu Huaqing. This naval strategy delineated three stages. In the first stage, from 2000 to 2010, China was to establish control of waters within the first island chain that links Okinawa Prefecture, Taiwan and the Philippines. In the second stage, from 2010 to 2020, China would seek to establish control of waters within the second island chain that links the Ogasawara island chain, Guam and Indonesia. The final stage, from 2020 until 2040, China would put an end to U.S. military dominance in the Pacific and Indian Oceans, using aircraft carriers as a key component of their military force. Recent Chinese military developments, rhetoric, and actions reflect implementation of this maritime strategy, on pace with the projections to seek control of the first island chain.

In order to achieve these goals, China is increasing its territorial sovereignty claims over islands in the Pacific that are also claimed by its neighboring countries. Examples include the Senkaku/Diaoyu Islands and the Philippines' Scarborough Shoal. China has also built facilities on Mischief Reef, which is internationally recognized as part of the Philippines. These are actions many feel violate international law; however, the Philippines lacks the naval and air force capabilities to effectively confront China and negotiations have gone nowhere.<sup>950</sup>

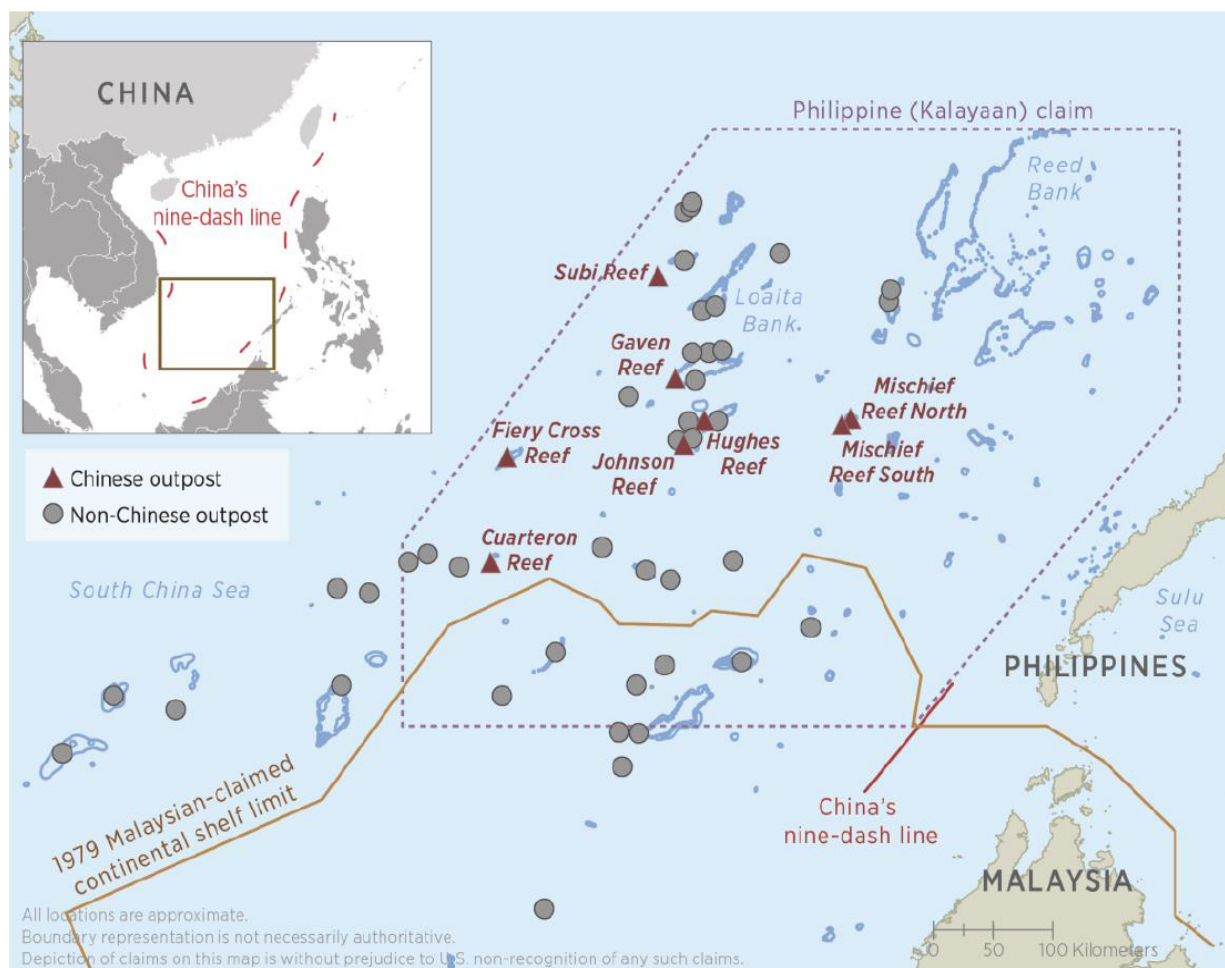
*Figure 16.15: Chinese Maritime Claims and the Nine Dash Line*



Source: Adapted from Wikipedia, May 11, 2013,  
[http://upload.wikimedia.org/wikipedia/commons/c/ce/9\\_dotted\\_line.png](http://upload.wikimedia.org/wikipedia/commons/c/ce/9_dotted_line.png).



**Figure 16.16: DoD Report Map of Chinese Outposts in South China Sea**



Source: Department of Defense, *Military and Security Developments Involving the People's Republic of China* 2016, April 2016, p. 10.

**Figure 16.17: Chinese Claims and the Nine Dash Line: Key Island Groups involved in Disputes**



**Source:** Map prepared by CRS using base maps provided by Esri.

**Notes:** Disputed islands have been enlarged to make them more visible.

Source: Ronald O' Rourke, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress*, Congressional Research Service, R42784, May 31, 2016, p. 10.

**Figure 16.18: Chinese Claims and the Nine Dashed Line: EEZs Overlapping the Zone Enclosed by Map of Nine Dashed Line**



**Source:** Source: Eurasia Review, September 10, 2012.

**Notes:** (1) The red line shows the area that would be enclosed by connecting the line segments in the map of the nine-dash line. Although the label on this map states that the waters inside the red line are "China's claimed territorial waters," China has maintained ambiguity over whether it is claiming full sovereignty over the entire area enclosed by the nine line segments. (2) The EEZs shown on the map do not represent the totality of maritime territorial claims by countries in the region. Vietnam, to cite one example, claims all of the Spratly Islands, even though most or all of the islands are outside the EEZ that Vietnam derives from its mainland coast.

Source: Ronald O' Rourke, Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress, Congressional Research Service, R42784, July 5, 2013, 10.

**Figure 16.19: Chinese Claims and the Nine Dashed Line: EEZs in South China Sea and East China Sea)**



**Source:** Map prepared by CRS using basemaps provided by Esri. EEZs are from the Flanders Marine Institute (VLIZ) (2011). Maritime Boundaries Geodatabase, version 6. Available at <http://www.vliz.be/vmdcdata/marbound>.

**Note:** Disputed islands have been enlarged to make them more visible.

Source: Ronald O' Rourke, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress*, Congressional Research Service, R42784, May 31, 2016, p. 79.



**Figure 16.20: Chinese Claims and the Nine Dashed Line: Locations of 2001, 2002, and 2009 U.S.-Chinese Incidents at Sea and in Air**



Source: Mark E. Redden and Phillip C. Saunders, *Managing Sino-U.S. Air and Naval Interactions: Cold War Lessons and New Avenues of Approach*, Washington, Center for the Study of Chinese Military Affairs, Institute for National Strategic Studies, National Defense University, September 2012. Detail of map shown on page 6.

Source: Ronald O' Rourke, *Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress*, Congressional Research Service, R42784, May 31, 2016, p. 13.

## **The Successor to the Nine Dash Line?**

In June 2014, China issued the new map of China shown in **Figure 16.21**, which showed China's its territorial claims in far more definitive terms than in the past, and without any sections indicating that Chinese claims might be uncertain or options. As People's Daily put it, the Chinese people will "fully, directly know the full map of. China... won't ever think again that China's territory has primary and secondary claims"

The map included Taiwan as part of China. It gave China suzerainty over the Spratlys and Paracels, the two main archipelagos of the South China Sea, including areas claimed by Vietnam, the Philippines and several other Southeast Asian nations. It also showed a 10-dash line (as opposed to China's earlier nine-dash line) that include most of the South China Sea. The map did, however, leave some Chinese claims affecting India and in Northeast Asia less clear – as much as a matter of its scale as anything else.<sup>951</sup>

## ***The Uncertain Future of Strategic Competition***

The key question over the years to come will be how much emphasis China places on given areas of strategic competition relative to its success in creating compromises that serve its core strategic interests, and particularly on the extent to which economic developments like its "new Silk Roads" provide strategic security for its energy imports from the Gulf and Global trade.

America's own history as an emerging power, and the whole course of 19<sup>th</sup> and 20<sup>th</sup> century nationalism, is a warning that prestige and politics can dominate over real strategic interests, as can military competition. The concept of states as rational bargainers has tragically erratic validity, and "crisis management" is has often proved to be little more than an oxymoron. While geoeconomics, and the longer term cost of clashes and conflict, may be more important to China in real strategic terms, prestige, history, fear, and the desire to win have driven the start of past conflicts far too often to ignore.

At the same time, China's steady emergence as a major world power, and the fact it already ranks second in the world, may ease some of its current concerns and fears of containment. China has many reasons to compromise over lesser security interests, if only to limit U.S. influence in the region. China's willingness to compromise with the Philippines in 2016, and allow Philippine fishermen back into disputed waters is a case in point. So is the careful restraint with which the U.S. has tested freedom of navigation and Chinese claims regard air rights. In many ways, the key question is whether China, the United States, and other regional powers show the restraint that they should and actually remember the grim lessons of the past two centuries, rather than repeat them.



*Figure 16.21: China's New Map of Greater China: June 2014*



Source: Source: Xinhua, May 28, 2014.

## CHAPTER 17: U.S. AND CHINA: U.S. “REBALANCING” AND THE CHINESE REACTION

China does not exist in a strategic vacuum. Its strategy, military development, and evolving power projection capabilities are all influenced by both its neighbors and by U.S. reactions to China’s emerging role in Asia, the Pacific, and South China Sea. In recent years, these U.S. reactions have centered on what the U.S. has called “rebalancing to Asia – a shift that has reflected both Asia’s growing strategic and economic importance to the U.S., and growing U.S. concerns over China’s regional ambitions.

### *U.S. “Rebalancing” to Asia*

As was touched upon in Chapter 1, the US announced a major shift in its national strategy to a focus on Asia in a document called *Sustaining US Global Leadership: Priorities for 21<sup>st</sup> Century Defense* that the U.S. Department of Defense issued on January 3, 2012.<sup>952</sup> It is important to stress that this new US strategy never explicitly described a “pivot to Asia” -- a phrase sometimes used in US speeches. It also never called for a major buildup of U.S. forces in the Pacific. The new U.S. strategy only called for a limited “rebalancing” of U.S. naval and air forces from NATO and Europe to the continental US and the Pacific, and for a new focus on strategic partnerships with other states in Asia.

### “Rebalancing” in 2012

The U.S. announced this rebalancing without announcing any major adjustments to implement it in its future year defense plans (FYDP), programs, and budgets. The text of *Sustaining US Global Leadership: Priorities for 21<sup>st</sup> Century Defense* emphasized the importance of the Asia-Pacific region to U.S. strategic interests, but document stressed the U.S. commitment to regional allies -- focused more on the Koreans than China – and gave equal priority to meeting challenges in Asia and the Middle East.<sup>953</sup>

U.S. economic and security interests are inextricably linked to developments in the arc extending from the Western Pacific and East Asia into the Indian Ocean region and South Asia, creating a mix of evolving challenges and opportunities. Accordingly, while the U.S. military will continue to contribute to security globally, *we will of necessity rebalance toward the Asia-Pacific region.*

Our relationships with Asian allies and key partners are critical to the future stability and growth of the region. We will emphasize our existing alliances, which provide a vital foundation for Asia-Pacific security. We will also expand our networks of cooperation with emerging partners throughout the Asia-Pacific to ensure collective capability and capacity for securing common interests. The United States is also investing in a long-term strategic partnership with India to support its ability to serve as a regional economic anchor and provider of security in the broader Indian Ocean region. Furthermore, we will maintain peace on the Korean Peninsula by effectively working with allies and other regional states to deter and defend against provocation from North Korea, which is actively pursuing a nuclear weapons program.

The maintenance of peace, stability, the free flow of commerce, and of U.S. influence in this dynamic region will depend in part on an underlying balance of military capability and presence. Over the long term, China’s emergence as a regional power will have the potential to affect the U.S. economy and our security in a variety of ways. Our two countries have a strong stake in peace and stability in East Asia and an interest in building a cooperative bilateral relationship. However, the growth of China’s military power must be accompanied by greater clarity of its strategic intentions in order to avoid causing friction in the region.

The United States will continue to make the necessary investments to ensure that we maintain regional access and the ability to operate freely in keeping with our treaty obligations and with international law. Working closely with our network of allies and partners, we will continue to promote a rules-based international order that ensures underlying stability and encourages the peaceful rise of new powers, economic dynamism, and constructive defense cooperation.

In the Middle East, the Arab Awakening presents both strategic opportunities and challenges. Regime changes, as well as tensions within and among states under pressure to reform, introduce uncertainty for the future. But they also may result in governments that, over the long term, are more responsive to the legitimate aspirations of their people, and are more stable and reliable partners of the United States.

Our defense efforts in the Middle East will be aimed at countering violent extremists and destabilizing threats, as well as upholding our commitment to allies and partner states. Of particular concern are the proliferation of ballistic missiles and weapons of mass destruction (WMD). U.S. policy will emphasize Gulf security, in collaboration with Gulf Cooperation Council countries when appropriate, to prevent Iran's development of a nuclear weapon capability and counter its destabilizing policies. The United States will do this while standing up for Israel's security and a comprehensive Middle East peace. *To support these objectives, the United States will continue to place a premium on U.S. and allied military presence in – and support of – partner nations in and around this region.*

Many U.S. experts, analysts, and former officials did build on this shift in strategy to talk about China as an emerging challenge, a “pivot” to Asia, and possible shifts in U.S. forces. Such comments, however, are not official U.S. policy, and it is important to focus on what the U.S. Secretary of Defense actually said in official policy speeches and statements in the years that followed.

Former US Secretary of Defense Leon Panetta described these shifts in US strategy in more detail in a speech to the Shangri-La Security Dialogue in Singapore on June 2, 2012. He again did not discuss any major changes to US forces. He also acknowledged serious constraints on US military resources, and continued to focus on the need for US and Chinese cooperation and dialogue:<sup>954</sup>

The purpose of this trip, and of my remarks today, is to explain a new defense strategy that the United States has put in place and why the United States will play a deeper and more enduring partnership role in advancing the security and prosperity of the Asia-Pacific region, and how the United States military supports that goal by rebalancing towards this region.

...America's fate is inexorably linked with this region. This reality has guided more than six decades of U.S. military presence and partnership in this region -- a defense posture that, along with our trading relations, along with our diplomatic ties, along with our foreign assistance, helped usher in an unprecedented era of security and prosperity in the latter half of the 20th century.

In this century, the 21st century, the United States recognizes that our prosperity and our security depend even more on the Asia-Pacific region. After all, this region is home to some of the world's fastest growing economies: China, India, and Indonesia to mention a few. At the same time, Asia-Pacific contains the world's largest populations, and the world's largest militaries. Defense spending in Asia is projected by this institute, the IISS, to surpass that of Europe this year, and there is no doubt that it will continue to increase in the future.

Given these trends, President Obama has stated the United States will play a larger role in this region over the decades to come. This effort will draw on the strengths of the entire United States government. We take on this role not as a distant power, but as part of the Pacific family of nations. Our goal is to work closely with all of the nations of this region to confront common challenges and to promote peace, prosperity, and security for all nations in the Asia-Pacific region.

...We will play an essential role in promoting strong partnerships that strengthen the capabilities of the Pacific nations to defend and secure themselves. All of the U.S. military services are focused on implementing the president's guidance to make the Asia-Pacific a top priority. Before I detail these specific efforts, let me provide some context for our broader defense strategy in the 21<sup>st</sup> century.

The United States is at a strategic turning point after a decade of war. We have significantly weakened al-Qaida's leadership and ability to attack other nations. We have sent a very clear message that nobody attacks the United States and gets away with it.

Our military mission in Iraq has ended and established—established an Iraq that can secure and govern itself.

In Afghanistan, where a number of Asia-Pacific nations are playing a critical role in the international coalition, we have begun our transition to the Afghan security lead and to an Afghanistan that can secure and govern itself. Recent meeting in Chicago, NATO and its partners—over 50 nations—came together to support General Allen's plan to accomplish this goal. In addition to that, we joined in a successful NATO effort to return Libya to the Libyan people.

But even as we have been able to draw these wars to a hopeful end, we are confronted today by a wide range of complex global challenges. From terrorism—terrorism still remains a threat to the world—from terrorism to the destabilizing behavior of Iran and North Korea, from nuclear proliferation to the new threat of cyberattack, from continuing turmoil in the Middle East to territorial disputes in this region.

At the same time, the United States, like many other nations, is dealing with large debt and large deficits, which has required the Department of Defense to reduce the planning budget by nearly half a trillion dollars or specifically \$487 billion that were directed to be reduced by the Congress in the Budget Control Act over the next decade. But this new fiscal reality, challenge that many nations confront these days, has given us an opportunity to design a new defense strategy for the 21<sup>st</sup> century that both confronts the threats that we face and maintains the strongest military in the world.

This strategy makes clear the United States military, yes, it will be smaller, it will be leaner, but it will be agile and flexible, quickly deployable, and will employ cutting-edge technology in the future. It makes equally clear that while the U.S. military will remain a global force for security and stability, we will of necessity rebalance towards the Asia-Pacific region. We will also maintain our presence throughout the world. We will do it with innovative rotational deployments that emphasize creation of new partnerships and new alliances. We will also invest, invest in cyber, invest in space, invest in unnamed systems, invest in special forces operations. We will invest in the newest technology and we will invest in the ability to mobilize quickly if necessary.

We have made choices and we have set priorities, and we have rightly chosen to make this region a priority.

Our approach to achieving the long-term goal in the Asia-Pacific is to stay firmly committed to a basic set of shared principles -- principles that promote international rules and order to advance peace and security in the region, deepening and broadening our bilateral and multilateral partnerships, enhancing and adapting the U.S. military's enduring presence in this region, and to make new investments in the capabilities needed to project power and operate in Asia-Pacific. Let me discuss each of these shared principles.

The first is the shared principle that we abide by international rules and order. Let me underscore that this is not a new principle, our solid commitment to establish a set of rules that all play by is one that we believe will help support peace and prosperity in this region. What are we talking about? These rules include the principle of open and free commerce, a just international order that emphasizes rights and responsibilities of all nations and a fidelity to the rule of law; open access by all to their shared domains of sea, air, space, and cyberspace; and resolving disputes without coercion or the use of force.

Backing this vision involves resolving disputes as quickly as possible with diplomatic efforts. Backing these principles has been the essential mission of the United States military in the Asia-Pacific for more than 60 years and it will be even a more important mission in the future. My hope is that in line with these rules and international order that is necessary that the United States will join over 160 other nations in ratifying the Law of Seas Convention this year.

The second principle is one of partnerships. Key to this approach is our effort to modernize and strengthen our alliances and partnerships in this region. The United States has key treaty alliances with Japan, South Korea, Australia, Philippines and Thailand. We have key partners in India, Singapore, Indonesia, and other nations. And we are working hard to develop and build stronger relations with China.

As we expand our partnerships, as we strengthen our alliances, the United States-Japan alliance will remain one of the cornerstones for regional security and prosperity in the 21st century. For that reason, our two

militaries are enhancing their ability to train and operate together, and cooperating closely in areas such as maritime security and intelligence, surveillance and reconnaissance. We are also jointly developing high-tech capabilities, including the next generation missile defense interceptor, and exploring new areas of cooperation in space and in cyberspace.

In the past several months we have strengthened the alliance and our broader strategic objectives in the region with a revised plan to relocate Marines from Okinawa to Guam. This plan will make the U.S. presence in Okinawa more politically sustainable, and it will help further develop Guam as a strategic hub for the United States military in the Western Pacific, improving our ability to respond to a wide range of contingencies in the Asia-Pacific region.

Another linchpin of our Asia-Pacific security is the U.S. alliance with the Republic of Korea. During a year of transition and provocation on the Korean Peninsula, this alliance has been indispensable, and I have made it a priority to strengthen it for the future. To that end, even as the United States reduces the overall size of its ground forces in the coming years in a transitional way over a five-year period, we will maintain the United States Army's significant presence in Korea. We are also boosting our intelligence and information sharing with the Republic of Korea, standing firm against hostile provocations from North Korea while transforming the alliance with new capabilities to meet global challenges.

The third shared principle is presence. While strengthening our traditional alliances in Northeast Asia and maintaining our presence there, as part of this rebalancing effort we are also enhancing our presence in Southeast Asia and in the Indian Ocean region.

A critical component of that effort is the agreement announced last fall for a rotational Marine Corps presence and aircraft deployments in northern Australia. The first detachment of Marines arrived in April, and this Marine Air-Ground Task Force will be capable of rapidly deploying across the Asia-Pacific region, thereby enabling us to work more effectively with partners in Southeast Asia and the Indian Ocean and tackle common challenges such as natural disasters and maritime security.

These Marines will conduct training and exercises throughout the region and with Australia, strengthening one of our most important alliances and building on a decade of operational experience together in Afghanistan. Speaking of that, I welcome and applaud Australia's announcement that later this year it will assume leadership of Combined Team Uruzgan, and will lead our security efforts there through 2014.

We're also continuing close operational cooperation with our longtime ally, Thailand. The Thais annually host COBRA GOLD, a world-class multilateral military exercise, and this year we will deepen our strategic cooperation to meet shared regional challenges. We are energizing our alliance with the Philippines. Last month in Washington I joined Secretary Clinton in the first-ever "2+2" meeting with our Filipino counterparts. Working together, our forces are successfully countering terrorist groups. We are also pursuing mutually beneficial capability enhancements, and working to improve the Philippine's maritime presence. Chairman Dempsey will be traveling from here to the Philippines to further our military engagement.

Another tangible manifestation of our commitment to rebalancing is our growing defense relationship with Singapore. Our ability to operate with Singaporean forces and others in the region will grow substantially in the coming years when we implement the forward deployment of the Littoral Combat Ships to Singapore.

As we take existing alliances and partnerships in new directions, this rebalancing effort also places a premium on enhancing partnerships with Indonesia, Malaysia, India, and Vietnam, and New Zealand. In the coming days I will travel to Vietnam to advance bilateral defense cooperation, building off of the comprehensive memorandum of understanding that our two nations signed last year. From Vietnam, I will travel to India to affirm our interest in building a strong security relationship with a country I believe will play a decisive role in shaping the security and prosperity of the 21st century.

As the United States strengthens these regional partnerships, we will also seek to strengthen a very important relationship with China. We believe China is a key to being able to develop a peaceful, prosperous, and secure Asia-Pacific in the 21st century. And I am looking forward to traveling there soon at the invitation of the Chinese government. Both of our nations recognize that the relationship -- this relationship between the United States and China is one of the most important in the world. We in the United States are clear-eyed about the challenges, make no mistake about it, but we also seek to grasp the opportunities that can come from closer cooperation and a closer relationship.



I'm personally committed to building a healthy, stable, reliable, and continuous mil-to-mil relationship with China. I had the opportunity to host Vice President Xi and later Defense Minister General Liang at the Pentagon in the effort to pursue that goal. Our aim is to continue to improve the strategic trust that we must have between our two countries, and to discuss common approaches to dealing with shared security challenges.

We are working with China to execute a robust military-to-military engagement plan for the rest of this year, and we will seek to deepen our partnership in humanitarian assistance, counter-drug, and counter-proliferation efforts. We have also agreed on the need to address responsible behavior in cyberspace and in outer space. We must establish and reinforce agreed principles of responsible behavior in these key domains.

I know that many in the region and across the world are closely watching the United States-China relationship. Some view the increased emphasis by the United States on the Asia-Pacific region as some kind of challenge to China. I reject that view entirely. Our effort to renew and intensify our involvement in Asia is fully compatible -- fully compatible -- with the development and growth of China. Indeed, increased U.S. involvement in this region will benefit China as it advances our shared security and prosperity for the future.

In this context, we strongly support the efforts that both China and Taiwan, both have made in recent years trying to improve cross-strait relations. We have an enduring interest in peace and stability across the Taiwan Strait. The United States remains firm in the adherence to a one-China policy based on the Three Communiqués and the Taiwan Relations Act. China also has a critical role to play in advancing security and prosperity by respecting the rules-based order that has served the region for six decades. The United States welcomes the rise of a strong and prosperous and successful China that plays a greater role in global affairs.

Another positive step towards furthering this rules-based order is Asia's deepening regional security architecture, which the United States strongly supports. Last October, I had the opportunity to be the first U.S. secretary of defense to meet privately with all ASEAN defense ministers in Bali. We applaud the ASEAN Defense Ministers Meeting Plus for producing real action plans for multilateral military cooperation, and I strongly support the ASEAN decision to hold more frequent ADMM-Plus discussions at the ministerial level. We think this is an important step for stability, real coordination, communication, and support between these nations.

The United States believes it is critical for regional institutions to develop mutually agreed rules of the road that protect the rights of all nations to free and open access to the seas. We support the efforts of the ASEAN countries and China to develop a binding code of conduct that would create a rules-based framework for regulating the conduct of parties in the South China Sea, including the prevention and management of disputes.

On that note, we are obviously paying close attention to the situation in Scarborough Shoal in the South China Sea. The U.S. position is clear and consistent: we call for restraint and for diplomatic resolution; we oppose provocation; we oppose coercion; and we oppose the use of force. We do not take sides when it comes to competing territorial claims, but we do want this dispute resolved peacefully and in a manner consistent with international law.

We have made our views known and very clear to our close treaty ally, the Philippines, and we have made those views clear to China and to other countries in the region. As a Pacific power, the United States has a national interest in freedom of navigation, in unimpeded economic development and commerce, and in a respect for the rule of law. Our alliances, our partnerships, and our enduring presence in this region all serve to support these important goals.

For those who are concerned about the ability of the United States to maintain a strong presence in the Asia-Pacific region in light of the fiscal pressures we face, let me be very clear. The Department of Defense has a five-year budget plan and a detailed blueprint for implementing this strategy I just outlined for realizing our long-term goals in this region, and for still meeting our fiscal responsibilities.

The final principle -- shared principle that we all have is force projection. This budget is the first in what will be a sustained series of investments and strategic decisions to strengthen our military capabilities in the Asia-Pacific region. I would encourage you to look at the increasing technological capabilities of our forces as much as their numbers in judging the full measure of our security presence and our security commitment.



For example, over the next five years we will retire older Navy ships, but we will replace them with more than 40 far more capable and technologically advanced ships. Over the next few years we will increase the number and the size of our exercises in the Pacific. We will also increase and more widely distribute our port visits, including in the important Indian Ocean region. And by 2020 the Navy will reposture its forces from today's roughly 50/50 percent split between the Pacific and the Atlantic to about a 60/40 split between those oceans. That will include six aircraft carriers in this region, a majority of our cruisers, destroyers, Littoral Combat Ships, and submarines.

Our forward-deployed forces are the core of our commitment to this region and we will, as I said, sharpen the technological edge of our forces. These forces are also backed up by our ability to rapidly project military power if needed to meet our security commitments. Therefore, we are investing specifically in those kinds of capabilities -- such as an advanced fifth-generation fighter, an enhanced Virginia-class submarine, new electronic warfare and communications capabilities, and improved precision weapons -- that will provide our forces with freedom of maneuver in areas in which our access and freedom of action may be threatened.

We recognize the challenges of operating over the Pacific's vast distances. That is why we are investing in new aerial-refueling tankers, a new bomber, and advanced maritime patrol and anti-submarine warfare aircraft.

In concert with these investments in military capabilities, we are developing new concepts of operation which will enable us to better leverage the unique strengths of these platforms and meet the unique challenges of operating in Asia-Pacific. In January, the department published a Joint Operational Access Concept which, along with these related efforts like Air-Sea Battle, are helping the Department meet the challenges of new and disruptive technologies and weapons that could deny our forces access to key sea routes and key lines of communication.

It will take years for these concepts and many of the investments that I just detailed, but we are making those investments in order that they be fully realized. Make no mistake -- in a steady, deliberate, and sustainable way the United States military is rebalancing and bringing an enhanced capability development to this vital region.

*...Project Power Despite Anti-Access/Area Denial Challenges.* In order to credibly deter potential adversaries and to prevent them from achieving their objectives, the United States must maintain its ability to project power in areas in which our access and freedom to operate are challenged. In these areas, sophisticated adversaries will use asymmetric capabilities, to include electronic and cyber warfare, ballistic and cruise missiles, advanced air defenses, mining, and other methods, to complicate our operational calculus. States such as China and Iran will continue to pursue asymmetric means to counter our power projection capabilities...<sup>955</sup>

### **“Rebalancing” in 2013**

A public shift to a greater focus on China did take place a year later. Secretary Gates's replacement, Secretary Chuck Hagel, gave a speech at the May 31, 2013 Shangri-La Forum that updated US policy towards the Asia-Pacific region in ways that were driven by China's steady emergence as a major regional military power and the growing tensions in the East and South China Seas. Once again, however, his speech focused on U.S. strategic partnerships and regional security cooperation:<sup>956</sup>

...[T]he world is undergoing a time of historic transformation, and Asia is at the epicenter of that change. The 21<sup>st</sup> century will be defined by the rise of new powers; the rapid spread of information, goods, and technologies; innovation and economic integration; new security coalitions that take on shared challenges; issues of trade, energy and the environment; and greater opportunities for people of all nations to have a voice in shaping their future.

With this incredible promise come complications and challenges. In Asia, we see a range of persistent and emerging threats, including:

- North Korea's nuclear weapons and missile programs, and its continued provocations;

- Ongoing land and maritime disputes and conflicts over natural resources;
- The continued threat of natural disaster, the curse of poverty and the threat of pandemic disease;
- Environmental degradation;
- Illicit trafficking in people, weapons, drugs, and other dangerous materials – including the proliferation of weapons of mass destruction;
- And the growing threat of disruptive activities in space and cyberspace.

These are the challenges of the 21<sup>st</sup> century. This morning I want to describe, from my perspective as the Secretary of Defense of the United States, what we can do together to meet these critical challenges. In particular, America and other nations of the Asia-Pacific must continue to strengthen existing alliances, forge new partnerships, and build coalitions based on common interests to ensure this region's future is peaceful and prosperous.

### **1. U.S. Investments in Asia-Pacific**

In support of this goal, America is implementing a rebalance – which is primarily a diplomatic, economic and cultural strategy. President Obama is increasing funding for diplomacy and development in Asia, including a seven percent increase in foreign assistance in the Asia-Pacific region. The United States is providing new resources for regional efforts such as the Lower Mekong Initiative, which helps improve water management, disaster resilience, and public health. We have built strong momentum toward implementing a next-generation trade and investment agreement through the Trans-Pacific Partnership negotiations. We are fostering regional trade and investment through our work in APEC and our support to ASEAN.

The Department of Defense plays an important role in securing the President's vision of rebalance. Our approach was outlined in the President's 2012 Defense Strategic Guidance, which is still guiding the U.S. military as we reorient its capabilities and capacities to better prepare for future global security challenges.

As we carry out this strategy, it is true that the Department of Defense will have fewer resources than in the recent past. It would be unwise and short-sighted to conclude, however, that our commitment to the rebalance cannot be sustained – particularly given the truth that even under the most extreme budget scenarios, the United States military will continue to represent nearly 40 percent of global defense expenditures. Like the employment of all resources, it is always a matter of the wise, judicious and strategic use of those resources that matters the most and has the most lasting impact.

The fact of the matter is that new fiscal realities present an opportunity to conduct a thorough and much-needed review to ensure we are matching resources to the most important priorities. With that goal in mind, I recently directed a Department-wide Strategic Choices and Management Review. Although the review's outcome is not final, the direction I provided was to follow the President's defense strategic guidance, to focus new energy and thinking on addressing long-standing challenges, and to make our defense enterprise one that better reflects 21<sup>st</sup> century security realities – including the rise of Asia.

For the region, this means I can assure you that coming out of this review, the United States will continue to implement the rebalance and prioritize our posture, activities and investments in Asia-Pacific. We are already taking many tangible actions in support of that commitment.

For example, the United States is adding to the capacity of our ground forces in the Pacific after Iraq and as we draw down from Afghanistan. The 1<sup>st</sup> and 3<sup>rd</sup> Marine Expeditionary Force and the Army's 25<sup>th</sup> Infantry Division are all returning to their home stations in the Pacific theater. The United States Army is also designating 1<sup>st</sup> Corps as "regionally aligned" to the Asia-Pacific region.

In addition to our decision to forward base 60 percent of our naval assets in the Pacific by 2020, the U.S. Air Force has allocated 60 percent of its overseas-based forces to the Asia-Pacific – including tactical aircraft and bomber forces from the continental United States. The Air Force is focusing a similar percentage of its space and cyber capabilities on the region. These assets enable us to capitalize on the Air Force's inherent speed, range, and flexibility.

The United States military is not only shifting more of its assets to the Pacific – we are using these assets in new ways to enhance our posture and partnerships. For example, we are pushing forward with plans for innovative rotational deployments in the region. Last year, we noted at this forum that the U.S. Navy had committed to rotating up to four Littoral Combat Ships through Singapore. In recent weeks, the first of those ships, the USS Freedom, arrived to begin a busy schedule of regional maritime engagements. I look forward to visiting the ship tomorrow. Meanwhile, the second company-sized rotation of U.S. Marines recently arrived in Darwin to deepen cooperation with our treaty ally Australia and other regional partners. Eventually, 2,500 U.S. Marines will be deployed to Australia each year.

America's enduring commitment to peace and security in the Asia-Pacific region depends on sustaining the ability to deter aggression and operate effectively across all domains, including air, sea, land, space, and cyberspace.

Our five-year budget plan submitted to Congress this year put a premium on rapidly deployable, self-sustaining forces – such as submarines, long-range bombers, and carrier strike groups – that can project power over great distance and carry out a variety of missions. In the future, this region will see more of these capabilities as we prioritize deployments of our most advanced platforms to the Pacific, including the F-22 Raptor and F-35 Joint Strike Fighter deployments to Japan, and a fourth Virginia-class fast attack submarine forward deployed to Guam.

Even further over the horizon, we are investing in promising technologies and capabilities that will enhance our decisive military edge well into the future. For example, last month, for the first time ever, the U.S. Navy successfully launched an experimental remotely piloted aircraft from an aircraft carrier, ushering in a new era in naval aviation.

Having achieved a series of technological breakthroughs in directed energy, next year for the first time the U.S. Navy will deploy a solid-state laser aboard a ship, the USS Ponce. This capability provides an affordable answer to the costly problem of defending against asymmetric threats like missiles, swarming small boats, and remotely piloted aircraft.

Combined with new concepts, doctrine, and plans that integrate these new technologies and other game changing capabilities, we will ensure freedom of action throughout the region well into the future.

Our investments in Asia are not just about cutting-edge technology and platforms, they are also about cultivating deeper ties between our people and building a network of professional military personnel and security experts across the region.

We have prioritized investments in people, including:

- Expanding the size and scope of our exercises in PACOM, allocating over \$100 million in funding for joint exercises in the PACOM region;
- Setting aside new funding for defense education that will allow us to significantly increase the number of students who can attend the Asia-Pacific Center for Security Studies in Hawaii.
- These investments in people, technology, and capabilities are critical to our strategy and to the region's peace and security. Even more important, however, is America's continued investment in our alliances and partnerships, and the region's security architecture.

## **2. U.S. Bilateral Relationships**

Relationships, trust, and confidence are what matter most in the region. America's partners must have confidence in their bilateral ties and alliances with us and our commitments to them and the region, including our treaty alliances. These remain essential to our long-term vision of regional peace and stability.

That is why we have initiated processes with each of our treaty allies to define a new, forward-looking agenda based on enhancing security for our allies and partners, increasing the ability of militaries to work together seamlessly, and building their capacity to contribute to the region's security:

With Japan, we have agreed to review the Defense Guidelines that underpin our Alliance cooperation, and are making substantial progress in realigning our force posture and enhancing Alliance missile defense capabilities;

With the Republic of Korea, we are working to implement the Strategic Alliance 2015 and discussing a shared vision for a more globally-oriented Alliance out to 2030;

With Australia, we are expanding cooperation related to cyber security and space situational awareness. The U.S. and Australian Navies recently reached an agreement to deploy an Australian warship in a U.S. carrier strike group in the Western Pacific, giving our naval forces new practical experience operating together cooperatively and seamlessly;

With the Philippines we are discussing an increased rotational presence of U.S. forces and helping the Philippine armed forces to modernize and build greater maritime capacity; and

With Thailand, six months ago we announced our Joint Vision Statement, the first such bilateral document in over 50 years.

Our Allies are also working more closely together. In this vein we are encouraged by growing trilateral security cooperation between the U.S., Japan, and the Republic of Korea, as well as the U.S., Japan, and Australia. The United States is also looking at trilateral training opportunities such as jungle training between the U.S. and Thailand that could expand to incorporate the Republic of Korea. Similarly, the United States is working to build trilateral cooperation with Japan and India.

Complex security threats facing the United States and our allies – which go beyond traditional domains and borders – demand these new approaches to Alliance cooperation, and they also demand new and enhanced partnerships as well.

Here in Singapore I look forward to building on our practical collaboration under the U.S.-Singapore Strategic Framework Agreement, which has guided security cooperation not only in this region, but in the Gulf of Aden and Afghanistan as well.

With New Zealand, the signing of the Washington Declaration and associated policy changes have opened up new avenues for defense cooperation in areas such as maritime security cooperation, humanitarian assistance and disaster relief, and peacekeeping support. This week, in Guam, a New Zealand Navy ship is visiting a U.S. Naval facility – the first such visit in nearly 30 years.

With the Vietnamese, we are expanding our cooperation – as set forth in a new memorandum of understanding – in maritime security, training opportunities, search-and-rescue, peacekeeping, military medical exchanges, and humanitarian assistance and disaster relief.

In Malaysia, we are expanding maritime cooperation, including the first-ever visit of a U.S. aircraft carrier to Sabah.

In Burma, we are beginning targeted, carefully calibrated military-to-military engagement aimed at ensuring the military supports ongoing reforms, respects human rights, and a professional force accountable to the country's leadership.

The United States is also working to enhance our partners' capacity to provide for their own security and the security of the region. Ultimately, the United States' goal in the region is to encourage allies to work together to design the next generation of platforms. With our closest and most capable allies and partners, we are already working to jointly develop and deploy cutting-edge technologies to tackle emerging security challenges.

An important example of this cooperation is with India, one of the leaders in this broader Asia region, where we are moving beyond purely defense trade towards technology sharing and co-production.

The world's largest democracy, India's role as a stabilizing power is of growing importance with the increase of trade and transit between the Indian and Pacific Oceans. The United States considers India's efforts to enhance its military capabilities as a welcome contribution to security in the region.

Our vision for the Asia-Pacific region is an open and inclusive one. Along with India, other rising powers also have a special role to play in a future security order as they assume the responsibilities that come with

their growing stake in regional stability. To that end, a critical element of our long-term strategy in Asia is to seek to build strong relationships with rising powers – including India, Indonesia and China.

The United States and Indonesia – the world’s largest Muslim-majority nation – are building new habits of cooperation that reflect a shared vision for a peaceful and prosperous region. As a large, diverse, and democratic country, Indonesia has a key role in helping lead this region. The United States and Indonesia are working together on humanitarian assistance and disaster response preparedness, maritime security, international peacekeeping, and combating transnational threats.

Building a positive and constructive relationship with China is also an essential part of America’s rebalance to Asia. The United States welcomes and supports a prosperous and successful China that contributes to regional and global problem solving. To this end, the United States has consistently supported a role for China in regional and global economic and security institutions, such as the G20. We encourage our allies and partners to do the same.

The United States strongly supports the efforts made by the PRC and Taiwan in recent years to improve cross-Strait relations. We have an enduring interest in peace and stability in the Taiwan Strait. The United States remains firm in its adherence to a one-China policy based on the three joint U.S.-China communiques and the Taiwan Relations Act.

While the U.S. and China will have our differences – on human rights, Syria, and regional security issues in Asia – the key is for these differences to be addressed on the basis of a continuous and respectful dialogue. It also requires building trust and reducing the risk of miscalculation, particularly between our militaries.

President Obama and President Xi, who will soon meet for a summit in California, have both been clear that they seek a stronger military-to-military relationship. I am pleased that the dialogue between our armed forces is steadily improving. Over the course of the past year, positive developments include:

- We hosted then-Vice President Xi Jinping at the Pentagon, and later hosted China’s Minister of Defense;
- Secretary Panetta, General Dempsey and Admiral Locklear led delegations to China;
- The first ever Chinese observation of the US-Philippine Balikatan exercise;
- The first-ever joint counter-piracy exercise in the Gulf of Aden;
- The U.S. invitation for China to participate in RIMPAC, the Pacific’s largest multilateral Naval exercise;
- An agreement to co-host a Pacific Army Chiefs Conference with China for the first time;
- Later this year, I look forward to welcoming the Minister of Defense to the Pentagon.

While we are pleased to see this progress, it is important for both the United States and China to provide clarity and predictability about each other’s current and future strategic intentions.

Accordingly, China, the United States and all nations of the region have a responsibility to work together to ensure a vibrant regional security architecture that solves problems. America’s bilateral relationships and Alliances will continue to underpin the region’s security and prosperity, but multilateral institutions provide critical platforms and opportunities for countries to work together.

### **3. Toward a Regional Security Architecture**

The United States strongly supports a future security order where regional institutions move beyond aspiration to achieving real results, and evolve from talking about cooperation to achieving real, tangible solutions to shared problems, and a common framework for resolving differences. We are working toward a future where militaries can respond together rapidly and seamlessly to a range of contingencies, such as providing immediate humanitarian assistance and disaster relief.

ASEAN has set the stage for regional cooperation by developing a network of viable institutions. ASEAN nations play a critical role in this region’s security architecture, and will continue to do so. In addition to the

East Asian Summit and the ASEAN Regional Forum, the relatively new ASEAN Defense Ministers Meeting Plus (ADMM+) provides an important framework for nations in the region to pursue common security objectives.

...The United States supports Asian nations taking the lead in pushing their region towards greater cooperation... [o]ur relationships with ASEAN nations are critical, and ASEAN leaders extend great hospitality to members of my government every year.... I believe this first-ever U.S.-hosted meeting of ASEAN Defense Ministers will provide another opportunity for us to discuss a shared vision for a dynamic, peaceful, and secure future for the region.

This future can only be realized if we work together to create an environment where all can prosper and succeed, and where coercion and conflict are put aside in favor of open dialogue. This requires a continued commitment to certain foundational principles that have enabled this region's success for generations. These include free and open commerce; a just international order that emphasizes rights and responsibilities of nations and fidelity to the rule of law; open access, by all, to the domains of sea, air, space, and now, cyberspace; and the principle of resolving conflict without the use of force.

Threats to these principles are threats to peace and security in the 21<sup>st</sup> century. Unfortunately, some nations continue to dismiss these values and pursue a disruptive path – most notably, North Korea.

The United States has been committed to ensuring peace and stability on the Korean Peninsula for sixty years. That means deterring North Korean aggression and protecting our allies, and achieving the complete denuclearization of the Korean Peninsula. The United States will not stand by while North Korea seeks to develop a nuclear-armed missile that can target the United States.

The United States has been clear that we will take all necessary steps to protect our homeland and our allies from dangerous provocations, including significantly bolstering our missile defense throughout the Pacific. No country should conduct “business as usual” with a North Korea that threatens its neighbors. We are working closely with our ROK and Japanese allies to strengthen our posture and ability to respond to threats from North Korea. The prospects for a peaceful resolution also will require close U.S. coordination with China.

Beyond the peninsula, the United States also remains concerned over the potential for dangerous miscalculations or crises posed by numerous competing territorial claims in the region.

The United States has been clear that we do not take a position on the question of sovereignty in these cases. That does not mean, however, that we do not have an interest in how these disputes are addressed and settled. The United States stands firmly against any coercive attempts to alter the status quo. We strongly believe that incidents and disputes should be settled in a manner that maintains peace and security, adheres to international law, and protects unimpeded lawful commerce, as well as freedom of navigation and overflight.

In the South China Sea, the United States continues to call on all claimants to exercise restraint as they publicly pledged in 2002, and to seek peaceful means to resolve these incidents. In that regard, we support the recent agreement between China and ASEAN to establish crisis hotlines to help manage maritime incidents. The U.S. also welcomes efforts to start talks on a Code of Conduct for the South China Sea. We encourage claimants to explore all peaceful means of settling their territorial disputes and the use of the dispute adjudication resolution mechanisms provided by the Law of the Sea Convention. Such efforts should not hinder progress towards developing a binding Code of Conduct.

Even as we seek to uphold principles in well-established areas, we must also recognize the need for common rules of the road in new domains.

The U.S. and all nations in the region have many areas of common interest and concern in cyberspace, where the threats to our economic security, businesses and industrial base are increasing. In response, the United States is increasing investment in cyber security and we are deepening cyber cooperation with Allies in the region and across the globe. Next week I will attend a meeting of NATO Defense Ministers devoted to cyber issues.

We are also clear-eyed about the challenges in cyber. The United States has expressed our concerns about the growing threat of cyber intrusions, some of which appear to be tied to the Chinese government and military. As the world's two largest economies, the U.S. and China have many areas of common interest and concern,

and the establishment of a cyber working group is a positive step in fostering U.S.-China dialogue on cyber. We are determined to work more vigorously with China and other partners to establish international norms of responsible behavior in cyberspace.

The United States and its Asian-Pacific allies and partners are far more likely to be able to live peacefully and prosperously in a world where we are bound together by strong economic ties, mutual security interests and respect for rules, norms, and the institutions that underpin them.

### **Secretary Hagel's Summary in April 2014**

Roughly a year after that speech, Secretary Hagel did provide further details about the links between China and U.S. force plans and strategy in a speech to the PLA National Defense University on April 8, 2014. Once again, however, he emphasized the need for cooperation over competition:<sup>957</sup>

Today, China's status as a major power is already solidified, built on its growing economic ties across the globe, and particularly across the Asia-Pacific region. Last year, the trade in goods and services between the United States and China exceeded \$500 billion. Trade between ASEAN members and China exceeded \$400 billion last year. And [one-third of global trade] travels the South China Sea.

China's tremendous growth, coupled with the continued dynamism of the Asia-Pacific and America's increasing engagement in the region, offers an historic and strategic opportunity for all nations. As our economic interdependence grows, we have an opportunity to expand the prosperity this region has enjoyed for decades.

To preserve the stable regional security environment that has enabled this historic economic expansion, the United States and China have a very big responsibility to address new, enduring regional security challenges alongside all the partners of the Asia-Pacific. We face North Korea's continued dangerous provocations, its nuclear program, and its missile tests; ongoing land and maritime disputes; threats arising from climate change, natural disasters, and pandemic disease; the proliferation of dangerous weapons; and the growing threat of disruption in space and cyberspace.

The Asia-Pacific region is the most militarized in the world, and any one of these challenges could lead to a conflict, a deadly conflict. And as the PLA modernizes its capabilities and expands its presence in Asia and beyond, American and Chinese forces will be drawn into closer proximity, which increases the risks of an incident, an accident, or a miscalculation. But this reality also presents new opportunities for cooperation.

All of us want a future of peace and stability for this region, and the costs of conflict will rise as economic interdependence grows. But the high cost of conflict will not make peace and stability inevitable. History has made that very clear. So we must work together, and in partnership with all the nations of this region, we must work together to develop and build upon what President Xi and President Obama have called a "new model" of relations.

This model seeks to seize opportunities for cooperation between the U.S. and China, but also to enhance peace and security throughout the region. It seeks to manage competition, but avoid the traps of rivalry. And good China-U.S. relations will not come at the expense of our relations with others in the region or elsewhere, nor should it, for China or for the United States.

Realizing this vision will require continued commitment, effort, leadership, courage, and some new thinking for both the United States and China across all dimensions of our relationship, but especially between our militaries. That is what I would like to speak to you about today. In particular, I'd like to address how we can develop a "new model" of military-to-military relations that General Chang and I announced this morning.

Doing so will require a shared understanding, an understanding of the regional security order that we seek and the responsibilities we all have to uphold it. It will require bold leadership that seeks to deepen practical cooperation in areas of shared interest, while constructively managing differences through open dialogue, transparency, and candor.

In the spirit of openness and candor, I'd like to describe to you – the future leaders, you, the future leaders of the PLA – America's intentions.

Here in the Asia-Pacific and around the world, the United States believes in maintaining a stable, rules-based order built on free and open access to sea lanes and air space, and now, cyberspace; liberal trade and economic policies that foster widely-shared prosperity for all people; halting the proliferation of dangerous and destabilizing weapons of mass destruction; and clear, predictable, consistent, and peaceful methods of resolving disputes consistent with international law.

Since the Second World War, American and Asian investment in this rules-based order has produced extraordinary results, including here in China. For our part, the United States has helped to provide access to global markets, technology, and capital; underwritten the free flow of energy and natural resources through open seas; and maintained alliances that have helped keep the peace. We haven't done it alone. We've done it with partners.

America's rebalancing to the Asia-Pacific is about ensuring that America's presence and engagement – including our relationship with China – keeps pace with the Asia-Pacific's rapidly evolving economic, diplomatic, and security environment.

The rebalance also reaffirms America's longstanding bonds of history, commerce, and friendship throughout this region. This includes commitments to our treaty allies – Japan, Korea, Australia, Thailand, and the Philippines. And it includes our deepening ties with members of ASEAN. That is not – must not be, nor will be – at the exclusion of strengthening our relationship with China. That is why I just visited Japan, one of America's closest allies, and last week hosted an ASEAN defense minister's forum in the United States, the first time we've ever done so. In both settings, I not only emphasized America's interest in continuing to build a lasting and constructive relationship with China, I encouraged all of our allies, all of our allies and partners to build long, consistent, productive relationships with China.

All nations have the responsibility to pursue common interests with their neighbors and to settle disputes peacefully in accordance with international law and recognized norms. But as a nation's power and prosperity grows, so do its responsibilities. And whether the 21st century is one marked by progress, security, and prosperity will depend greatly on how China and other leading Asian Pacific powers meet their responsibilities to uphold a rules-based order.

Disputes in the South China and East China Seas must be resolved through international norms and laws. We must trust in those laws and those norms. The United States has been clear about the East and South China Sea disputes. We do not take a position on sovereignty claims, but we expect these disputes to be managed and resolved peacefully and diplomatically, and oppose the use of force or coercion. And our commitment to allies in the region is unwavering.

Great powers must resolve their disputes peacefully and responsibly. Strengthening the peace and avoiding conflict requires leadership. It requires courage. It requires understanding. It requires reaching out. And it requires cooperation. It also requires a careful management of differences, all of which are important parts of President Xi and President Obama's vision for China-U.S. relations.

Today, I had the opportunity to engage in productive discussions with General Chang. As I mentioned earlier, we spent most of the morning together. We spent a good part of the morning talking about our military-to-military relationship, how we can support the vision of President Xi and President Obama. We discussed the responsibility we have to reassure each other – and to reassure other nations throughout this region – reassure them about our capabilities and our intentions, because that is how we build trust.

We also discussed the need to take a long-term perspective, because both of our nations are, and will remain, Pacific powers, great powers. And in order to deepen mutual understanding, we cannot shy away from addressing difficult issues. We must deal straight up, honestly, directly with each other in confronting disagreements and difficult issues.

With these ideas in mind, I believe our “new model” of military-to-military relations should proceed on three tracks: first, maintaining sustained and substantive dialogue; second, forging concrete, practical cooperation where our interests converge; and, third, working to manage competition and differences through openness and communications.

The foundation for our military-to-military cooperation must be a sustained and substantive dialogue. The engine for this dialogue has been our high-level exchanges. We must continue and increase those exchanges. This in particular has been an area of notable progress.



Last year, China hosted General Dempsey, our senior military officer and Chairman of the Joint Chiefs, as well as our Air Force Chief of Staff and Vice Chief of Naval Operations. I was honored to host General Chang at the Pentagon last year. We also hosted Admiral Wu Shengli, your chief of naval operations.

You recently hosted General Odierno, our Army Chief of Staff. Later this month, our Chief of Naval Operations, Admiral Greenert, will visit China. And, next month, General Dempsey will host his counterpart in Washington, General Fang, for another exchange.

More bilateral exchanges and visits are planned, and earlier today General Chang and I agreed on two important new mechanisms: We will establish a high-level Asia-Pacific security dialogue, and we will create an Army-to-Army dialogue. This will deepen substantive military discussions and institutional understanding.

When they are substantive, these discussions are invaluable. They're invaluable because they help identify areas where we can and should pursue concrete, practical cooperation – the second track of our military-to-military relations, which is vitally important.

Already, we have identified non-traditional security missions as areas of clear mutual interests, including counter-piracy, humanitarian assistance and disaster relief, military medicine, and maritime safety. One example of our practical cooperation is these areas where we can do more, and specifically annual Disaster Management Exchanges held now between our militaries, and with representatives of the United States Federal Emergency Management Agency. Last November's exchange, held in Hawaii, included a first-ever exercise involving PLA troops on U.S. soil.

We are set to deepen this practical cooperation. In addition to welcoming China to this year's RIMPAC exercise, today I invited the PLA to participate in a military medical cooperation activity that will take place afterwards.

By building trust where we have common interests, practical cooperation and sustained dialogue will help us work through disagreements and more effectively manage competition, which is the third track of our military-to-military engagement.

Managing the competitive aspects of our relationship requires us to be more candid, more open, more transparent about our capabilities, our intentions, and, again, our disagreements, even on the most sensitive subjects. This openness is not only for our mutual benefit. It provides assurances to an increasingly anxious region unsure of our intentions.

The United States has taken significant steps to be more open with China about our capabilities, intentions, and disagreements. And we will continue to welcome initiatives by China to do the same, particularly as China undertakes significant military modernization efforts.

During my tour yesterday of the Liaoning aircraft carrier, I heard directly from the ship's sailors how important open military-to-military communication is. Last December, the Liaoning commander, Senior Captain Zhang Zheng, helped to avoid a near-catastrophe in which U.S. and Chinese vessels avoided a collision by only 46 yards. It turns out that, only three months before that incident, Senior Captain Zhang had accompanied Admiral Wu on a visit to the United States. When Senior Captain Zhang was confronted with a moment of crisis, his effort to de-escalate the situation was informed by having met members of the U.S. Navy and having developed an understanding of the U.S. Navy's intentions and operating procedures.

Greater openness has also enabled recent progress in establishing a notification mechanism for major military activities, and it will help us to expand the content of these notifications as we build greater trust.

Openness and two-way communication is especially important in the area of strategic and emerging capabilities, and in managing regional security challenges. It is why we seek to resume a U.S.-China nuclear policy and strategy dialogue. It is also why, through our Cyber Working Group, the United States has been forthright in our concerns about Chinese use of networks to perpetrate commercial espionage and intellectual property theft. We've also made efforts to be more open about our cyber capabilities, including our approach of restraint.

Those efforts recently took a major step forward when the Department of Defense, for the first time ever, provided to representatives of the Chinese government a briefing on DoD's doctrine governing the use of its

cyber capabilities. We've urged China to do the same. It's in both of our interests to continue to follow this path.

We've asked China to work more closely with the United States and regional partners on another shared challenge where we have had some disagreement, responding to the dangerous destabilizing behavior of North Korea. In my meetings with Asia-Pacific leaders throughout this visit, we've discussed the threat North Korea poses to America, its allies, and to regional stability. The regime's nuclear program and its recent missile launches in violation of UN Security Council resolutions pose a continued and stark challenge and threat to the United States homeland.

America will continue to respond to North Korea's actions by reinforcing our allies and increasing our deterrence, including through my announcement this week that we will deploy two additional ballistic missile defense ships to Japan. This builds on other steps to bolster regional missile defense, including building a second radar site in Japan and expanding our ground-based interceptors in our country, in Alaska.

We look to China to play a constructive role in meeting this challenge, to help us, partner, cooperate with us, because of China's interests, its status as a leading power in Asia and the world, and because its largest trading partners are the nations being threatened by North Korea.

Continuing to support a regime that engages in these provocative and dangerous actions – and oppresses its own people – will only hurt China's international standing in this region. Instead, the United States and China, along with other nations in this region, must increase our cooperation to address the North Korean threat.

As we work through differences and find areas of common interest, my hope is that we heed what Harry Truman, a great American president, said many years ago. And he said this: "We do not believe that there are blind tides of history which sweep men one way or another" – because people "of courage and vision can ... determine their own destiny."

The United States and China can and will determine their own destiny. They must marshal that courage and vision that President Truman talked about. We must determine our own destiny, our own way together. That is our shared responsibility.

Each of you, in this way, will help shape our future and our countries' destinies. Each of you will be a part of this conversation and the molding and the shaping of where we all take the world. One by one – captain-to-captain, ensign-to-ensign, general-to-general, admiral-to-admiral – we must all do our part to build greater trust, confidence, and cooperation between our two militaries, our two countries, and among all the countries of the region of the world.

### **"Rebalancing" in 2015**

U.S. policy did, however, gradually focus more on China's emergence as a major regional power over time. Some of the changing views of Secretary of Defense Ashton Carter on the U.S. force posture in Asia and U.S. strategy in dealing with China have already been discussed in Chapter One. Secretary Carter provided the following additional views in a speech to the Arizona State University McCain Institute on April 6, 2015:<sup>958</sup>

So as Secretary of Defense, I am personally committed to overseeing the next phase of our rebalance, which will deepen and diversify our engagement in the region.

First, we will continue to invest in future capabilities that will be especially relevant to the Asia-Pacific's complex and dynamic security environment. These include high-end capabilities, such as a new, long-range stealth bomber and a new, long-range anti-ship cruise missile – just to name two...and areas like rapid runway repair, which may seem mundane, but will help ensure that U.S. forces in the region can survive in a crisis. We're also working on new weapons like a railgun, which uses electromagnetic forces rather than high explosives to fire rounds at much higher speeds, lower cost, and with greater effectiveness. And we're developing new space, electronic warfare, and other advanced capabilities, including some surprising ones.

Next, we are now fielding in numbers key capabilities we have developed over the past decade – capabilities that are suited for the Asia-Pacific now and for years to come. We've sent the latest Virginia-class submarine

and the Navy's P-8 surveillance aircraft. We're deploying our most advanced fighters in the region – the F-22 and the F-35 Joint Strike Fighter – as well as our long-range B-2 and B-52 bombers. And given the region's growing missile threat, we're forward deploying two additional Aegis missile defense-equipped ships. We'll also continue to push our most advanced technology to the Pacific, including, for example, our newest stealth destroyer, the Zumwalt.

And we're finding new ways to use existing weapons systems. For example, we've adapted the Tomahawk missile, best known for use against fixed land-based targets back in the 1991 Gulf War, so it can be used against moving targets in a maritime environment – which is something we think about a lot in the Asia-Pacific.

Third, we're adapting our overall defense posture in the region to be geographically distributed, operationally resilient, and politically sustainable. There is no more concrete example than some of our construction underway around the Asia-Pacific. For example, in Japan, Korea, and Guam, we're in the middle of four of the largest military construction projects since the end of the Cold War... and, by the way, our allies in Japan and Korea are stepping up to pay their fair share of the bill for that construction.

We're also being smarter about how we manage our personnel and platforms in the region. We're shifting Marines from a concentrated presence on Okinawa to Australia, Hawaii, Guam, and mainland Japan. We've established new agreements to rotate forces to the Philippines and Australia, where our Marines' fourth rotation is about to begin. And in June, the Army will deploy an Army Brigade Combat Team on its first rotation to Korea – where I'll be in just a few days...providing a higher readiness force on the Korean peninsula. We're also rotating air and naval assets throughout the region.

In addition, we've maintained out there an increased tempo of training and exercises. For example, the Army's Pacific Pathways program has enhanced its training with a number of partners in the region. And, as we speak, Operation Foal Eagle is underway in Korea, which includes thousands of U.S. and Korean personnel.

Everything I just discussed – the investments, the capabilities, and the posture – helps us with our fourth line of effort: which is reinforcing the partnerships and alliances that are the bedrock of everything we do in the Asia-Pacific.

That begins with constantly refreshing our long-standing alliances – as we have done since their origin back in the Cold War – to reflect the new strategic environment. When I get to Japan later this week, we will be working to complete a new set of Guidelines on Defense Cooperation – which is the foundational guidance for this important alliance – to allow us to take our cooperation to a whole new level and into new areas like space and cyberspace. In Korea, I'll be working with my counterpart to reinforce deterrence and improve capabilities on the Peninsula to counteract an increasingly dangerous and provocative North Korea.

To expand the reach of our alliances, we are building unprecedented “trilateral” cooperation – in other words, we're networking our relationships. With Japan and Australia, for example, we're cooperating to strengthen maritime security in Southeast Asia and explore defense technology cooperation. And with Japan and Korea, we're building on a first-of-its-kind information-sharing arrangement that will help us collectively deter and respond to crises.

We're also establishing new partnerships – brand new partnerships – while deepening others...especially in South and Southeast Asia. I mentioned our growing relationship with Vietnam earlier, but this June I will also return to Singapore for the annual Shangri-La Dialogue, and travel on to Southeast Asia and India.

The U.S.-India relationship is one of our most exciting and dynamic partnerships. In January, we agreed to an update of our bilateral Defense Framework...which is the first update in ten years with this country of growing importance. It will open up new ways to expand the U.S.-India relationship, such as maritime security, and new opportunities to cooperate on high-end technologies, for example, jet engines and aircraft carrier design.

In Southeast Asia, we are enhancing the capabilities of our partners as they step up and play leading roles on a range of challenges. That's why we are partnering with the Philippines, Vietnam, Malaysia, and Indonesia to provide them with additional assets for maritime security and disaster relief operations. And why we're helping Singapore develop a regional information sharing and disaster relief hub.

Okay, so what about China? How does it fit into this strategy? Some people would have you believe that China will displace America in the Asia-Pacific or that its economic growth will somehow squeeze out opportunities for young people like you. But I reject the zero-sum thinking that China's gain is our loss because there is another scenario in which everyone wins...and it is a continuation of the decades of peace and stability anchored by a strong American role, in which all Asia-Pacific countries continue to rise and prosper, including China. This is the scenario we seek in the ongoing rebalance.

That said, we and many other countries are deeply concerned about some of the activities China is undertaking. Its opaque defense budget...its actions in cyberspace...and its behavior in places like the South and East China Seas raise a number of serious questions. These are concerns we raise with our Chinese counterparts on a regular basis.

The U.S. and China are not allies, but we don't have to be adversaries. A strong, constructive U.S.-China relationship is essential for global security and prosperity. Our relationship will be complex as we continue to both compete and cooperate. But we also believe there are opportunities to improve understanding and to reduce risk with China, which is why President Obama and President Xi announced two historic confidence-building agreements this past fall. We're working to complete another measure this year that aims to prevent dangerous air-to-air encounters, and there are a wide range of other possible confidence-building measures that I will be strongly working on.

Assuring peace, prosperity, and progress as countries across the Asia-Pacific continue to rise will be your generation's central strategic challenge. The rebalance is helping create the right incentives and conditions to encourage China to play by the rules of a principled international order...one that has helped China – as much as any other nation – rise and prosper.

...Over the next century, no region will matter more for American security and also for American prosperity. That's the world we will be living in. And, thanks to President Obama's leadership, the United States is poised economically, diplomatically, and militarily to embrace all of its opportunities.

## **The FY2016 Shift to Global Rebalancing and a Focus on Budget and Force Cuts**

The US initially announced that it would shift its Asian naval presence from 50% to 60% of its total fleet by 2020, but later talked about shifting 5% of its fleet and air forces. At one point, the US Air Force planned to allocate 60% of its overseas-based forces to the region.<sup>959</sup> While it talked about focusing on the Air-Sea Battle concept, that was before developments in the Ukraine and the growing crisis in the Middle East. The USAF, Navy, and Marine Corps faced similar challenges in modernizing and maintaining its combat air fleet, such as procuring the F-35 fighters, funding and deploying the Long-Range Strike Bomber (LRSB), and in modernizing key “enablers” such as an airborne refueler.

At the same time, both such plans and U.S. policy statements relating to a U.S. ‘rebalancing to Asia’ were sharply affected by rising pressures on the U.S. federal budget and defense spending. From 2012 onwards, the US made cuts in defense spending plans, force plans, and military readiness and exercise activities. Every year through the FY2017 budget cycle, it faced new uncertainties over its future defense plans because of Sequestration and a Budget Control Act that Congress passed on August 3, 2011 – some seven months after the Department of Defense announced its new strategic guidance.

Every U.S. defense budget submission to Congress from FY2013 to FY2017 remained well below the future year defense plan projected in the FY2012 budget, although the U.S. kept its lead over all other nations in total military spending. At the same time, US force planners had to adapt to steadily rising threats from non-state actors outside Asia – such as the Islamic State – and increasingly tense relations with Russia.

The trends involved are complex. Total U.S. defense spending reached a recent peak of \$691 billion in FY2010, and then dropped to \$582.7 billion in FY2017 – a drop of some 16%. Much of this drop, however, came from cuts in wartime spending on Iraq and Afghanistan as the U.S. removed its combat presence in both countries. The actual cut in the “baseline” budget that paid for the peacetime strength of total U.S. forces only dropped from \$528 billion in FY2010 to \$523.6 billion in FY2017.<sup>960</sup>

The pressures on U.S. spending did ease slightly after FY2013, however, due to continuing spending on Overseas Contingency Operations (OCO) spending, and shifts in the Bipartisan Budget Acts of 2013 and 2015 that raised the budget caps on defense spending. The President’s FY2017 defense budget request was sent to Congress in February 2016 and proposed to gradually raise total spending from \$582.7 billion in FY2017 to \$585.2 billion in FY2021. However, this budget request only sought baseline spending of \$523.9 billion for FY2017 and the projected \$585.2 billion in FY2021 did not call for any significant increases in U.S. forces.

This easing of the cuts in U.S. spending was not driven by rebalancing to Asia, and U.S. strategy changed to reflect the fact that the U.S. had to react to events in Ukraine and a steadily deteriorating situation in the Middle East. As a result, the strategy presented in the President’s FY2016 defense budget submission to the U.S. Congress no longer focused on “rebalancing to Asia.” Instead, the documents supporting the budget request made it clear that the U.S. would rebalance its force posture on a *global* rather than *Asian* basis.<sup>961</sup>

### **The Key Portions of the FY2017 Budget Guidance**

This shift to global rebalancing was reinforced in FY2017 Defense Budget Overview, which repeated the FY2016 description of U.S. strategy almost word for word.<sup>962</sup>

The Department must balance the Joint Force and adapt to changes in the security environment. The Secretary of Defense has directed the Department to prioritize the challenges presented by ongoing or possible future aggression from China, Russia, Iran, and North Korea, as well as maintaining the capabilities to conduct ongoing counter-terrorism operations. These five challenges are informative to balancing the Joint Force.

#### **Balancing for broad spectrum of conflict.**

Future conflicts could range from hybrid contingencies against state or non-state actors to high-end conflicts against states armed with weapons of mass destruction and/or advanced anti-access and area-denial capabilities. To address this diverse range of challenges, the U.S. military will continue to invest in a broad range of capabilities to support the full spectrum of possible operations. While preserving hard-won expertise in counterinsurgency and stability operations, the Joint Force must also be prepared to battle sophisticated adversaries employing advanced warfighting capabilities, especially space and cyber. The Department will sustain robust investments in science, technology, research, and development in areas most critical to meeting future challenges or where there is greatest potential for game-changing advances.

#### **Balancing presence and sustaining posture abroad to protect U.S. national security interests.**

In meeting the defense priorities of the nation, the Department will continue to ensure the right balance is achieved to sustain a global posture that deters aggression and safeguards the nation’s allies. The Department will continue its contributions to the Asia-Pacific rebalance, while remaining committed to the security of allies and partners in the Middle East. The Department will continue to work with allies and partners in Europe to promote regional security, Euro-Atlantic integration, enhanced military capability, and enhanced interoperability. Across the globe, DoD will ensure that the Joint Force is properly manned, trained, and equipped in the event of a crisis.

#### **Balancing capability, capacity, and readiness within the Joint Force.**

The Department's greatest responsibility is to win the nation's wars. The Department will continue to invest in the most capable, ready, and efficient force that can project power globally for full-spectrum operations against a range of threats. The FY 2017 budget request supports this aim in the following ways:

- Sustaining a world-class Army capable of conducting the full range of operations on land, including prompt and sustained land combat, by maintaining a force structure that it can train, equip, and keep ready. The Department will maintain a balance of capability, capacity, and readiness across the Army's total force, including the Active, Guard, and Reserve components. The active component of the Army is reducing its planned post-war end strength from 490,000 to 450,000 personnel by the end of FY 2018. The Army National Guard and the Army Reserve are reducing their planned force structure to 335,000 and 195,000 soldiers, respectively, by the end of FY 2017. The Army continues to move toward stabilizing its total force at 980,000.
- Providing stability in Navy shipbuilding while buttressing aviation and weapons to address emerging challenges. The FY 2017 budget request supports the construction funding for 38 ships across the FYDP and supports steady production of destroyers and submarines; ten destroyers and nine submarines are constructed through FY 2021 to support a fleet size of 308 ships. The FYDP shipbuilding construction program includes funding for the Ohio Replacement Program Advanced Procurement beginning in FY 2017; one LHA amphibious assault ship replacement; four T-AO(X) fleet oilers, and continued funding for the refueling and overhaul of the USS GEORGE WASHINGTON (CVN 73). The FY 2017 budget request also funds two littoral combat ships (LCS) and continues to finance the detailed design and construction of the second Ford Class carrier and provides for the procurement of carrier-based aircraft to address a looming strike-fighter shortage in the 2020s, and it bolsters funding for some of the Navy's most capable weapons to provide a powerful deterrent to potential aggressors.
- Resourcing the Marine Corps to be a force-in-readiness, immediately deployable to respond to crises and support contingencies. This budget provides a Marine Corps with a 182,000 active duty end strength, and capable of expeditionary operations across all warfighting functions. The Marine Corps is actively modernizing and preparing for future challenges, as demonstrated by its Joint Strike Fighter program achieving initial operating capability this year, and is increasing this momentum with new technologies to enable its mission set.
- Maintaining an Air Force with global power projection capabilities and modernizing next generation Air Force combat equipment — to include fighters, bombers, and munitions — particularly against increasingly sophisticated air defense systems, while sustaining the health of the combat fleet. To make resources available for these programs and preserve investments in critical capabilities, the Air Force will reduce capacity in some single-role aviation platforms by the end of the FYDP.
- Achieving the right balance and integrated approach to warfighting readiness between the Active Component (AC) and the Reserve Component (RC), which is critical to the Department's overall efforts to size and shape the future Joint Force.
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end strength, and capable of expeditionary operations across all warfighting functions. The Marine Corps is actively modernizing and preparing for future challenges, as demonstrated by its Joint Strike Fighter program achieving initial operating capability this year, and is increasing this momentum with new technologies to enable its mission set.

- Maintaining an Air Force with global power projection capabilities and modernizing next generation Air Force combat equipment — to include fighters, bombers, and munitions — particularly against increasingly sophisticated air defense systems, while sustaining the health of the combat fleet. To make resources available for these programs and preserve investments in critical capabilities, the Air Force will reduce capacity in some single-role aviation platforms by the end of the FYDP.
- Achieving the right balance and integrated approach to warfighting readiness between the Active Component (AC) and the Reserve Component (RC), which is critical to the Department's overall efforts to size and shape the future Joint Force.

As the Joint Force maintains this critical balance to remain modern, capable, and ready — while reducing end strength — the Department is taking the following steps in the President's Budget submission to develop and protect key capability areas, including:

- Air/Sea: increasing the Joint Force's ability to counter advanced anti-access and area-denial capabilities by continuing to invest in fifth-generation fighters and long-range strike aircraft and munitions, survivable persistent surveillance, resilient architectures, and undersea warfare capabilities;
- Nuclear Deterrence: continuing to invest in modernizing the triad's essential nuclear delivery systems, to include the Ohio Class Submarine, command and control, and, in collaboration with the Department of Energy, nuclear weapons and supporting infrastructure;
- Space: moving toward more resilient systems and system architectures, and pursuing a multi-layered approach to deter attacks on space systems;
- Missile Defense: making targeted investments in defensive interceptors, discrimination capabilities, and sensors;
- Cyber: continuing to invest in new and expanded cyber capabilities and forces to operate and defend DoD's networks; enhance DoD's ability to conduct cyberspace operations; support military operations worldwide; and counter cyber-attacks against the United States;
- Precision Strike: procuring advanced air-to-surface weapons that will allow fighters and bombers to engage a wide range of targets, and a long-range anti-ship cruise missile that will improve the ability of U.S. aircraft to engage surface combatants in defended airspace;
- Intelligence, Surveillance, and Reconnaissance (ISR): continuing to invest in systems that are effective in highly contested environments, while sustaining capabilities appropriate for more permissive environments, in order to support global situational awareness, counter-terrorism operations, and other Combatant Command needs; and,
- Counter-Terror and Special Operations: improving the nation's ability to counter terrorist activity by maintaining current SOF end-strength and improving the efficacy of counter-terrorism operations. This requires the Department to budget and plan to sustain persistent, networked, distributed operations to defeat trans-regional terrorist networks, counter other emerging transnational threats, counter weapons of mass destruction, build the capacity of U.S. partners, and support conventional operations.

The Department also recognizes that the size of the force or the level of funding and investments alone cannot entirely reduce the risks the nation faces. The Department must also continue to evolve its thinking on its warfighting concepts and planning, toward developing a more diverse, adaptive, and less costly playbook of options for how the Joint Force should operate in the emerging security environment.

In addition to balancing Joint Force capability, capacity, and readiness, this budget supports the Department's continued efforts to rebalance internally, to prioritize resourcing for warfighting. This includes reducing the Department's major headquarters' operating budgets across the Department and reducing major headquarters staff by 25 percent in the Office of the Secretary of Defense and the Defense Agencies.

The DoD will remain committed to increasing productivity in defense acquisition. The Better Buying Power initiative seeks to achieve affordable programs by incentivizing productivity and innovation in industry and government, eliminating unproductive processes and bureaucracy, promoting effective competition, improving tradecraft in contracted acquisition of services, and improving the professionalism of the total acquisition workforce.

The Department can be better stewards of taxpayer dollars by eliminating excess infrastructure; it already has more infrastructure than needed, and the excess will increase as DoD reduces its end strength. The best way to eliminate unneeded infrastructure is through the Base Realignment and Closure (BRAC) process. Once again, Congress has denied the Department's request for a BRAC this year. Congress should approve the Department's request to authorize another BRAC round in 2019. Currently, each Military Department is expending much needed funds to maintain a surplus of facilities. A new round of BRAC will put about \$2 billion back in the operating forces by 2025.

These shifts in the U.S. approach to rebalancing still left many aspects of the future U. S. strategy and force posture in Asia unclear. The U.S. continued to face new and changing strategic priorities growing out of the Russian invasion of the Ukraine, the new war against Islamic extremism strategy, and the impact of past budget cuts as well as the emergence of China.

Nevertheless, the U.S. remains the world's largest military power. While any efforts to estimate and compare global military spending are uncertain, independent estimates by institutions like the Stockholm International Peace Research Institute (SIPRI) and International Institute for Strategic Studies (IISS) are almost certainly broadly correct in their broad estimates.

SIPRI estimated that U.S. defense spending (in current U.S. dollars) was \$464.7 billion in 2004 and \$596 billion in 2015. In contrast, Chinese defense spending was \$40.3 billion in 2004 and \$214.8 billion in 2015; Russian spending was \$20.9 billion in 2004 and \$66.4 billion in 2015. U.S. allies also funded major defense efforts: Britain spent \$54 billion in 2004 and \$55.5 billion in 2015, France spent \$53.1 billion in 2004 and \$50.9 billion in 2015, Germany spent \$38 billion in 2004 and \$39.4 billion in 2015, and Italy spent \$34.2 billion in 2004 and \$23.8 billion in 2015.<sup>963</sup>

The IISS estimate total U.S. defense spending as \$597.5 billion in 2015 versus \$145.8 billion for China, \$81.9 billion for Saudi Arabia, \$65.6 billion for Russia, \$56.2 billion for Britain, \$48.0 billion for India, \$46.8 billion for France, \$41.0 billion for Japan, \$36.7 billion for Germany, \$33.5 billion for South Korea, \$24.3 billion for Italy, \$24.3 billion for Brazil, \$22.8 billion for Australia, \$21.1 billion for Iraq, and \$18.6 billion for Israel.<sup>964</sup>

### ***Asian “Rebalancing” Still Matters***

Despite these policy shifts towards “global rebalancing,” and the uncertainties in some key aspects of U.S. force plans and deployments, several key aspects of Asian rebalancing remain a high priority. The strategy in the President's FY2017 budget request also states that:<sup>965</sup>

#### **Advancing the Rebalance to Asia and the Pacific**

The Budget supports the Administration's commitment to a comprehensive regional strategy in Asia and the Pacific that reinforces a rules-based order and advances security, prosperity, and human dignity across the region, as described in the highlights below. Recognizing that security in the Asia-Pacific region underpins regional and global prosperity, the Budget aligns resources and activities to strengthen U.S. alliances and partnerships with emerging powers, promote regional economic cooperation, and build a constructive relationship with China that simultaneously supports expanding practical cooperation on global issues while



candidly addressing differences. It also provides the necessary resources to implement the Trans-Pacific Partnership (TPP), a historic, high-standard trade agreement with 11 countries of the region that levels the playing field for American workers and American businesses. Through TPP, the United States will lead the way in revitalizing the open, rules-based economic system that will boost American exports while creating jobs at home by promoting strong labor, environmental, and intellectual property protections.

To promote universal and democratic values, the Budget provides support for educational and cultural exchanges and strengthens regional cooperation with organizations, such as the Asia-Pacific Economic Cooperation forum and the Association of Southeast Asian Nations. The Budget also provides resources and advances regional cooperation in counterterrorism, countering violent extremism, and nonproliferation.

In pursuit of security cooperation, the Budget enhances and modernizes U.S. defense relationships, posture, and capabilities with a focus on maritime security. DOD funding remains consistent with the priorities identified in the 2012 Defense Strategic Guidance and the 2014 Quadrennial Defense Review. DOD's most significant efforts to support the rebalance include implementing the Southeast Asia Maritime Security Initiative; increasing the number of ships assigned to the Pacific Fleet outside of U.S. territory by approximately 30 percent, which improves the Navy's ability to maintain a more regular and persistent maritime presence in the Pacific; rotating four Littoral Combat ships through the region through 2017; and deploying the first P-8 Poseidon maritime patrol aircraft off Singapore. DOD continues to develop its defense relationship with India through the Defense Technology and Trade Initiative, the Joint Working Group on Aircraft Carrier Technology Cooperation, and the Jet Engine Technology Joint Working Group.

Secretary of Defense Ash Carter also made it clear that the U.S. continued to focus on a stronger security network in the Asia-Pacific in his speech Shangri-La Dialogue on June 4, 2016.<sup>966</sup>

By doing so, our nations are making a choice for a principled and inclusive future, one as bright and miraculous as the recent past. A future where every country – no matter how big or small – is free to make its own political, economic, and military choices, free from coercion and intimidation. Where disputes are resolved peacefully; and the freedoms of navigation and overflight, guaranteed by international law, are respected. And where, as a result, every person and every nation has the opportunity to rise and prosper and win.

We all have an interest in realizing that future. And a responsibility to bring it about. Now, unlike elsewhere in the world, peace and stability in the Asia-Pacific has never been managed by a region-wide, formal structure comparable to NATO in Europe. That's made sense for this region, with its unique history, geography, and politics, and where bilateral relationships have long served as the bedrock of regional security.

And yet, as the region continues to change, and becomes more interconnected politically and economically, the region's militaries are also coming together in new ways. They're building connections for a common purpose: upholding the security and stability critical to a principled and prosperous future. And these connections are now helping our countries plan together, exercise and train together, and operate together, more effectively and efficiently than ever before.

Now, this growing Asia-Pacific security network includes but is more than some extension of existing alliances. It weaves everyone's relationships together – bilateral, trilateral, and multilateral – to help all of us do more, over greater distances, with greater economy of effort. It enables us to take coordinated action to respond to contingencies like humanitarian crises and disasters; to meet common challenges, such as terrorism; and to ensure the security of and equal access to the global and regional commons, including vital waterways. You can see this networked approach in our collective responses to Typhoon Haiyan in 2013 and the Nepal earthquake last year.

Most importantly, this is a principled security network. It is inclusive, since any nation and any military – no matter its capability, budget, or experience – can contribute. Everyone gets a voice, and no one is excluded, and hopefully, no one excludes themselves. And as this security network reflects the principles our countries have collectively promoted and upheld for decades, it will help us realize the principled future that many in the region have chosen, and are working together toward.

By expanding the reach of all and by responsibly sharing the security burden, this principled network represents the next wave in Asia-Pacific security.

And the United States is fully committed to this principled security network and to the Asia-Pacific's principled future. That's because this region, which is home to nearly half the world's population and nearly half of the global economy, remains the most consequential for America's own security and prosperity.

So even as the United States counters Russian aggression and coercion in Europe; as well as checks Iranian aggression and malign influence in the Middle East; and also accelerates ISIL's certain defeat, America's approach to the Asia-Pacific remains one of commitment, and strength, and inclusion.

Last Friday, I spoke with the newest class of American Navy and Marine Corps officers as they graduated from the U.S. Naval Academy. These are some of the finest young men and women America has to offer. And I explained to them that the United States has long and enduring diplomatic, economic, and security interests in the Asia-Pacific. And their role in it.

As a result, the United States has for decades contributed to the region's diplomatic, economic, and security affairs, including during the many other times when some wrongly predicted an impending American withdrawal from the Asia-Pacific.

In fact, decade after decade – in the 1970s, the 1980s, the 1990s, and the 2000s – we've heard that the United States would cede its role as the primary security provider in the Asia-Pacific. And indeed, decade after decade – day in, and day out – American soldiers, sailors, airmen, and Marines have worked here, most often with your nations, to help ensure this region's security and uphold a common set of principles for all our countries to follow...so that every nation and everyone in this region could rise and prosper.

That's been America's objective and America's practice for decades. Regardless of what else was going on at home or in other parts of the world – during Democratic and Republican administrations, in times of surplus and deficit, war and peace – the United States has remained economically, politically, and militarily engaged, as well as of course geographically located, in the Asia-Pacific. And as I told those new officers, they will be doing the same in the years ahead and over the course of their long careers.

That's because U.S. engagement in the Asia-Pacific is in America's interests. And the Congressional representation here today – including Chairman McCain, Senators Barrasso, Cotton, Ernst, Gardner, Graham, and Sullivan – demonstrates that America's commitment to the region – and the rebalance to the Asia-Pacific in particular – is not transient. It is enduring. And that's because the logic of, and the need for, and the value of American engagement in the Asia-Pacific is irrefutable. And it is proven over decades.

President Obama launched the rebalance to ensure the United States continued to approach this changing region with commitment, strength, and inclusion. Indeed, the rebalance is an affirmative investment in – and a U.S. Government-wide commitment to – the Asia-Pacific's principled future.

Through the rebalance, the United States has reenergized our diplomacy in the region. Just look at the recent months. The president hosted the first-ever U.S. ASEAN Summit at Sunnylands. President Obama made historic visits to Vietnam and Japan just last week, his tenth trip to the region. I'm now on my fifth trip to the region – and it won't be my last. And my colleague and friend John Brennan, our CIA Director, is also attending the Shangri-La Dialogue this weekend. Several of my Cabinet colleagues meanwhile will attend next week's U.S.-China Strategic and Economic Dialogue. Prime Minister Modi will be in Washington next week, and Prime Minister Lee, as I said, will visit the next month. In other words, this is a busy month in a busy year but one that is representative of America's increased attention and engagement in the region.

The United States is also strengthening economic ties with the region. For example, over the last seven years, U.S.-ASEAN trade has expanded by 55 percent. Since last year's Shangri-La Dialogue, we've completed negotiations on the important Trans-Pacific Partnership deal, or TPP, which will bind the United

States more closely together with 11 other economies, unlock economic opportunities for all of us, and guarantee a trade system of high standard.

And the Defense Department for our part is operationalizing its part of the rebalance, too – cementing it for the future. That means the United States will remain, for decades, the primary provider of regional security and a leading contributor to the region’s principled security network.

To do so, the Defense Department is continuing to send its best people – including some of those new Naval officers and Marines I spoke with last week – and also its most advanced capabilities to the Asia-Pacific. That includes F-22 and F-35 stealth fighter jets, P-8 Poseidon maritime patrol aircraft, continuous deployments of B-2 and B-52 bombers, and our newest surface warfare ships.

The Defense Department is also investing in new capabilities critical to the rebalance. We’re growing the number of surface ships and making each of them more capable, and we’re investing in Virginia-class submarines, new undersea drones, the new B-21 Long-Range Strike Bomber, as well as in areas like cyber, and electronic warfare, and space.

The Defense Department maintains its world-leading capabilities because the United States has made incomparable investments in it over decades. As a result, it will take decades or more for anyone to build the kind of military capability the United States possesses. This strength is not simply about dollar figures. We harness those dollars to America’s innovative and technological culture to develop revolutionary technologies. And that military edge is strengthened and honed in unrivaled and hard-earned operational experience over the past 15 years. No other military possesses this kind of skill and agility backed by this much experience.

And it’s reflective of a growing trend. Indeed, even as the United States will remain the most powerful military and main underwriter of security in the region for decades to come – and there should be no doubt about that – those growing bilateral relationships demonstrate that nations around the region are also committed to doing more to promote continued regional security and prosperity. That’s why the Asia-Pacific’s principled security network is growing.

And as the region changes and the rebalance is solidified, the United States is and will continue using its unique capabilities, experience, and influence to enhance the region’s security network – always contributing with commitment, strength, and inclusion.

While Secretary Carter stressed that the U.S. did not seek to exclude any given country, he also expressed concern regarding China’s behavior and encouraged Beijing to change its behavior.<sup>967</sup>

As we weave these bilateral, trilateral, and multilateral relationships together, it’s important to remember that this principled network is not aimed at any particular country: it is open and excludes no one. This means that as nations want to contribute to regional stability and security, they can work together with other nations in the network to do so.

The United States welcomes the emergence of a peaceful, stable, and prosperous China that plays a responsible role in the region’s principled security network. We know China’s inclusion makes for a stronger network and a more stable, secure, and prosperous region. In all of our interactions with our Chinese counterparts, the United States consistently encourages China to take actions that uphold – and do not undercut – the shared principles that have served so many in Asia-Pacific so well.

The region will be stronger, safer, and more prosperous when all countries are working toward a common vision in which shared principles are upheld, all countries enjoy equal treatment irrespective of their size or strength, and disputes are resolved peacefully and lawfully.

Unfortunately, there is growing anxiety in this region, and in this room, about China's activities on the seas, in cyberspace, and in the region's airspace. Indeed, in the South China Sea, China has taken some expansive and unprecedented actions that have generated concerns about China's strategic intentions.

And countries across the region have been taking action and voicing concerns publicly and privately, at the highest levels, in regional meetings, and global fora. As a result, China's actions in the South China Sea are isolating it, at a time when the entire region is coming together and networking. Unfortunately, if these actions continue, China could end up erecting a Great Wall of self-isolation.

Now, the United States is not a claimant in the current disputes in the South China Sea. And we do not take a position on which claimant has the superior sovereignty claim over the disputed land features.

But, the United States will stand with regional partners to uphold core principles, like freedom of navigation and overflight, and the peaceful resolution of disputes through legal means and in accordance with international law.

As I affirmed here last year and America's Freedom of Navigation Operations in the South China Sea have demonstrated, the United States will continue to fly, sail, and operate wherever international law allows, so that everyone in the region can do the same.

And the United States will work with all Asia-Pacific nations to ensure these core principles apply just as equally in the vital South China Sea as they do everywhere else. Because only when everyone plays by the same rules can we avoid the mistakes of the past, like when countries challenged one another in contests of strength and will, with disastrous consequences for the region.

The United States views the upcoming ruling by the UN Arbitral Tribunal on the South China Sea as an opportunity for China and the rest of the region to recommit to a principled future, to renewed diplomacy, and to lowering tensions, rather than raising them. All of us should come together to ensure that this opportunity is realized.

The United States remains committed to working with China to ensure a principled future. Our two countries have a long-standing military-to-military relationship. We recently completed two confidence-building measures, one on maritime rules of behavior and another on crisis communications. The regular U.S.-China Military Maritime Consultative Agreement talks were just held in Hawaii. And China will also be back at RIMPAC this year. In fact, the United States and China plan to sail together from Guam to Hawaii for RIMPAC, conducting several exercise events along the way, including an event to practice search-and-rescue.

And the United States wants to strengthen those ties. I plan, at President Xi's invitation, to discuss this deeper cooperation as well as the concerns I've outlined here, when I travel to Beijing later this year. America wants to expand military-to-military agreements with China to focus not only on risk reduction, but also on practical cooperation. Our two militaries can all also work together, bilaterally or as part of the principled security network, to meet a number of challenges – like terrorism and piracy – in the Asia-Pacific and around the world.

After all, both our nations share so many interests. And we face many of the same global challenges. The United States expects and welcomes a China that plays a responsible role in world affairs commensurate with its wealth and potential influence. Together in a network represented by all the delegates in this room, we all can do so much. And the United States wants to work with China to find solutions for the global problems we're both facing and seize the many opportunities before us.

By networking security together, the United States, China, and all others in the region can continue to ensure stability and prosperity in a dynamic region. We can become more interconnected; we can develop greater interoperability; we can innovate together on shared capabilities. And we can continue to ensure that this region's historic change becomes historic progress...giving everyone and every nation in the Asia-Pacific the opportunity to rise and prosper and win.

Through a principled security network, we can all meet the challenges we're facing together – whether it's Russia's worrying actions, North Korea's nuclear and missile provocations, the threat posed by extremist groups, or the growing strategic impact of climate change. These challenges and others are real for all of us who live in the Asia-Pacific. But so are the opportunities: for nations, for militaries, and for the people of the Asia-Pacific. Across the region, there are economic miracles still to occur, military relationships still to strengthen, and populations still to educate, empower, and enrich.

To realize these opportunities, the Asia-Pacific will need continued stability and security. It is said of this region, that security is like oxygen. When you have enough of it, you pay no attention to it. But when you don't have enough, you can think of nothing else.

For many years, the United States – along with its allies and partners – helped provide oxygen in this it. But by networking regional security together, we can all contribute more, and in different ways. In the years ahead, as we continue to realize this brighter, principled future, providing the region's oxygen will more and more become a networked effort.

Through the region's principled security network, all of us will provide that oxygen – Americans and Filipinos, Chinese and Indians, Singaporeans and Japanese, Australians and Malaysians, Koreans and Kiwis, and many, many more. Together, we will provide the security that enables millions upon millions of people all around the Asia-Pacific to continue to rise and prosper, to be safe, to raise their children, dream their dreams, and live lives that are full.

### **U.S. Strategy and India**

This U.S. effort to expand its security relationships with Asian partners led to new agreements with India and Vietnam. The shifts in U.S. relations with India were particularly important. Once it achieved independence from the United Kingdom in 1948, India's diplomatic posture was defined by a determination to remain diplomatically independent and ties to global power politics and other states. This posture was frequently termed “strategic autonomy”<sup>968</sup> and was exemplified by the fact that India was the driving force behind the creation of the Non-Aligned Movement in 1961 during the height of the Cold War. U.S.-India relations were also affected by the close relationship the U.S. often had with India's rival Pakistan.

The rise of China, however, has led India to change the focus of its strategy as well as the U.S., as has the Sino-Indian War of 1962 and a long simmering border dispute. It has not given up on non-alignment, but it has shifted its posture to some degree. One sign was a civil-nuclear agreement between the U.S. and India in 2005, although India continued to limit its relations with the U.S.

It also shifted further after Narendra Modi of the Bharatiya Janata Party (BJP) became Prime Minister following an election in 2014. The BJP is a more nationalistic and right-wing party than the Indian National Congress that had previously dominated Indian politics. The BJP also had far less historical commitment to strategic autonomy as the concept was formed and practiced by Congress members like Jawaharlal Nehru, V.K. Menon, and Indira Gandhi.

As a result, U.S.-India relations grew closer. During Prime Minister Modi's visit to Washington in June, 2016, President Obama announced that India was being named a Major Defense Partner (MDP).<sup>969</sup> India's Foreign Secretary Subrahmanyam Jaishankar stated, “Now we would be treated at a level similar to the closest allies and partners of the U.S. and that it sort of allows for better, higher quality, faster technology access on the defense side and also more liberal access to the dual technology side.”<sup>970</sup>

In August 2016, the U.S. and India formalized the long-discussed Logistics Exchange Memorandum of Agreement (LEMOA) during Defense Minister Manohar Parrikar's visit to Washington. While it does not sound particularly exciting in nature, the LEMOA agreement is substantial as it is the first of three "foundational agreements" that the U.S. prioritizes having in bilateral defense partnerships.

An October 2016 report from the Center for Strategic and International Studies (CSIS) by Kathleen Hicks and Richard Rossow described the impact of the foundational defense agreements as follows:<sup>971</sup>

Most troublesome in the U.S.-India relationship has been the absence of key defense "Foundational Agreements"—a Logistics Exchange Memorandum of Understanding (LEMOA), a Basic Exchange Cooperation Agreement (BECA), and a Communications and Information Security Memorandum of Agreement (CISMOA).

Here we are suddenly seeing movement after a decade of dormancy. The Logistics Exchange Memorandum of Understanding (LEMOA)—a retitling of the long-sought Logistics Support Agreement—establishes a means of U.S. forces to receive support and logistics from another country and for the United States to provide similar support and logistics to another country. With India, this would include the receipt of fuel, supplies, and underway repairs at Indian ports for U.S. vessels at U.S. ports, among other functions.

...A BECA establishes the types and nature of information to be exchanged between the signatory countries and the purposes of cooperation, most often for sharing geospatial information—typically maps and aeronautical or maritime charts. The CISMOA is agreement establishing the parameters for sharing communications security information, standards and even communication security equipment. Agreeing to a CISMOA enables the two countries to better share information, especially operational information, in real time as they would be using interoperable communications equipment. The communications security equipment—typically hardware that provides encryption to communications—is highly sensitive and in nearly all cases requires some level monitoring for appropriate use by U.S. personnel. The United States enters into these agreements with foreign countries to establish a means to cooperate more quickly than if each instance of cooperation must receive approval on a case-by-case basis.

While the LEMOA and other agreements are unlikely to result in any change in Indian strategy, they do indicate that India is more open to engaging in defense cooperation with the U.S. Additionally, it likely indicates a concern in India regarding the growing strength of China.

The growing relationship between the U.S. and India is also reflected in the frequency and warmth of high profile visits. President Obama became the first sitting U.S. President to visit India twice during his tenure and was also the chief guest at India's Republic Day parade in January 2015—an extremely significant and ceremonial event in India.<sup>972</sup> In less than two years as Secretary of Defense, Ash Carter has met with his counterpart Defense Minister Parrikar on six different occasions. Secretary Carter commented that he interacted with Minister Parrikar more than "any other defense counterpart anywhere in the world."<sup>973</sup>

At the Raisina Dialogue in March 2016, Adm. Harry B. Harris stated, "Expanded cooperation with India will not only be the defining partnership for the Rebalance, it will arguably be the defining partnership for America in the 21st century."<sup>974</sup> This type of language regarding the India-U.S. relationship has also been echoed by Secretary Carter and President Obama. While the U.S. and India defense relationship continues to move at measured pace, the positive developments throughout 2016 indicate that U.S. remains focused on India as a key piece of rebalancing.

### **U.S. Strategy and Vietnam**

The U.S. has also improved its strategic relationship with Vietnam. In 2016, the U.S. lifted the arms embargo on Vietnam that had stood for four decades following the Vietnam War.<sup>975</sup> Vietnam

was shifting its position because of China's posture in the South China Sea. In response to the lifting of the embargo Vietnamese President Tran Dai Quang stated, "This change will ensure that Vietnam has access to the equipment that it needs to defend itself. It also underscores the commitment of the United States to fully normalize the relationship with Vietnam, including strong defense ties."<sup>976</sup>

Even before the lifting of the embargo the U.S. was helping Vietnam to help bolster its maritime capabilities. A White House fact sheet on U.S.-Vietnam relations in May 2016 noted that:<sup>977</sup>

The United States is strengthening security cooperation with Vietnam, including helping the government build its maritime security capabilities, by providing more than \$45.7 million since FY 2014 through the State Department's Foreign Military Financing and law enforcement capacity building programs. Additional assistance is provided through the Department of Defense's Cooperative Threat Reduction Program and Maritime Security Initiative (MSI) funding, a regional initiative for which the Department of Defense has committed \$425 million over five years. At Vietnam's request, we are pursuing providing 18 MetalShark 45-foot patrol boats, as well as training and maritime law enforcement equipment to the country's Coast Guard. Our Navies are working more closely together to ensure maritime security and safety.

Vietnam is, however, remains a country that now has a relatively small military. SIPRI estimated that Vietnam allocated only \$4.8 billion for defense expenditure in 2015.<sup>978</sup>

### **Reversals with the Philippines**

However, 2016 was not without setbacks for the Rebalance. Relations between the U.S. and the Philippines soured after the election of President Ricardo Duterte. He assumed office on June 30, 2016, and President Duterte has insulted President Obama, said he would cancel the 2014 agreement with the U.S., stated that he wanted the Philippines to move away from the U.S., and sought enhance ties with China.<sup>979</sup>

This is a substantial setback for the U.S., which had seen -Philippines Enhanced Defense Cooperation Agreement in 2014 that had been seen as a major success in its rebalancing efforts.<sup>980</sup>

### ***US Force Strength in the Pacific: The US Pacific Command (PACOM)***

In spite of the uncertainties in the future U.S. force posture and plans for Asia, the U.S. retains a massive mix of military capabilities in Asia and the Pacific, and that are supported by strategic partnerships that are well enough defined to provide the necessary strength it needed to deal with near terms threats and serve U.S. strategic interests.

These U.S. forces are deployed in two major commands: The US Pacific Command (PACOM) and the US Central Command (CENTCOM). The US Pacific Command (PACOM) includes the forces in four component commands: US Pacific Fleet, US Pacific Air Forces, US Army Pacific, and US Marine Forces Pacific. These commands are headquartered in Hawaii and have forces stationed and deployed throughout the region.

PACOM's forces change regularly as a result of modernization, contingency needs, and budget pressures. As of January 2014, PACOM had some 330,000 military and civilian personnel, or. US Navy and Marine forces were numerically the largest elements in PACOM's area of responsibility (AOR). The US Pacific Fleet included five aircraft carrier strike groups, more than 140,000 personnel, 180 ships, and almost 2,000 aircraft. US Marine Corps Pacific possessed about two-

thirds of US Marine Corps combat strength and included approximately 85,000 personnel and two Marine Expeditionary Forces.

US Air Forces Pacific had approximately 43,000 airmen and 435 aircraft; US Army Pacific had more than 60,000 personnel, including five Stryker brigades. PACOM also had over 1,200 Special Operations personnel. In addition, there were about 27,000 Coast Guard personnel available to support US military forces in the region.<sup>981</sup>

### **Changing U.S. Forces in the Pacific**

In November 2016, PACOM reported that it had some 380,000 personnel, or about one-fifth of the total U.S. military strength:<sup>982</sup>

Approximately 380,000 U.S. military and civilian personnel are assigned to the USPACOM area of responsibility. U.S. Pacific Fleet consists of approximately 200 ships (to include five aircraft carrier strike groups), nearly 1,100 aircraft, and 140,000 Sailors and civilians dedicated to protecting our mutual security interests. Marine Corps Forces, Pacific includes two Marine Expeditionary Forces and about 86,000 personnel and 640 aircraft assigned. U.S. Pacific Air Forces comprises of approximately 46,000 airmen and civilians and more than 420 aircraft. U.S. Army Pacific has approximately 106,000 personnel from one corps and two divisions, plus over 300 aircraft and five watercraft assigned throughout the AOR from Japan and Korea to Alaska and Hawaii. Of note, component command personnel numbers include more than 1,200 Special Operations personnel. Department of Defense civilian employees in the Pacific Command AOR number about 38,000.

These U.S. forces had serious limits, and the U.S. remained dependent on its regional strategic partners. The Commander of US Pacific Command – Adm. Samuel J. Locklear, III – described PACOM’s force levels, and modernization efforts as follows in his testimony to the Senate Armed Services Committee on April 16, 2015. He focused on the potential gap between US defense spending and military resources and the capabilities the US must develop, as well as the growing need for the US to build strategic partnerships in the region and match similar developments in Chinese forces, and described the U.S. military posture in Asia as follows:<sup>983</sup>

Sustaining effective and forward presence begins with having the necessary military infrastructure and access to support forward-stationed and rotational forces. USPACOM’s posture effectively communicates U.S. intent and resolve to safeguard U.S. national interests, strengthen alliances and partnerships, maintain an assured presence in the region, prevent conflict, and if necessary, respond rapidly and effectively across the full range of military operations.

USPACOM faces three key challenges related to force posture. The first is operating in an AOR that covers 52% of the earth’s surface. The vast distances complicate ISR, movement/maneuver, and sustainment, and require a geographically distributed force laydown to rapidly respond to crisis. The second challenge is the growth of military capabilities in the region. The Indo-Asia Pacific is the most militarized region in the world. Maintaining the ability to defend strategic national security interests in an increasingly complex and lethal environment requires a force posture that is operationally resilient. Finally, expanding access to regions in South and Southeast Asia requires access and forward staging arrangements that are politically sustainable.

In support of USPACOM’s objectives, the military services and our allies and partners are making investments to improve U.S. force posture. Examples of these investments are:

- Construction in Iwakuni, Japan to allow a carrier air wing to relocate from Atsugi
- Expanding base facilities and capabilities in Okinawa for Futenma replacement
- Operationalizing Enhanced Defense Cooperation Agreement with the Philippines
- Expanding future capabilities through construction at Camp Humphreys, ROK
- Reinforcing Guam’s munitions and fuels piers at Apra Harbor



- Implementing Force Posture Initiatives through troop rotations and, ultimately, facility
- upgrades and construction in Darwin, Australia
- Building hardened C2 and aircraft shelters at Andersen AFB, Guam
- Installing and fortifying fuel nodes, manifolds, and lines in Guam and Japan
- Implementing rotational forces through USFK
- Developing divert options and training ranges in the Northern Marianas Islands
- Dredging port facilities to requisite depths to allow pier operations in Naha, Japan

These posture investments are part of USPACOM's holistic infrastructure investment strategy and are key to continued mission success.

Much of the supporting infrastructure in the Pacific and on the West Coast of the U.S. mainland was established during World War II and during the early years of the Cold War. The infrastructure now requires investment to extend its service life. The military services continue to invest in sustainment, restoration, and modernization (SRM) to provide quality facilities to support service members and their families; however, during times of austere budgets, the military services struggle to maintain infrastructure SRM funding levels. These forced decisions undermine the significant investment in facilities made by DoD and Host Nation Funded Construction programs over past decades.

Reduced SRM funding will negatively impact the ability to bring new forces and capabilities into the theater and maintain critical infrastructure. The U.S. and the theater benefit from the significant levels of investment made by allies and partners. For example, the Republic of Korea is significantly contributing to the cost of keeping U.S. Forces on the Korean Peninsula. The Government of Japan has committed up to \$3.1 billion to help realign U.S. Marines from Okinawa to Guam and other locations and \$4.5 billion to expand the airfield and associated facilities at Marine Corps Air Station Iwakuni.

The Commonwealth of the Northern Mariana Islands (CNMI) Joint Military Training initiative (CJMT) is an important posture undertaking. CNMI remains strategically important as a forward and sovereign U.S. location with lease rights until 2033 and extendable to 2083. When the U.S.- Japan Defense Policy Review Initiative moves approximately 4,700 U.S. Marines from Japan to Guam, the CJMT will enable this U.S. Marine force to train and maintain operational readiness. Specifically, on the island of Tinian, the CJMT initiative will provide live-fire ranges and training areas. The CJMT will optimize future training ranges for joint and combined exercises with allies and foreign forces. As a part of aviation resiliency initiatives, divert and alternate air fields are also being explored on the islands of Saipan and Tinian along with other locations in the broader Western Pacific.

**Forward Deployed Forces:** The tyranny of distance, which defines the USPACOM AOR, requires forward deployed forces to engage with allies and partners, respond rapidly to crisis or contingencies, defend the homeland, and reinforce U.S. commitment to the region. To increase USPACOM's forward deployed forces and capabilities, the military services are:

- Rotationally deploying Navy Littoral Combat Ships into Singapore
- Forward deploying two additional ballistic missile defense-capable surface ships to Japan
- Increased deployments and rotations of E-8 JSTARS, E-3 AWACS, and E-2D Advanced Hawkeye in theater
- Replacing the USS George Washington with the more capable USS Ronald Reagan aircraft carrier in Japan
- Installing an advanced radar in Australia
- Continuing to deploy and operate F-22s in theater
- Completing a second ballistic missile defense radar in Japan

- Stationing additional submarines in Guam
- Improving rotational force presence in the Philippines, Singapore, and Australia

**New Systems and Operating Concepts:** Crafting new concepts and fielding new systems is fundamental to employing a credible force. For example, the military services are:

- Replacing P-3 maritime patrol aircraft with newer and more capable P-8s
- Deploying tilt rotor aircraft for Marines and Special Forces and new unmanned capabilities throughout the AOR
- Forward stationing High Speed Vessels and Mobile Landing Platforms in the USPACOM AOR
- Introducing Naval Integrated Fire Control – Counter Air Aegis Destroyers
- Expanding the U.S. Army Pacific Pathways deployment concept
- Preparing for F-35 Joint Strike Fighters deployment with maintenance hubs in Japan and Australia

**Addressing Critical Capability Gaps:** The most technical, high-end military challenges are in the USPACOM AOR, and are growing. While many improvements to posture, forward deployed forces, capabilities, and concepts have been made to address these challenges, there are a number of mission sets and enablers that require continuous focus and attention. These include areas such as Undersea Warfare, Intelligence/Surveillance/Reconnaissance, space, battle management, command and control, cyber, munitions, Ballistic Missile Defense and Integrated Air and Missile Defense systems, and capacity shortfalls in theater enablers such as petroleum redistribution and lift.

Undersea Warfare is a mission set that requires constant attention to maintain a decisive advantage. Of the world's 300 foreign submarines, roughly 200 are in the Indo-Asia-Pacific region; of which, 150 belong to China, North Korea, and Russia. Countries operating these systems view the platforms as a mechanism to affect the balance of power in their favor. Even small navies that possess submarines hold a distinct advantage over a navy without the capability.

There is a significant leap underway in the Indo-Asia-Pacific in undersea capability as newer submarines replace older variants. In the past few years, Singapore, India, Vietnam and Malaysia have all received modern diesel submarines and China is on a modernization path to improve the lethality and survivability of its attack submarines with the introduction of quiet, high-end, diesel-powered and nuclear-powered submarines. Russia is also modernizing its existing fleet of Oscar-class multi-purpose attack nuclear submarines (SSGNs) and producing their next generation Yasen-class SSGNs.

In addition to attack submarines, there are important developments underway that will increase Chinese and Russian strategic deterrent patrol capability and capacity. China has three operational JIN-class ballistic missile submarines and up to five more may enter service by the end of the decade. Additionally, Russia is planning to field its newest Borei-class nuclear ballistic missile submarines in the Pacific later this year. Submarine detection and tracking is a complex problem set and will continue to be one of the most important functions of naval forces. A continued and sustained investment in the U.S. nuclear submarine force, advanced Undersea Warfare technologies, capabilities and capacity, and readiness is necessary to outpace the growing challenges.

Persistent and deep-look ISR capabilities and supporting architecture are required to prevent strategic surprise, assess the security environment, and support actions that impose cost or defeat potential adversaries. Although ISR capacity and capabilities have increased, significant capacity issues remain. Efforts to mitigate ISR capacity issues, as well as develop new capabilities, are ongoing. Additionally, an ISR processing, exploitation, and dissemination enterprise that is interoperable and shared with Allies and Partners is important. Without a concerted effort to continue advancing U.S. capabilities, the U.S. risks missing key indications and warnings in an environment where situational awareness affects decision space.

Satellite communications (SATCOM) is an essential enabler to exercise Command & Control (C2) and enabling ISR. Satellite space continues to grow increasingly congested and contested, and adversaries continue developing means to curtail access to space-enabled capabilities. A resilient space-based command, control, and ISR architecture remains a USPACOM priority.

There is a growing need to sustain and modernize airborne early warning systems to execute multi-mission, multi-domain integrated command and control. The cruise missile, air, and UAV threats in the USPACOM AOR require robust, long range Battle Management, Command and Control (BMC2) and Wide-Area Surveillance (WAS) platforms capable of operating in a contested environment. Developing and modernizing the capabilities within the BMC2 and WAS platforms to track and operate in a communications contested or degraded environment is necessary to meet the challenges of future operational environments in the Pacific; these platforms must be interoperable with military services, partners, and allies.

Related, the Joint Information Environment (JIE) increments I and II have the potential for consolidation of each military services' command, control, communication, and computers programs. JIE II will further strengthen collective cyber security and defense posture in the region, improve staff efficiency and support, and strengthen interagency and international relationships. JIE II will require an information infrastructure adaptable enough to accommodate multiple security classification levels with the interoperability and sharing capability to maximize mission effectiveness. JIE II is a necessary next step to mitigate the risk posed by persistent cyber threats. These threats continue to grow.

Increased cyber capacity and use, especially by China, North Korea, and Russia, underscore the growing requirement to evolve our command, control, and operational structure authorities. In order to fully leverage the Cyber domain, Combatant Commanders require an enduring theater cyber operational command resourced to provide regional cyber planning, integration, synchronization, and direction of cyberspace forces. The theater cyber operational command will provide direction of operations against increasingly capable threats in coordination with

USCYBERCOM, the interagency, and allies and partners. USPACOM sees a future where Joint Force Cyber Component Command (JFCCC) are aligned regionally under Combatant Commands. JFCCCs will provide staffing and expertise required to oversee persistent operations and defense of theater information networks, synchronization of cyber risk assessments and intelligence, and development of flexible cyber effects.

Munitions are a critical component of combat effectiveness and readiness. A number of munitions improvements in lethality, production, and precision are required. There is a growing need for ship-to-ship and air-to-ship munitions to allow U.S. forces to defeat an aggressor from greater range. Specifically, there are troubling gaps in Anti-Surface Warfare capability and readiness that compel the accelerated fielding of a long range anti-ship missile. A long-range stand-off weapon, such as the Defense Advanced Research Programs Agency / Office of Naval Research developed Long Range Anti-Ship Missile, will meet the urgent need for an offensive anti-surface warfare capability against combatants in a contested environment. There is also a need for advancements in the air-to-air realm and for Hard Target Munitions capabilities to engage hardened targets that are growing in numbers and complexity. Area Effects Munitions are required to prevent open space aggression. Lastly, along with lethal munitions, non-lethal capabilities can prove equally valuable in supporting USPACOM's strategy and deterrence.

With North Korea continuing to advance its ballistic missile capabilities, USPACOM will continue its efforts in maintaining a credible, sustainable ballistic missile defense. The recent deployment of long range second TPY-2 radar to Japan (December 2014) along with THAAD on Guam achieving full Fully Operational Capability further enhanced U.S. homeland defense capabilities which are required to protect key regional nodes from aggressive action. In addition, over the last year the U.S., Japan, the Republic of Korea, and Australia have had better coordination and information sharing. USPACOM looks forward to continuing our work with our regional IAMD partners and expanding our ballistic missile defense cooperation and information sharing.

Equally important to having the right equipment and capabilities is the capacity of critical logistics. The time and distance required to move assets across the Pacific make it an imperative to preposition and secure munitions. Dedicated sealift must be adequately funded to posture munitions, fuel, and other supplies within theater. Agile, responsive, and sustained operations demand a resilient network of capabilities to deploy and sustain USPACOM forces.

USTRANSCOM's prepositioning strategy has emphasized positioning equipment and materiel afloat to optimize flexibility, ensure rapid responses to crises, and provide force presence; however, USPACOM still does not have enough lift to satisfy all operational requirements.

**Readiness:** Fundamental to USPACOM's mission is the ability to deter aggression and prevail in crisis. USPACOM's readiness is evaluated against its ability to execute operational and contingency plans, which places a premium on forward-deployed, ready forces that can exercise, train, and operate with our partner nations' militaries and follow-on forces able to respond to operational contingencies.

USPACOM maintains forward-deployed ready forces as credible deterrents, to support and defend national security interests, and to provide assurance and protection to allies and partners.

Forward deployed forces, west of the International Date Line, remain responsive and relevant to mitigating risk in the event of escalating regional security events and greatly benefit from training with allies and partners in a complex environment. Ready, forward-deployed forces increase decision space and decrease response time, bolster allies' and partners' confidence, and reduce the chance of miscalculation by potential adversaries. However, redistribution of global forces that lead to moving forces out of the Indo-Asia-Pacific diminishes USPACOM's impact and effectiveness. Additionally, short-notice redeployment of USPACOM's ready, forward deployed forces to fill emergent requirements to other areas of operation increases risk to our nation's Indo-Asia-Pacific interests and objectives.

In addition to concerns with the forward deployed forces, there are troubling readiness trends associated with follow-on forces. The ability of the U.S. to surge and globally maneuver ready forces has historically been an asymmetric advantage that is now diminishing. Over the past year, the U.S. has been forced to prioritize the readiness of forward-deployed forces, at the expense of the readiness of follow-on-forces and critical investments needed to outpace emerging threats. A lack of ready surge forces resulting from high operational demands, delayed maintenance periods, and training limitations will limit responsiveness to emergent contingencies and greatly increases risk.

Budget reductions and uncertainty directly impact operations and combat readiness. Fiscal constraints disrupt the predictable, persistent funding needed to organize, train, and equip a ready force. Fiscal uncertainty degrades and disrupts long-term engagement opportunities with strategic consequences to U.S. relationships and prestige. Resource pressures have triggered deferrals in exercises, operations, and senior leader engagement opportunities; have introduced regional doubt; and compound the risk to U.S. interests in the region. As the Service Chiefs recently testified, continuation of sequestration will further delay critical warfighting capabilities, reduce readiness of forces needed for contingency response, forego procurement of new platforms and weapon systems and further downsize weapons capacity...all of which are required for success in the USPACOM AOR. I am in full agreement with their assessments and remain deeply concerned about the growing risk to U.S. interests in the Indo-Asia-Pacific.

## **U.S. Forces in the Pacific in 2016**

On May 27, 2015 Adm. Harry B. Harris Jr. assumed the position of Commander of PACOM. In his testimony to the House Armed Services Committee on February 24<sup>th</sup>, 2016 he reiterated much of what Adm. Locklear had said and a year earlier, but added more regarding PACOM's force posture.<sup>984</sup>

### **Strategic Force Posture in the Indo-Asia-Pacific**

The tyranny of distance and short indications and warnings timelines place a premium on robust, modern, and agile forward-stationed forces at high levels of readiness. USPACOM requires a force posture that credibly communicates U.S. resolve, strengthens alliances and partnerships, prevents conflict, and in the event of crisis, responds rapidly across the full range of military operations. USPACOM's strategic force posture is also supported by the deployment of rotational forces and the fielding of new capabilities and concepts that address operational shortfalls and critical gaps.

**Global Force Management (GFM):** In support of the Rebalance, the Department has undertaken GFM initiatives that include the deployment of Littoral Combat Ships to Singapore, replacing the aircraft carrier USS GEORGE WASHINGTON in Japan with the more capable USS RONALD REAGAN, the deployment of two additional ballistic missile defense-capable surface ships to Japan, and the stationing of additional submarines and a submarine tender in Guam. The Air Force deploys a broad range of aircraft as part of its Theater Force Package model including B-52s, F-22s, F-16s, E-8s, and RC-135s. The Army forward deployed a second ballistic missile defense radar in Japan, maintained a THAAD battery in Guam, and

delivered training and presence across the region through Pacific Pathways, enhancing partnership opportunities without permanent basing. The Army also continues updating Prepositioned Stocks (APS) and advocating for the placement of Disaster Response activity sets across Southeast Asia. The Marine Corps continues to execute the Defense Policy Review Initiatives (DPRI), which will reduce the Marine Corps footprint in Japan and distribute Marine Air Ground Task Force (MAGTF) capability across the region. The Marine Corps is also expanding rotational presence in Australia through its Marine Rotational Force-Darwin initiative. USPACOM plans to improve rotational force presence in the Philippines via the Enhanced Defense Cooperation Agreement (EDCA) and establishing USAF dispersal capabilities in the Commonwealth of the Northern Mariana Islands (CNMI) and in the Northern Territory of Australia. Rotational forces west of the International Date Line are positioned to deter and defeat potential aggressors in the region. Finally, we are beginning consultations with the government of South Korea for the placement of a Terminal High Altitude Air Defense capability on the Korean Peninsula.

**Posture Initiatives:** The size and scope of forward stationed forces and the challenges within the security environment require recapitalization and improvement to infrastructure in theater. To that end, fiscal year 2016 military construction projects largely reflect requirements that support fielding new capabilities in the region, to include the F-35 Joint Strike Fighter, CV-22 Osprey, C-130J Hercules, and F-22 Raptor. Additional investments support resiliency initiatives and infrastructure recapitalization in Australia, Guam, CNMI, Hawaii, and Japan; critical munitions throughput recapitalization in California (Military Ocean Terminal Concord); and quality of life investments for our forces in South Korea and Japan.

Additionally, USPACOM's force posture strategy seeks to provide the correct level of capital investment to support established posture initiatives and commitments, including efforts in Korea (Yongsan Relocation Plan and Land Partnership Plan) and Japan (Okinawa Consolidation and the Defense Policy Review Initiative). In support of these initiatives, the Government of Japan committed up to \$3.1 billion to help realign U.S. Marines from Okinawa to Guam and other locations, and \$4.5 billion to expand the airfield and associated facilities at Marine Corps Air Station Iwakuni. Korea and Japan maintain robust host nation funded construction programs, which play vital roles in supporting U.S. presence and enduring capabilities in the region. These vital partner contributions require the Services to program Planning and Design funds to ensure our allies deliver facilities that meet our requirements.

Furthermore, USPACOM is expanding its presence in various parts of the region to include completing the permanent stationing of THAAD on Guam, the addition of a submarine and sub tender in Guam, additional Aegis BMD capable ships to Japan, and seeking the assignment of additional Intelligence, Surveillance, and Reconnaissance (ISR) assets in the region. In support of the Rebalance, USPACOM is in the midst of executing four major Force Posture initiatives: (1) U.S.-Japan Defense Policy Review Initiative (DPRI) / USMC Distributed Laydown, (2) U.S. Forces Korea Realignment, (3) Resiliency Efforts, and (4) Agile Logistics.

- **DPRI:** USPACOM is making progress on DPRI/USMC Distributed Laydown initiatives; however, significant Japanese political challenges remain. Consolidation of U.S. Marines in Japan is dependent upon completion of Okinawa construction efforts to include the Futenma Replacement Facility (FRF). In spite of the Government of Japan (GOJ) political resolve and dedication of resources, progress on relocating Marines from Futenma to Camp Schwab is slow going. GOJ budgeted \$258M in FY15 for 200 projects, but only 9 facilities have been completed with an additional 8 under construction. GOJ faces challenges in several areas, including overcoming Nago City obstruction impacting construction and controlling protester interference. The central government has dispatched police officers from the mainland to Okinawa to assist the Okinawa Prefectural Police in managing protest activity in and around U.S. bases in Okinawa. However, as of this writing, very little progress has been made in improving the situation and protests continue to escalate. While the issues in Okinawa continue, USPACOM made progress in laying the groundwork for relocating 5,000 Marines to Guam. Tied to the Guam effort, DoD is aggressively pursuing the establishment of the CNMI Joint Military Training (JMT) Area to mitigate joint training deficiencies in the region.

- **USFK Realignment:** The consolidation of U.S. forces in Korea via the Land Partnership Program (LPP) and Yongsan Relocation Program (YRP) is moving ahead at full-speed. Construction will triple the size of Camp Humphreys and increase the base's population to ~36,000 troops and family

members. The ROK is bearing the majority of the relocation's cost, committing over \$7.5 billion to the project. USPACOM appreciates Congress' continued support of DoD's largest peace-time relocation project.

- **Resiliency Efforts:** USPACOM resiliency efforts include investment in a more robust transportation infrastructure in ally and partner countries, mitigation of single points of failure via the dispersal and optimization of critical enablers, such as communication nodes, fuel, medical, and logistic support equipment, and hardening facilities. For example, USPACOM is hardening facilities in Guam and CNMI as well as enhancing airfields at dispersed sites throughout the theater.

- **Agile Logistics:** Due to time and distance required to move assets within the USPACOM region, it is imperative to invest in infrastructure to ensure logistics commodities - munitions, fuel, and other war materiel - are properly prepositioned, secured, and available to meet requirements. USPACOM continues to build capacity for pre-positioned war reserve fuel stocks and invest in munitions, fuel, and other war materiel facilities and infrastructure throughout the theater. For example, critical munitions throughput recapitalization in California (Military Ocean Terminal Concord) is necessary to support USPACOM plans and operations.

**Readiness:** USPACOM is a "fight tonight" theater with short timelines across vast spaces. Threats such as North Korea - which has over a hundred thousand rockets aimed at Seoul - require U.S. military forces in the region maintain a high level of readiness to respond rapidly to a crisis. USPACOM's readiness is evaluated against its ability to execute operational and contingency plans, which place a premium on forward-stationed, ready forces that can exercise, train, and operate with our partner nations' militaries and follow-on forces able to respond to operational contingencies.

Forward-stationed forces west of the International Date Line increase decision space and decrease response time, bolster the confidence of allies and partners, and reduce the chance of miscalculation by potential adversaries.

The ability of the U.S. to surge and globally maneuver ready forces is an asymmetric advantage that must be maintained. Over the past two decades of war, the U.S. has of necessity prioritized the readiness of deploying forces at the expense of follow-on-forces and critical investments needed to outpace emerging threats. A shortage of ready surge forces resulting from high operational demands, delayed maintenance periods due to sequestration, and training pipeline shortfalls limit responsiveness to emergent contingencies and greatly increase risk. These challenges grow each year as our forces downsize while continuing to deploy at unprecedented rates.

Fiscal uncertainty requires the Department to accept risk in long-term engagement opportunities with strategic consequences to U.S. relations and prestige. Continued budget uncertainty and changes in fiscal assumptions in the Future Years Defense Program (FYDP) degrade USPACOM's ability to plan and program, leading to sub-optimal utilization of resources. Services must be able to develop and execute long-term programs for modernization while meeting current readiness needs. Much of the supporting infrastructure in the Pacific and on the West Coast of the U.S. mainland was established during World War II and during the early years of the Cold War. The infrastructure requires investment to extend its service life but the Services struggle to maintain infrastructure sustainment, restoration, and modernization accounts at appropriate levels. If funding uncertainties continue, the U.S. will experience reduced warfighting capabilities and increased challenges in pacing maturing adversary threats.

## **The Regional Challenges Described in the U.S. 2016 PACOM Posture Statement**

Adm. Harry B. Harris Jr. provided additional data on U.S. perceptions of the threat, U.S strategic partnerships, and the U.S. view of China in his 2016 PACOM Posture Statement:

### **Security Environment**

The Indo-Asia-Pacific has been a largely peaceful region for over 70 years, in large part, because of the system of rules and norms established and underpinned by robust U.S. presence and anchored by a series of treaty alliances and bilateral relationships with countries in the region. Regional nations, including and

perhaps especially China, have benefited because of the security architecture provided by the U.S. and our allies. The Indo-Asia-Pacific is critically important to U.S. commerce, diplomacy, and security. Estimates predict up to 70 percent of the world's population will reside in the region by the middle of this century. Within the region are the world's two largest economies after the U.S. (China and Japan), and five of the smallest economies. The region contains the world's most populous nation (China), largest democracy (India), largest Muslim-majority state (Indonesia), and smallest republic (Nauru). It contains seven of the ten largest standing militaries in the world, five nuclear nations, and five of the U.S.' seven mutual defense treaty alliances.

The region's environment, history, cultural and political diversity, and robust military capabilities present dynamic strategic challenges. Self-interested actors challenge the existing international rules-based order that helped underwrite peace and prosperity in the region for over 70 years. North Korea continues its provocative, coercive behavior and weapons development. Chinese coercion, artificial island construction, and militarization in the South China Sea threaten the most fundamental aspect of global prosperity - freedom of navigation. Other challenges include the movement and facilitation of violent extremists to and from the Middle East, transnational criminal activity (including human trafficking and illicit drugs), and an increasingly revanchist and assertive Russia. USPACOM enhances U.S. force posture, presence, and resiliency in the region, modernizing U.S. force capability to ensure forces are ready to fight and win any contingency. USPACOM is working with allies and partners on a bilateral - and increasingly multilateral - basis to address these challenges. Together, we enhance capability and capacity to respond to the range of threats endemic to the region. We are stronger together.

## Overview

A number of challenges has emerged over the past year that place stability and security at risk. In July 2015, China largely completed land reclamation at seven sites in the South China Sea and is finishing runways, infrastructure, and systems to militarize what are, in effect, man-made bases, significantly raising regional tensions. China views the South China Sea as a strategic frontline in their quest to dominate East Asia out to the Second Island Chain. I view their thinking as approaching a new "Great Game." Last month, North Korea conducted its fourth nuclear test in ten years and last August, raised tensions with a land-mine attack in the Demilitarized Zone (DMZ). Russia continues modernizing its military forces, homeporting its newest Dolgurukiy-class ballistic missile submarine in Petropavlovsk, and revitalizing its ability to execute long range strategic patrols, highlighted by last July's deployment of Tu-95 Bear bombers near Alaska and California, and last month's bomber flights around Japan. Terrorist attacks in Bangladesh and Indonesia underscore the fact that violent Islamic extremism is a global problem.

While these events threaten the region's peace and prosperity, there was positive progress as well. Last September, Japan passed its Peace and Security Legislation which authorizes collective self-defense in limited circumstances. The Philippines remained committed to solving its maritime dispute with China peacefully through arbitration under the Law of the Sea Convention. The Philippine Supreme Court upheld the Philippine's domestic approval of the Enhanced Defense Cooperation Agreement (EDCA), which will provide significant partnership and access benefits. India underscored its "Act East" policy by crafting a Joint Strategic Vision of the Asia-Pacific and Indian Ocean Region with the U.S. and is progressing toward signing essential foundational agreements that will enable deeper ties, improve interoperability, and increase cooperation. Singapore has increased routine access to U.S. military assets such as Littoral Combat Ships and P-3/P-8 aircraft. Trilateral cooperation among allies is increasing and multilateral forums such as the Association of South East Nations (ASEAN) are focusing on shared security challenges in the region. These events demonstrate that Indo-Asia-Pacific countries are increasingly viewing the U.S. as their security partner of choice. That said, significant challenges remain.

## Key Challenges

**North Korea:** Though North Korea is not yet an existential threat to the U.S., it remains the most dangerous and unpredictable actor in the Indo-Asia-Pacific. Kim Jung Un regularly conducts provocative and escalatory actions. Just last month, North Korea conducted an underground nuclear test, the fourth since 2006, which violated its obligations and commitments under international law, including several UN Security Council Resolutions. Additionally, this month, North Korea conducted a ballistic missile test under the guise of launching a satellite. These tests, coupled with the unprovoked mine attack on Republic of Korea (ROK)

soldiers in the DMZ last August, are the latest in a series of actions intended to destabilize the Peninsula, challenge ROK President Park's leadership, and raise tensions.

While the international community urges North Korea to live up to its international obligations and return to credible negotiations under the Six-Party Talks framework, Pyongyang has shown no willingness to seriously discuss denuclearization. Kim Jung Un is on a quest for nuclear weapons, and the technology to miniaturize them and deliver them intercontinentally. Additional nuclear tests are likely to occur. North Korea will also likely test and field improved mobile intercontinental ballistic missiles and intermediate range ballistic missiles (MUSUDAN) capable of reaching Japan, and actively pursue its submarine launched ballistic missile development program. On 6 February, North Korea launched its second space vehicle in direct violation of several United Nations Security Council Resolutions, firing a complex, multi-stage rocket that also forms the basis of an intercontinental ballistic missile. North Korea announced its intent to conduct "annual and regular" drills to advance this prohibited capability. I have no doubt they will do so.

North Korea refuses to abide by the rules and norms of the international community and represents a clear danger to regional peace, prosperity, and stability. In the cyber domain, North Korea has lesser cyber technical capabilities than other states, but has already demonstrated them as a way to impose costly damage to commercial entities. This was demonstrated in the high-profile attack on Sony Pictures Entertainment. North Korea sells weapons and weapons related technologies in conflict with United Nation Security Council Resolution restrictions.

**Chinese Military Modernization and Strategic Intent:** China's military modernization program is transforming its forces into a high-tech military to achieve its dream of regional dominance, with growing aspirations of global reach and influence. Given China's economic rise, the goal may be natural; however, the lack of transparency on China's overall strategic intent behind its military investments and activities creates instability and regional anxiety.

China's navy and air forces are rapidly fielding advanced warships and planes. Over the past decade, the Chinese navy has significantly increased in size and is much more capable in every way. Chinese forces are operating at a higher tempo, in more places, and with greater sophistication than ever before. Chinese shipyards are constructing China's first cruiser-sized warship, their first indigenous aircraft carrier, and many classes of patrol boats, frigates, and destroyers. Newer, more capable submarines continue replacing older ones. New fighters (including the "Gen-5" J-31), bombers, special mission aircraft, and unmanned systems give China greater air capabilities, lethality, and flexibility. These advances have been aided and accelerated by systemic technology theft, enabling China to skip decades of research and development and go straight into production. Finally, the People's Liberation Army (PLA) is undergoing dramatic reorganization to improve its command and control of joint forces.

China's strategic capabilities are significant. The JIN-class ballistic missile submarine (Type 094) carries the JL-2 submarine launched ballistic missile capable of reaching parts of the continental U.S. and represents China's first credible sea-based nuclear deterrent. New road-mobile intercontinental ballistic missiles provide more strike options and greater survivability.

In the maritime domain, China's Navy (PLA(N)) is increasing its routine operations in the Indian Ocean, expanding the area and duration of operations and exercises in the Western and Central Pacific Ocean, and is beginning to act as a global navy - venturing into other areas, including Europe, North America, South America, Africa, and the Middle East.

While China's actions are causing concern among neighbors in the region, there are potential opportunities. Its small but growing number of bilateral and multinational exercises suggests Beijing's greater willingness to interact with partners. Support for UN Peace Keeping missions is an encouraging sign of Chinese willingness to play a more active and constructive role in international affairs. My goal is to convince China that the best way ahead is through peaceful cooperation, participation and conformance in a rules-based order, and by honoring agreements made in good faith.

**Territorial Disputes:** The political and military dynamic in the East and South China Seas is changing, and tactical miscalculations between claimants present threats to stability and security.

In the East China Sea, tensions between Japan and China over the Senkaku Islands continue. China seeks to challenge Japan's administrative control over the islands by deploying warships into the area, sailing coast



guard ships inside the territorial waters surrounding the Senkakus, and intercepting Japanese reconnaissance flights. In April of 2014, President Obama affirmed that Article V of the U.S.-Japan Security Treaty includes the Senkaku Islands. I am bound to protect that promise.

In the South China Sea, the situation is more complex. There are six claimants to disputed features: Brunei, China, Malaysia, the Philippines, Taiwan, and Vietnam, and there are three notable disputes over territorial sovereignty. The first dispute is between China, Taiwan, and Vietnam over the sovereignty of the Paracel Islands, which China took by force from Vietnam and has occupied since 1974. The second dispute is between China, Taiwan, and the Philippines over Scarborough Reef, of which China seized control in 2012. The third dispute involves multiple claimants within the Spratly Islands where China, Taiwan, Vietnam, Brunei, Malaysia, and the Philippines each claim sovereignty over various features.

The U.S. takes no position on competing sovereignty claims in the South China Sea, but we encourage all countries to uphold international law, as reflected in the Law of the Sea Convention, which ensures unimpeded lawful commerce, freedom of navigation and overflight, and peaceful dispute resolution.

While China has not clearly defined the scope of its maritime claims in the South China Sea, China has unilaterally changed the status quo. Chinese leaders seem to believe that, through coercion, intimidation, and force, they can bypass accepted methods of dispute resolution. They have demonstrated this through aggressive artificial island building, and by growing a fleet of “white hull” ships and fishing vessels whose purpose is to dominate the area without the appearance of overt military force. China is now turning its artificial island projects into operating bases for forward-staging military capabilities - under the rubric of being civilian facilities. For example, in January 2016, China landed civilian aircraft on its man-made airbase at Fiery Cross Reef. The PLA is installing new or improved radars, communications systems, and other military capabilities at seven separate reclaimed bases. The scale and scope of these projects are inconsistent with the China’s stated purpose of supporting fishermen, commercial shipping, and search and rescue. Although Vietnam, Malaysia, the Philippines, and Taiwan have also conducted land reclamation in the South China Sea, their total - approximately 115 acres over 45 years - is dwarfed by the size, scope, speed, and scale of China’s massive buildup. In a little over two years, China has constructed more than 3,000 acres of artificial land - heightening environmental concerns by destroying the fragile ecosystem of the South China Sea. Professor John McManus of the University of Miami has called this the most rapid rate of permanent loss of coral reef area in human history. Equally concerning is Beijing’s repeated pronouncements that it will not accept any decision issued by the arbitral tribunal in the case filed by the Philippines under the Law of the Sea Convention.

China’s actions undermine the international rules-based order. Furthermore, these actions have driven China’s South China Sea neighbors to expand their own military capabilities and seek stronger relationships with the U.S. and one another. The result is a situation that is ripe for miscalculation that could escalate to conflicts that no one wants, in an area vital to global prosperity.

### ***The U.S. Emphasis on Air Rights and Freedom of Navigation***

While preventing conflict in South China Sea requires patience and transparency among all parties, a stable strategic balance requires the U.S. to reserve its ability to make effective use of its naval and air forces. The U.S. can only to continue to play a constructive role in preventing conflict and supporting peaceful dispute resolution requires national resolve and a willingness to apply all elements of national power in the right measure to influence all claimants to use international dispute resolution mechanisms.

This explains why USPACOM has made conducting freedom of navigation operations in the South China Sea- the continuation of a longstanding U.S. practice. These operations are an important military tool to demonstrate America’s commitment to the rule of law, including the fundamental concept of freedom of navigation. The U.S. is demonstrating that it will sail, fly, and operate wherever international law allows.

USPACOM puts these policies in their broader strategic context in Adm. Harris's testimony to the House Armed Services Committee in February 2016:<sup>985</sup>

**Russian Assertiveness:** Though focused on Europe and the Middle East, Russia is engaged politically and militarily in the Indo-Asia-Pacific. Russian activity is assertive, but not confrontational. Ships and submarines of the Russian Pacific Fleet and long range aircraft routinely demonstrate Russia's message that it is a Pacific power. 6 Russian ballistic missile and attack submarines remain especially active in the region. The arrival in late 2015 of Russia's newest class of nuclear ballistic missile submarine (DOLGORUKIY SSBN) in the Far East is part of a modernization program for the Russian Pacific Fleet and signals the seriousness with which Moscow views this region.

**Violent Extremism / Foreign Fighters:** The Indo-Asia-Pacific has the largest Muslim population on the planet and extremism is a rising challenge. Of the many extremist groups in the Indo-Asia-Pacific, those connected to Islamic State of Iraq and the Levant (ISIL) or Al Qa'ida (AQ) are of greatest concern. Foreign fighters from the Indo-Asia-Pacific have contributed to violence in Syria and Iraq and pose a growing threat to security in their home countries upon their return. Attacks in Australia and Bangladesh underscore regional concerns about self-radicalized actors. Small but growing numbers of Bangladeshi, Indonesian, and Philippine extremists have pledged fealty to ISIL, and threats to host nation and Western interests are rising. USPACOM - in coordination with USSOCOM - and partner nations are focused on disrupting these extremist networks.

**Transnational Crime:** Transnational Criminal Organizations (TCOs), many operating sophisticated global enterprises that traffic in human beings, weapons, drugs, and other illicit substances, exist throughout the Indo-Asia-Pacific. The revenue from criminal endeavors threatens stability and undermines human rights. Corruption follows wherever these organizations flourish, weakening governments and contributing to regional instability.

Methamphetamine and amphetamine-type stimulants continue to be the primary drug threat in the region. Joint Interagency Task Force-West (JIATF-W) reports that at least 90 percent of the precursor chemical seizures potentially destined for illicit methamphetamine production originates in China. Maritime container shipments of China-sourced chemicals are diverted for methamphetamine and heroin/opioid production in Mexico - a direct threat to the U.S. homeland. The Asia-Pacific is also a growing, lucrative market for illicit narcotics produced in the Western Hemisphere. Just last week, JIATF-W coordinated with French authorities in French Polynesia to apprehend a sailing vessel located with almost 750 kilograms of cocaine.

Nearly 36 million victims of human trafficking are estimated worldwide and nearly two-thirds are from Asia. Women and children - especially those from the lowest socioeconomic sectors - are the most vulnerable. Roughly half of those 36 million victims end up in the commercial sex trade, while others are forced into difficult and dangerous positions in factories, farms, as child soldiers, or as domestic servants. While much remains to be done, USPACOM forces, including JIATF-W, are building partner capacity and sharing intelligence in order to combat these transnational threats.

**Proliferation Issues:** The Indo-Asia-Pacific region has the busiest maritime and air ports in the world. Developing technology has outpaced many nations' ability to effectively manage export controls. Trade includes dual-use technology - commercial items controlled by the nuclear, ballistic missile, and chemical/biological weapons control regimes, including manufactured or re-exported materials from other nations with limited export control enforcement.

USPACOM's Countering Weapons of Mass Destruction (CWMD) community supports counterproliferation operations throughout the Indo-Asia-Pacific region. USPACOM addresses concerns through key leader engagements, combined and joint exercises, and international security exchanges focused on counter proliferation activities. Recent success stories include Vietnam joining 104 nations as an endorsee of the Proliferation Security Initiative (PSI). The PSI rotational exercise series provides a framework for partner nations to improve legal authorities and operational capabilities to interdict WMD, delivery systems, and other related materials. Proactive dialogue under PSI is vital to reducing WMD proliferation.

USPACOM works with the Armed Forces of the Philippines to enhance military to military interoperability and provide assistance to military first responders' capability to respond to a WMD. Under section 1204 of the FY14 National Defense Authorization Act (NDAA), the primary objective of USPACOM's WMD

assistance is to train and equip first responders. In Aug 2015, USPACOM, Service Components, and combat support agencies such as the Defense Threat Reduction Agency provided the Armed Forces of the Philippines (AFP) a “first class” Chemical, Biological, Radiation, Nuclear (CBRN) Defense capability. Under these section 1204 authorities, USPACOM will begin to work with Thailand, Vietnam, and Malaysia to enhance their capacity to respond to a WMD event.

**Natural Disasters:** The Indo-Asia-Pacific remains the world’s most disaster-prone region, experiencing over 2,700 disasters that affected nearly 1.6 billion people in the past decade alone. In addition to seismic and weather disasters, areas of large populations, dense living conditions, and poor sanitation in the region create optimal conditions for the rapid spread of diseases. U.S. forces regularly train with allies and partners in disaster relief operations and are called upon often to respond to tragic events.

USPACOM’s Center for Excellence for Disaster Management (CFE-DM) increases regional governments’ readiness to respond to natural disasters by developing lessons learned and providing best practices. Many of the lessons learned and preparedness measures implemented after Typhoon Haiyan (Operation Damayan, November 2013) reduced damage and loss of life when Typhoon Hagupit struck the Philippines in 2014. To help USPACOM rapidly respond to future natural disasters, Vietnam is allowing sets of vehicles, equipment, and supplies to be prepositioned within its borders for disaster preparedness purposes. USPACOM will continue improving pre-crisis preparedness and working with allies and partners to improve responses whenever disasters strike, but it is important to note that disaster preparedness cannot overtake traditional military readiness as our focus.

### **Allies and Partners**

USPACOM’s forward presence, posture, and readiness reassure allies and partners of U.S. commitment to security in the Indo-Asia-Pacific. Strengthening these relationships is critical to meeting the challenges and seizing opportunities. Through bi-lateral and multi-lateral relationships and activities, USPACOM is building a community of like-minded nations that are committed to maintaining of the international rules-based order. The U.S.’s five Indo-Asia Pacific treaty allies are Australia, Japan, Republic of Korea, Philippines, and Thailand. In addition, the U.S. continues to strengthen partnerships with New Zealand, India, and Singapore, and build new relationships that advance common interests with Vietnam, Mongolia, Malaysia and Indonesia. This year, USPACOM plans to leverage Fiscal Year 2016 National Defense Authorization Act, Public Law 114-92, Section 1263, “South China Sea Initiative” (Section 11 1263) authority, to begin implementing the Secretary’s Southeast Asia Maritime Security Initiative (MSI) – an initiative Secretary Carter announced at the Shangri-La Dialogue that will increase the maritime security and maritime domain awareness capacity of the Philippines, Vietnam, Malaysia, Indonesia, and Thailand. The Secretary has made available \$50 million in FY16 funding and announced an additional \$375 million from FY17-20 to conduct MSI activities pursuant to this authority. MSI takes a regional approach to help our partners better sense activity within their sovereign territorial domain, share information with domestic joint and international combined forces, and contribute to regional peace and stability operations. I’m also looking forward to improving military-to-military relationships with Burma and Sri Lanka, once political conditions permit. Strengthening and modernizing alliances and partnerships is a top USPACOM priority.

### **Allies**

**Japan:** The US-Japan alliance remains strong and operational cooperation between USPACOM and the Japan Joint Staff continues to increase. Our relationship is a cornerstone of regional stability. On September 19th, 2015 Japan's Peace and Security Legislation authorizing limited collective self-defense passed into law and will take effect this year. Japan’s Peace and Security Legislation and the revised Guidelines for U.S.-Japan Defense Cooperation will significantly increase Japan’s ability to contribute to peace and security. Japan’s leadership has worked toward lessening historical tensions and improving cooperation and collaboration with the Republic of Korea (ROK) in areas such as information sharing and disaster response. The Government of Japan supports USPACOM activities to maintain freedom of navigation in the South China Sea. In another growing relationship, a Japanese destroyer participated in the U.S.- India-Japan trilateral exercise MALABAR in October and then transited the South China Sea in company with the USS Theodore Roosevelt in early November. Japanese P-3s exercised with the Philippines and operated in the South China Sea while returning to Japan from Southwest Asia.

**Republic of Korea:** The ROK alliance remains strong, and I am optimistic that the Japan-ROK relationship will continue to improve, which I hold as a top priority. The U.S. and ROK agreed to delay wartime operational control (OPCON) transfer and adopt a conditions-based approach, rather than following a calendar-based deadline. Secretary of Defense Carter and his counterpart, Minister Han, signed the Conditions Based OPCON Transition Plan (COTP) in November 2015 at the annual Security Consultative Meeting in Seoul. This is part of American and ROK efforts to modernize the alliance to better address continued threats and provocations from North Korea such as January's nuclear test and February's space launch. Trilateral cooperation with Japan is the next logical step to ensure both countries' mutual security.

**Australia:** The U.S.-Australia alliance anchors peace and stability in the region. Australia plays a leading role in regional security and capacity-building efforts and addressing disaster response. Australia is a key contributor to global security, contributing to counter-ISIL efforts in Iraq and the Resolute Support mission in Afghanistan. With the implementation of force posture initiatives, the Marine Rotational Force-Darwin successfully completed its third rotation while increasing its presence from 250 to 1,177 U.S. Marines. The fourth rotation begins in April 2016. The U.S. and Australia are increasing collaboration in counter-terrorism, space, cyber, integrated air missile defense, and regional capacity building. Australia is procuring high-tech U.S. platforms that will increase interoperability. These include the F-35A Lightning II, P-8 Poseidon, C-17 Globemaster III, EA-18G Growler, Global Hawk UAVs, and MH-60R helicopters. To enhance synchronization and integration, the Australian Government provides a Flag Officer and a Senior Executive (civilian) to USPACOM and a General Officer to U.S. Army Pacific staffs on a full-time basis.

**Philippines:** The alliance between the Philippines and the U.S. has been important for more than 65 years. The Philippines Supreme Court recently upheld the Philippine's domestic approval of the Enhanced Defense Cooperation Agreement (EDCA) which will improve U.S. access and build Philippine military capacity by addressing capability gaps, long-term modernization, Maritime Security (MARSEC), Maritime Domain Awareness (MDA), and disaster response capabilities. USPACOM is exploring way to use MSI to realize Philippines MARSEC and MDA capability development. The Philippine Navy has made good use of two previously awarded Excess Defense Article (EDA) U.S. Coast Guard Cutters. During the 2015 Cooperation Readiness Afloat and Training (CARAT) exercise, one of the EDA cutters (BRP RAMON A. ALCARAZ PF-16) operated with the USS FORT WORTH, enhancing our shared security concerns. During the 2015 Asia-Pacific Economic Cooperation summit, President Obama announced the award of a third former U.S. Coast Guard cutter through the EDA program, which will significantly enhance the Philippine Navy's maritime security capabilities, and, through MSI, we are exploring ways to ensure that this vessel is delivered fully mission capable. U.S. P-3s and P-8s already operate from Clark Air Base on a rotational basis, and the EDCA will increase U.S. access in crisis to Philippine facilities that are important strategic locations. USPACOM provides information sharing and training for the Armed Forces of the Philippines in the areas of MARSEC and MDA. Additionally, USPACOM provided \$3.5 million in Chemical, Biological, Radiological, and Nuclear (CBRN) equipment and two years of sustainment training to the Armed Forces Philippines Defense Initiative through the CBRN Defense programs. USPACOM appreciates the continued support of the Defense Threat Reduction Agency, Joint Program Executive Office, and Joint Requirements Office in providing CBRN equipment and training to partners in the region.

**Thailand:** The U.S. and Thailand's long relationship began with a Treaty of Amity and Commerce in 1833, now 183 years old; that relationship expanded into a defense treaty in 1954, and the U.S. continues to value our alliance and friendship. Unfortunately, the Thai military's ongoing control of the civilian government since May 2014 undermines this important relationship. The U.S. encourages a return to democracy that will fully restore our bond; until then, military engagements and exercises will continue in reduced form. USPACOM will continue demonstrating commitment to our oldest ally while also reinforcing democratic values and ideals. Moving forward, it would be my hope that we use MSI to more fully support Thailand's maritime security and maritime domain awareness capability as an important member of the region. Moving forward, it would be my hope that we use MSI to more fully support Thailand's maritime security and maritime domain awareness capability as an important member of the region.

## **Partners**

**Singapore:** Singapore is our most important partner in Southeast Asia. It has been a major security cooperation partner for over a decade and provides invaluable access for U.S. forces. 13 The rotational deployment of Littoral Combat Ships to Changi Naval Base has been productive, and P-8s now operate out

of Paya Lebar Air Base on a regular basis. USPACOM conducts dozens of military exercises each year with Singapore's Armed Forces, Singaporean military officers regularly attend U.S. professional military education, and Singaporean military personnel participate in advanced military training that is conducted throughout the United States. Singapore hosts the annual Shangri-La Dialogue, a Secretary of Defense-level event that deepens regional ties and tables important issues for discussion. The combination of forward deployed forces and deep training relationships contribute to readiness, build deeper ties, and allow the U.S. to promote maritime security and stability with regional partners.

**India:** The new found momentum in our bilateral relationship with India represents USPACOM's most promising strategic opportunity. In January 2015, President Obama and Prime Minister Modi signed a Joint Strategic Vision of the Asia-Pacific and Indian Ocean Region. This landmark document presents shared views and interests for the region. The U.S. / India military-to-military relationship deepens as forces increasingly train and operate together. USPACOM intends to add momentum to an important relationship. Through this end, I have made improving the military-to-military with India a formal Line of Effort at USPACOM. In June 2015, during Secretary of Defense Carter's visit to India, the U.S. and India renewed the ten-year Defense Framework Agreement. In 2015, U.S. and India militaries participated together in three major exercises and 62 other military exchanges covering scenarios ranging from high end warfare to humanitarian assistance and disaster response. The US-India Defense Technology and Trade Initiative (DTTI) further expands opportunities. Defense sales are at an all-time high and U.S.-sourced airframes, such as P-8s, C-130Js, C-17s, AH-64s and CH-47s, increase interoperability. USPACOM will advance the partnership with India by expanding the scope of military-to-military interactions.

**New Zealand:** Despite differences over nuclear policy, our military-to-military relationship with New Zealand, underpinned by the Wellington and Washington Declarations, is on solid footing. The New Zealand military has fought, flown, and sailed with U.S. forces since the beginning of Operation Enduring Freedom. New Zealand continues to be a respected voice in international politics and a recognized leader in the South Pacific that shares common security concerns with the U.S., including terrorism, transnational crime, and maritime security. Military-to-military relations and defense engagements with New Zealand remain strong.

**Vietnam:** Vietnam's growing economy and their concerns over Chinese coercion presents a strategic opportunity for the U.S. to add another regional partner. USPACOM is moving forward with Vietnam to improve Vietnam's capacity and capability in maritime security, disaster response. We are also exploring ways to use MSI to support Vietnam's maritime security modernization efforts, including in the area of search and rescue. In addition, Vietnam has agreed to allow U.S. prepositioning humanitarian stocks and supplies for disaster preparedness purposes.

**Indonesia:** Indonesia is an important security partner in Southeast Asia. President Joko Widodo's initiative to transform Indonesia into a global maritime "Fulcrum" demonstrates Indonesia's desire to play a larger role in international diplomatic, economic, and security issues. Again, USPACOM is developing ways to partner with Indonesian security forces through MSI and other U.S. security cooperation programs to improve Indonesia's maritime security capacity and encouraging a collaborative regional maritime security architecture. Indonesia is not a claimant to territory in South China Sea maritime dispute, but it is reinforcing security on and around its Natuna Islands. Indonesia will maintain relationships with other influential nations such as Russia and China, but security cooperation with the U.S. is a top priority for Jakarta. As a tangible sign of this, the United States and Indonesia signed a ministerial-level Joint Statement on Comprehensive Defense Cooperation in October.

**Malaysia:** Malaysia is another important contributor to regional peace and security. Through the Comprehensive Partnership with Malaysia, the U.S. and Malaysia promote regional stability. Malaysia's regional leadership role, technologically advanced industry, stable economy, and capable military make it an important partner in securing peace and prosperity in Southeast Asia. USPACOM continues to assist Malaysia in building an amphibious force to address nontraditional threats in and around Malaysia's territorial waters. Malaysia seeks U.S. support in developing a more capable Coast Guard through the Malaysia Maritime Enforcement Agency. These capabilities and engagements demonstrate Malaysia's capacity and resolve to ensure regional and domestic security, and Malaysia develops opportunities for multilateral security cooperation through Cooperation Afloat Readiness and Training (CARAT) exercises. Like other Section 1263-designated countries, we are exploring ways that MSI can support Malaysia's maritime security requirements in each of these areas.

**Sri Lanka:** President Sirisena, elected in January, is serious about addressing Sri Lanka's human rights issues. We have an opportunity to expand U.S. interests with Sri Lanka - Asia's oldest democracy - and will proceed deliberately as progress is made. Given Sri Lanka's strategic location, it is in America's interest to increase military collaboration and cooperation. As conditions permit, USPACOM will expand military leadership discussions, increase naval engagement, and focus on defense institution building in areas such as demobilizing

#### **Others**

In addition to Indo-Asia-Pacific allies and partners, USPACOM has many other unique relationships throughout the region with countries, jurisdictions, and international governmental organizations. These relationships are important parts of our overall strategy.

**Taiwan:** Free and fair democratic elections in January on the island of Taiwan reflect shared values with the U.S. The U.S. maintains its unofficial relations with Taiwan through the American Institute in Taiwan and we continue supporting Taiwan's security. USPACOM will continue to fulfill U.S. commitments under the Taiwan Relations Act; continued arms sales to Taiwan are an important part of that policy and help ensure the preservation of democratic government institutions.

**The United Kingdom (UK), Canada, and France:** Staunch NATO allies, the UK, Canada, and France are also Indo-Asia-Pacific nations, each with significant interests in the Pacific and Indian Oceans, including territories, allies, partners, and trade. Each participates in PACFLT's RIMPAC and other major exercises, and deploy ships, submarines, and other forces to the region for operational, partner capacity, law enforcement and disaster response missions. Canada has a General Officer serving as a Deputy Director for Operations at USPACOM; the UK will assign a similar grade officer to serve as Director of USPACOM's Theater Security Cooperation effort. Each nations' leadership expressed renewed commitment to the region, and USPACOM welcomes and supports their efforts.

**The Association of Southeast Asian Nations (ASEAN):** While not a military alliance, ASEAN is among the most important multilateral forums in the region. The ten ASEAN member states, under the chairmanship of Malaysia last year and Laos this year, seek to improve multilateral security engagements and advance stability in the Indo-Asia-Pacific. ASEAN-centered political security fora such as the ASEAN Defense Minister's Meeting Plus (ADMM-Plus) and ASEAN Regional Forum (ARF) have encouraged ASEAN members and China to conclude a meaningful, substantive Code of Conduct for the South China Sea. USPACOM investment in the ADMMPlus, ARF and other U.S. ASEAN defense engagements improve multilateral defense cooperation and promote regional norms. Facilitating capacity building through incrementally increasing the complexity of ASEAN's recurring multilateral exercises is a priority. In 2016, USPACOM will participate in the second series of ADMM-Plus' three major exercises.

**China:** The U.S.-China relationship remains complex. While Chinese actions and provocations create tension in the region, there are also opportunities for cooperation. The U.S. approach to China encourages a dialogue between the armed forces of both countries to expand practical cooperation where national interests converge and to constructively manage differences through sustained and substantive consultations. USPACOM's engagements with China, governed by section 1201 of the FY2000 NDAA, improve transparency and reduce risk of unintended incidents, enhancing regional stability.

USPACOM executed over 50 bilateral and numerous multilateral engagements last year with China. USPACOM supports our national effort to encourage China to support the existing security architecture; however, China's base-building and militarization in the South China Sea, its lack of transparency regarding military modernization efforts, and continued malicious cyber activity raise regional tension and greatly hinder U.S.-China cooperation. Instead of jointly working toward reinforcing international rules and law to promote regional peace and stability, U.S.-China engagements are often focused on reducing friction and avoiding miscalculation.

USPACOM hosted a U.S.-China Military Maritime Consultative Agreement plenary and working group focused on operational safety in November 2015. USPACOM also provided significant support to the development of the Rules of Behavior memorandum of understanding on safety in the air and maritime domain. Ongoing dialogues led to improved communications and safer encounters at sea and in the air.

There are areas where U.S. and Chinese militaries cooperate in areas of common interest, such as counter piracy, military medicine, and disaster response. The most successful engagements focused on military medical cooperation and shared health concerns. For example, in January 2015, the PLA hosted the USPACOM Surgeon and component surgeons in Beijing, Xi'an and Shanghai focused on Disaster Response, Pandemic and Emerging Infectious Diseases, and Soldier Care. In September, the USPACOM Surgeon sponsored the third acupuncture subject matter expert exchange between U.S. and PLA acupuncturists in Beijing, leading to collaborative research on acupuncture treatment for post-traumatic stress disorder. USPACOM encourages China's participation in international efforts to address shared challenges in a manner consistent with international law and standards.

**Bilateral and Multilateral Approaches:** USPACOM is directly connected to regional leaders. I am in frequent communication with my regional counterparts and appreciate the ability to reach out at any time to share perspectives. USPACOM maintains a close link with allies and partners through staff exchange and liaison officers, in addition to a series of formal bilateral mechanisms. In Australia, key engagements stem from the ANZUS treaty obligations, guided by USPACOM's principle bilateral event with Australia, the Military Representatives Meeting. Similarly, USPACOM's military to military relationship with Japan is guided by the annual Japan Senior Leader Seminar. Military Committee and Security Consultative Meetings are the preeminent bilateral mechanisms that guide the ROK and U.S. alliance. Each year, USPACOM co-hosts the Mutual Defense Board and Security Engagement Board with the Armed Forces of the Philippines to deal with 21st-century challenges. USPACOM conducts annual Senior Staff Talks with Thailand to address security concerns and reinforce U.S. commitment to democratic principles. Bilateral mechanisms also exist with non-alliance partners throughout the region, including India, Indonesia, and Vietnam.

The future lies in multilateral security mechanisms. USPACOM is evolving key bilateral relationships into multilateral ones that will more effectively address shared security concerns. For example, US-Japan-ROK trilateral coordination in response to North Korean provocative behavior is improving. The ROK and Japan each recognize that provocative actions by North Korea will not be isolated to the peninsula and greater coordination and cooperation are required. The December 2014 signing of the US-Japan-ROK Trilateral Information Sharing Arrangement is an important step toward greater information sharing. This arrangement was first exercised in early January following the nuclear test in North Korea.

To encourage multilateral cooperation, USPACOM hosts the Chief of Defense Conference (CHODs) annually. The CHODs conference location rotates between Hawaii and a regional partner. In 2015, 31 countries attended the CHODs conference in Hawaii. USPACOM also participates in Australia-Japan-U.S. trilateral defense dialogues, including the Security and Defense Cooperation Forum (SDCF). The trilateral relationship between the U.S., Japan, and India is growing, as evidenced by the first trilateral ministerial meeting held last year. The U.S., Japan, and India share democratic values, interests in protecting sea lanes of commerce, and promoting adherence to international laws and norms. Next, USPACOM aims to build a powerful quadrilateral partnership framework of the most powerful democracies in the IndoAsia-Pacific. India, Japan, Australia, and the U.S. working together will be a force for the maintenance of the regional rules-based order, counterbalancing and deterring coercion or unrestrained national ambitions.

While Chinese contingency planning may consider some of these developments as potential threats to China, it is important to note that they serve some Chinese strategic interests by deterring North Korea and play a critical role in aiding China, Japan, South Korea and other Asian states by securing the Strait of Malacca and the Indian Ocean as maritime routes, protecting a key aspect of the global economy.

### ***U.S. Force Strength in the Gulf: The US Central Command***

The US does not have a command dedicated to the Indian Ocean. Most of Indian Ocean Region is under the U.S. Pacific Command but the US forces that defend the Gulf and cover the Western Indian Ocean Region are assigned to USCENTCOM. They include the forces the US deploys in support of the Gulf States, Jordan, Egypt, and the Red Sea states, and these forces play a role that is critical to China and other Asian energy importers in helping to secure one of the most violent and troubled areas in the world.

The forces actually deployed by USCENTCOM vary according to the contingency commitments the US makes in the CENTCOM region at any given time – a region that goes far beyond the IOR and extends from Egypt to Afghanistan and Pakistan. Their level varies with the level of tension or conflict in the region, and they are drawn from US forces in the US, in Europe and in the Pacific.

These contingency commitments have changed steadily over the last decade as US forces went into and then largely withdrew from Afghanistan and Iraq, but then adapted to the new threat from violent Islamic extremism, civil war in Syria, tensions between Iran and its Arab neighbors, and the massive political upheavals that began in 2011.

### **Naval Deployments**

The size of land force deployments, for example, has been steadily cut since the last US combat troops left Iraq at the end of 2011, and as US combat forces left Afghanistan at the end of 2014. The US does, however, still maintain a major air-sea force as part of its 5<sup>th</sup> Fleet, which is headquartered in Bahrain. The US Navy has maintained a presence in the Gulf since 1949, has had facilities in Bahrain since 1971, and created the 5<sup>th</sup> Fleet in 1995. In January 2014, the 5<sup>th</sup> Fleet had the following task forces:<sup>986</sup>

- CTF-50 Strike Forces: 1 carrier, 1 cruiser, 1 Arleigh Burke-class destroyer, 1 frigate, 1 replenishment ship.
- CTF-51 Contingency Response: 1 LHD, 1 LHA, 2 LSDs, 1 AV-8B squadron, 2 helicopter units, one AH-1W attack helicopter unit.
- CTF-52 Mine Warfare: 1 MCM, 1 MH-53 helicopter unit.
- CTF-53 Logistics: 1 ammo ship, 1 logistic stores ship, 1 fast combat support ship, 1 dry cargo/ammo ship, 1 fleet replenishment oiler.
- CTF-54: 1 Ohio-class guided missile submarine, 1 Los Angeles-class submarine,
- CTF-55 Surface forces: US Navy and US Coast Guard patrol ships.
- CTF-56 Expeditionary Forces: support for rapid power projection. EOD, marine mammals, inshore boats, riverine warfare,
- CTF-57 Maritime Patrol Aircraft: P-3C Orion and ASW aircraft.

### **Air Deployments**

The overall US Army and US Air Force presence in the Gulf/Western IOR region is harder to quantify. The US had approximately 25,000 personnel in the area for all services in 2013, and major air facilities in Kuwait, Bahrain, Qatar, and the UAE. It also has a major air base and command facility at Al Udeid Air Force Base in Qatar called the Combined Air and Space Operations Center (COAC), and prepositioning and contingency facilities in Oman.<sup>987</sup> The USAF had six air wings deployed in or near the IOR and two groups:<sup>988</sup>

- 376th Air Expeditionary Wing Transit Center at Manas, Kyrgyzstan
- 379th Air Expeditionary Wing, Al Udeid Air Base, Qatar
- 380th Air Expeditionary Wing, Undisclosed Location, Southwest Asia
- 386th Air Expeditionary Wing, Undisclosed Location, Southwest Asia
- 438th Air Expeditionary Wing, Kabul International Airport, Afghanistan.



- 455th Air Expeditionary Wing, Bagram Airfield, Afghanistan
- 609th Air and Space Operations Center, Undisclosed Location, Southwest Asia
- 1st Expeditionary Civil Engineer Group, Undisclosed Location, Southwest Asia

Total air activity in Operation Inherent Resolve -- the ongoing fighting centered on the threat posed by ISIS -- provides a rough indication of the kind of power projection and surge capabilities the U.S. has in the region. From the beginning of the Operation in August 2014 to the end of June 2015, the US flew over 18,000 close air, escort, and interdiction sorties, some 6,300 IS&R sorties, 6,800 airlift sorties, and 12,200 tanker sorties -- levels far lower than it had flown in the peak of the Iraq and Afghan Wars. These numbers illustrate the fact that both air and sea power in USCENTCOM at any given time are not a valid measure of US capability. It is rather the buildup capabilities of U.S. rapid deployment forces.<sup>989</sup>

### ***Future U.S. Force Shifts in Asia***

It's still unclear how U.S. forces in the Pacific will change over the near term - much less the long-term. The U.S. still faces serious pressures to limit its defense budget, and Russia's invasion of the Ukraine has shifted U.S. strategic priorities back towards Europe. As a result, the developments in Chinese forces in described in the following chapters must also be interpreted in terms of its respond to key U.S. official statements and strategy documents, and to fact that the U.S. has said it is pursuing a strategy to strengthen and "rebalance" its forces Asia-Pacific even since 2012.

When the US initially announced its rebalancing to Asia, it indicated that that it would shift its naval presence in the Pacific from 50% to 60% of its total fleet by 2020, and later talked about shifting 5% of its fleet and air forces. From 2012 onwards, however, the US made cuts in planned defense spending, force plans, military readiness and exercise activities.

Every year from FY2012 onwards, it faced new uncertainties over its future defense plans because of Sequestration and a Budget Control Act which the Congress passed on August 3, 2011 -- some seven months after it announced the changes to its strategy. It also faced growing military challenges in the Middle East and Europe, with the rise of ISIS in 2014 and the Russian seizure of the Crimea in February 2014.

At one point, the US Air Force planned to allocate 60% of its overseas-based forces to the region.<sup>990</sup> While it then talked about focusing on the air-sea battle, each before developments in the Ukraine and the growing crisis in the Middle East, the USAF, Navy, and Marine Corps faced similar challenges in modernizing and maintaining its combat air fleet, in procuring the planned number of F-35 fighters, in actually funding and deploying a new bomber, and in modernizing key "enablers" such as its refueling tankers.

### **The U.S. Land Force Challenge**

The US has also faced major challenges in deciding how to adapt its land forces to its new strategy in Asia. An analysis by the Congressional Research Service noted that major uncertainties existed in the future posture of the US Army:<sup>991</sup>

General Odierno reportedly envisions the Army playing an important role in the Asia-Pacific region. Noting that the Asia-Pacific region is home to 7 of the 10 largest armies in the world, General Odierno reportedly stated that the Army would "actively seek new opportunities for expanding current international training opportunities." General Odierno also emphasized how the presence of the U.S. Army in the region—about 25,800 soldiers in South Korea; 23,000 in Hawaii; 2,700 in Japan; and 13,000 in Alaska—serves as a

deterrent to potential aggressors and also provides forces that can be deployed elsewhere within the region. In terms of force structure, as previously noted, the Army does not foresee any cuts to Army units in Hawaii, Japan, or South Korea. In addition, three Stryker BCTs are stationed at Joint Base Lewis-McChord in Washington that are assigned to U.S. Pacific Command and under the operational control of U.S. Army Pacific, but it is not known if these units will be reassigned to different missions.

Deterrence and response aside, the Army reportedly plans to step up training exercises in the region in an effort to strengthen its presence and influence. In addition to Pacific-based units, the Army reportedly is considering including the XVIII Airborne Corps at Ft. Bragg, NC; the I Corps at Joint Base Lewis-McChord, WA; and the 101<sup>st</sup> Airborne Division at Ft. Campbell, KY, in upcoming exercises. The U.S. Army Pacific is reportedly working with the 101<sup>st</sup> Airborne Division on the possibility of participating in Yudh Abhyas, a bilateral exercise with India. The United States and India would take turns hosting the exercise, with the United States hosting the exercise in 2013. The U.S. Army Pacific is also reportedly working with Australia and New Zealand, perhaps to conduct a battalion-sized event with the New Zealand Army and a brigade-sized exercise with the Australian Army. In addition to working with these armies, the United States also hopes to leverage its relationships with Indonesia, Malaysia, and Thailand in order to increase partnership opportunities with the three nations.

In May of 2013, Chief of Staff of the Army General Odierno, Commandant of the Marine Corps General James F. Amos, and Commander of Special Operations Command Admiral McRaven described the continued importance of ground forces to global stability in White Paper, titled “Winning the Clash of Wills: Strategic Landpower and the Inherently Human Nature of Conflict,” also touches on the role of land power in the Asia-Pacific area.

The strategic environment of the multi-polar world is changing at an accelerating rate. The rise of powerful regional competitors with the ability to challenge us militarily, particularly in East Asia, will pose a national and international security challenge. Asymmetric anti-access capabilities, such as advanced anti-ship cruise missiles, anti-satellite weapons, and cyber warfare will challenge the United States’ ability to safeguard and guarantee access to the global commons. With some 90% of global trade moving by sea, any eruption of hostilities threatening free access to the commons would have immediate worldwide consequences. Our ability to intervene in the face of a crisis is exacerbated by declining force levels, reduced forward basing, reliance on unfettered access to improved ports and airfields, and ongoing economic turbulence...

Even if one focuses on the difficult challenges presented by China the value of landpower remains apparent. As tensions mount, many of the nations threatened by China’s rise are looking to the United States to “balance” China’s growing military power in the region. The Air Force and Navy obviously have a crucial role in this arena, both as a deterrent to aggression and in military engagement. Still, those efforts must be complemented by forward engaged and creatively employed Soldiers, Marines, and Special Operations Forces, as it signals a high level of American commitment to its partners and allies.<sup>992</sup>

The FY2013 to FY2016 Department of Defense budget requests continued to reflect turbulence in U.S. land force plans, and the US steadily reduced its future year defense program in each new budget request. At the same time, US force planners faced growing threats in other regions like non-state actors like the Islamic State from late 2013 onwards, and steadily more tense relations after the Russian invasion of the Ukraine in 2014.

Unless the world becomes far more stable, the U.S. may have to continue making repeated adjustments in its plans for in Asia, in determining its future military spending, and in deciding what levels of forces it will deploy over time. What is a key point in terms of US and Chinese military dialogue, however, is that even if all current U.S. plans are implemented, the US will not carry out a major military build-up in Asia, and posture its forces for a confrontation with China. This highlights the fact such a military dialogue must be founded on hard, detailed analysis of the actual force trends on both sides, not on a worst-case analysis of military rhetoric.

## ***Shifts in U.S. Power Projection: The US AirSea Battle and JAM-GC***

The increases in Chinese long-range naval, air, and missile capability have also affected some key aspects of US power projection planning. They have led the DoD to put a new emphasis on the role of the air sea battle in the Pacific and Asia, or what is now called the Joint Concept for Access and Maneuver in the Global Commons (JAM-GC):<sup>993</sup>

Recognizing that antiaccess/area-denial capabilities present a growing challenge to how joint forces operate, the Secretary of Defense directed the Department of the Navy and the Department of the Air Force to develop the Air-Sea Battle Concept.

The intent of Air-Sea Battle is to improve integration of air, land, naval, space, and cyberspace forces to provide combatant commanders the capabilities needed to deter and, if necessary, defeat an adversary employing sophisticated antiaccess/area-denial capabilities.

It focuses on ensuring that joint forces will possess the ability to project force as required to preserve and defend U.S. interests well into the future.

The Air-Sea Battle Concept is both an evolution of traditional U.S. power projection and a key supporting component of U.S. national security strategy for the 21st Century. However, it is important to note that Air-Sea Battle is a limited operational concept that focuses on the development of integrated air and naval forces in the context of antiaccess/area-denial threats. The concept identifies the actions needed to defeat those threats and the materiel and nonmateriel investments required to execute those actions.

There are three key components of Air-Sea Battle designed to enhance cooperation within the Department of the Air Force and the Department of the Navy.

- The first component is an *institutional* commitment to developing an enduring organizational model that ensures formal collaboration to address the antiaccess/area-denial challenge over time.
- The second component is *conceptual* alignment to ensure that capabilities are integrated properly between Services.
- The final component is doctrinal, organizational, training, materiel, leadership and education, personnel, and facilities *initiatives* developed jointly to ensure they are complementary where appropriate, redundant when mandated by capacity requirements, fully interoperable, and fielded with integrated acquisition strategies that seek efficiencies where they can be achieved.

### **Defining the Air-Sea Battle in 2013**

In 2013, a US military report on Air-Sea Battle discussed these concepts at more length in ways that raise issues the U.S. has not yet fully addressed:<sup>994</sup>

ASB is a limited objective concept that describes what is necessary for the joint force to sufficiently shape A2/AD environments to enable concurrent or follow-on power projection operations. The ASB Concept seeks to ensure freedom of action in the global commons and is intended to assure allies and deter potential adversaries. ASB is a supporting concept to the Joint Operational Access Concept (JOAC), and provides a detailed view of specific technological and operational aspects of the overall A2/AD challenge in the global commons.

The Concept is not an operational plan or strategy for a specific region or adversary. Instead, it is an analysis of the threat and a set of classified concepts of operations (CONOPS) describing how to counter and shape A2/AD environments, both symmetrically and asymmetrically, and develop an integrated force with the necessary characteristics and capabilities to succeed in those environments. ASB is about building conceptual alignment, programmatic collaboration and institutional commitment in an integrated way, across the military Services in order to develop forces and capabilities that can jointly address A2/AD challenges.

The purpose of ASB is not to simply conduct operations more jointly. It is to increase operational advantage across all domains, enhance Service capabilities and mitigate vulnerabilities. In addition to other joint and

service concepts, ASB will help ensure the U.S.'s ability to gain and maintain freedom of action in the global commons, and to the conduct of concurrent or follow-on operations against a sophisticated adversary.

**Central Idea.** The ASB Concept's solution to the A2/AD challenge in the global commons is to develop networked, integrated forces capable of attack-in-depth to disrupt, destroy and defeat adversary forces (NIA/D3). ASB's vision of networked, integrated, and attack-in-depth (NIA) operations requires the application of cross-domain operations across all the interdependent warfighting domains (air, maritime, land, space, and cyberspace, to disrupt, destroy, and defeat (D3) A2/AD capabilities and provide maximum operational advantage to friendly joint and coalition forces.

Cross-domain operations are conducted by integrating capabilities from multiple interdependent warfighting domains to support, shape, or achieve objectives in other domains. Cross-domain operations are those that can exploit asymmetric advantages in specific domains to create positive and potentially cascading effects in other domains. For cross-domain operations to be fully effective, commanders, whether defending or attacking, must have ready access to capabilities, no matter what domain they reside in or which commander owns them, to support or achieve operational objectives and create the effects required for advantage over an adversary. This interoperability may require multi-pathing, or the ability to use multiple, alternative paths from among all domain capabilities to achieve a desired end. While cross-domain operations are more complex than single domain or single Service options, their multi-pathing possibilities can provide distinct operational advantages over single domain or single Service solutions to operational problems.

The ability to integrate capabilities, equipment, platforms, and units across multiple domains and to communicate, interact, and operate together presents a joint force commander with more numerous and powerful options, which in turn, offer greater probability of operational success. For example, cyber or undersea operations can be used to defeat air defense systems, air forces can be used to eliminate submarine or mine maritime threats, or space assets can be used to disrupt adversary command and control. Put simply, traditional understandings of Service missions, functional responsibilities, or employment of capabilities from particular domains should not be barriers that hamper imaginative joint operations in an A2/AD environment. Each of the elements of ASB's construct offer joint force commanders increased flexibility and capability.

**Networked.** In the ASB Concept, networked actions are tightly coordinated in real time by mission-organized forces to conduct integrated operations across all domains without being locked into Service-specific procedures, tactics, or weapons systems. A networked force is people and equipment linked in time and purpose with interoperable procedures; command control (C2) structures; and appropriate authorities capable of translating information into actions. These joint forces are able to attack the adversary A2/AD system-of-systems in depth and across all domains to create and exploit vulnerabilities.

Networked capabilities are both the physical means by which forces communicate and exchange information and the relationships, protocols, and procedures used by warfighters to complete their assigned missions. To be effective, networked forces need interoperable procedures, (C2) structures, and equipment. Authorities must also be provided at the appropriate C2 level in order for joint and coalition forces to gain and maintain decision advantage. In the ASB Concept, networked does not only mean having assured communications and access to data; it also means having a force trained to conduct operations using mission-type orders and being able to operate even in the absence of continuous connectivity. The joint force can achieve that ability in part by establishing habitual relationships across Service, component, and domain lines so that forces can be effectively trained to operate together in a contested and degraded environment.

**Integrated.** Integration is the arrangement of military forces and their actions to create a force that operates networked across domains as a whole. An integrated joint force is better able to combine capabilities across multiple domains to conduct specific missions. The basic concept of integration has further evolved into seeking the development of pre-integrated joint forces. In order to maintain an advantage over potential adversaries, air, naval, and land forces must fully integrate their operations. Integration, traditionally viewed as strictly the combatant commander's job, needs to begin across Service lines as part of force development.

Forces should be integrated prior to entering a theater. Effective integration requires enhanced joint and combined training against A2/AD capabilities, including training and exercise for cross-domain operations before deployment. In some cases, pre-integration will also require Services' collaboration in materiel programming to ensure interoperability to avoid overly redundant or incompatible systems.

**Attack-in-depth to Disrupt, Destroy and Defeat.** The attack-in-depth methodology is based on adversary effects chains, or an adversary's process of finding, fixing, tracking, targeting, engaging and assessing an attack on U.S. forces. Attack-in-depth is offensive and defensive fires, maneuver, and command and control with the objective of disrupting, destroying, or defeating an adversary's A2/AD capabilities, conducted across domains in time, space, purpose, and resources. Attack-in-depth seeks to apply both kinetic and non-kinetic means to address adversary critical vulnerabilities without requiring systematic destruction of the enemy's defenses (e.g., a rollback of an adversary's integrated air defense system).

D3 represents the 3 lines of effort of the ASB Concept:

- **Disrupt** Adversary Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR or C4I);
- **Destroy** adversary A2/AD platforms and weapons systems; and,
- **Defeat** adversary employed weapons and formations.

**Disrupting** these effects chains includes impacting an adversary's C4ISR or C4I capabilities, ideally precluding attack on friendly forces. **Destroying** or neutralizing adversary weapons platforms enhances friendly survivability and provides freedom of action. **Defeating** employed weapons post-launch defends friendly forces from an adversary's attacks and allows sustained operations.

Due to the nature of A2/AD threats and potentially short indications and warning timelines posed by adversaries, joint forces must be capable of effective offensive operations as soon as conflict begins, while simultaneously defending or re-positioning deployed forces, protecting land and sea bases, and bringing forces forward from garrison with acceptable levels of risk. The ability to attack and defend through the entire depth of the desired battlespace, in all the interdependent warfighting domains, is critical to establishing joint freedom of action.

As is often the case, the U.S. military keep changing the names and details of such concepts, and it is important to stress that these concepts are not targeted against China or the Pacific. They are equally important in US contingency planning for dealing with Iran and power projection missions throughout the world. At the same time, their development will be critical to US security partnerships throughout Asia and the Pacific, and in cases that do involve land forces, they mean that the US must pay far more attention to securing its lines of access and resupply, and that air and missile power are likely to play a far greater role compared to US land power.

### ***Tensions and the Potential for Conflict in the Pacific and IOR***

As has been described at the start of this analysis, the fact that the U.S. and other Asian powers are changing their strategies and forces in ways the shape or react to China's emergence as a major military power does increase the possibility of the kind of classic confrontation between China as a rising power and the U.S. as an established power that has occurred all too often in recent centuries –as well as a major future regional arms race or conflict.

At the same time, there is no inherent reason that China's emergence as a major Pacific power, with far ranging power projection capabilities in other areas, should lead to conflict with the U.S. and/or other regional powers. There strong reasons for cooperation, and equally strong reasons why competition should end in negotiation and or deterrence, rather than any form of conflict.

### **Tensions between China and Asia States**

The U.S. and China still have strong common economic interests, and many common security interests in dealing with the security of world trade, the flow of energy exports, regional stability,

and threats like violent Islamic extremism. Nevertheless, the potential for conflict in areas like the South China Sea has grown and could range from low level clashes between China and its neighbors to conflicts involving China and the US. As Bonnie S. Glaser of CSIS noted in 2012,<sup>995</sup>

The risk of conflict in the South China Sea is significant. China, Taiwan, Vietnam, Malaysia, Brunei, and the Philippines have competing territorial and jurisdictional claims, particularly over rights to exploit the region's possibly extensive reserves of oil and gas. Freedom of navigation in the region is also a contentious issue, especially between the United States and China over the right of U.S. military vessels to operate in China's two-hundred-mile exclusive economic zone (EEZ).

These tensions are shaping—and being shaped by—rising apprehensions about the growth of China's military power and its regional intentions. China has embarked on a substantial modernization of its maritime paramilitary forces as well as naval capabilities to enforce its sovereignty and jurisdiction claims by force if necessary. At the same time, it is developing capabilities that would put U.S. forces in the region at risk in a conflict, thus potentially denying access to the U.S. Navy in the western Pacific.

As the previous chapter has made clear, these tensions have been steadily increased as China has increased its sovereignty claims over territory and waters within and beyond the nine dash lines. As Gregory Poling notes,<sup>996</sup>

China's policy of strategic ambiguity, as it has been euphemistically called, serves its purposes well. It allows China the flexibility to interpret its position to serve the audience at hand. This is why the Ministry of Foreign Affairs was able to issue its well-publicized statement in February 2012 stating that no nation claims sovereignty over the entire South China Sea and that the dispute is only about the "islands and adjacent waters." This raised hopes in the United States and among the other Asian claimants that China was backing away from the 9-dash lines claim and moving to bring its claims in line with international law.

That, however, has clearly not been the case. This year's tensions in the sea started with a two-month standoff between Chinese and Philippine ships at Scarborough Shoal. That confrontation, despite pronouncements to the contrary from Beijing, served as an example of a creeping evolution in Beijing's claims. For years the Chinese territorial claims in the South China Sea extended only to the Spratlys (Nansha, or "South Banks") and Paracels (Xisha, or "West Banks").

Any claim to other features, like Scarborough Shoal, was only implied in so far as they fell within the ambiguous 9-dash lines. Then China extended its claim to the entirely submerged Macclesfield Bank via the imaginary Zhongsha, or "Middle Banks," despite there being no way under international law to claim title over a submerged feature as if it were an island. Further, in recent years, as Beijing has tried to move beyond an overreliance on the indefensible 9-dash lines, Scarborough Shoal has been incorporated as part of Zhongsha. The fact that it lies hundreds of miles from Macclesfield Bank or that it appears on none of the historical documents China puts forth to prove its title to the Spratlys and Paracels seemingly does not matter.

Beijing showed similar disregard for the policy put forth in its February Ministry of Foreign Affairs statement when in early May it reinstated its annual unilateral fishing ban for all of the South China Sea above the 12th parallel. Such a ban would be possible only if China were claiming all the waters within the 9-dash lines, not only its "islands and adjacent waters." Then in late June, the China National Offshore Oil Corporation (CNOOC) fired a shot across Vietnam's bow by announcing the company would open nine oil and gas blocks in the South China Sea to foreign bids. The catch was that all nine blocks lie within the 200-nautical-mile exclusive economic zone (EEZ) of Vietnam, and many in fact overlap with existing blocks already leased by Vietnam, including those committed to Exxon-Mobil. More importantly, CNOOC's blocks are not defensible under a claim to the "islands and adjacent waters" of the South China Sea because there is no island within 200 nautical miles (the maximum allowable EEZ) of all the blocks.

Ronald O'Rourke of the Congressional Research Service notes in a May 2016 report that the maritime and EEZ disputes now focus on four key areas:<sup>997</sup>

- a dispute over the **Paracel Islands** in the SCS, which are claimed by China and Vietnam, and occupied by China;

- a dispute over the **Spratly Islands** in the SCS, which are claimed entirely by China, Taiwan, and Vietnam, and in part by the Philippines, Malaysia, and Brunei, and which are occupied in part by all these countries except Brunei;
- a dispute over **Scarborough Shoal** in the SCS, which is claimed by China, Taiwan, and the Philippines, and controlled since 2012 by China; and
- a dispute over the **Senkaku Islands** in the ECS, which are claimed by China, Taiwan, and Japan, and administered by Japan.

Furthermore, O'Rourke notes the likely animating factors behind China's continued aggressive posture in regards to the disputed maritime claims:<sup>998</sup>

- **Trade routes.** Major commercial shipping routes pass through these waters. It is frequently stated, for example, that more than \$5 trillion worth of international shipping trade passes through the SCS each year. Much of this trade travels to or from China and other countries in the region.
- **Fish stocks and hydrocarbons.** The ECS and SCS contain significant fishing grounds and potentially significant oil and gas exploration areas.
- **Military position.** Some of the disputed land features are being used, or in the future might be used, as bases and support locations for military and law enforcement (e.g., coast guard) forces, which is something countries might do not only to improve their ability to assert and defend their maritime territorial claims and their commercial activities in surrounding waters, but for other reasons as well, such as attempting to control or dominate the surrounding waters and airspace.
- **Nationalism.** The maritime territorial claims have become matters of often intense nationalistic pride.
- to create a buffer zone inside the so-called first island chain for keeping U.S. military forces away from China's mainland in time of conflict;
- to create a bastion (i.e., a defended operating sanctuary) in the SCS for China's emerging sea-based strategic deterrent force of nuclear-powered ballistic missile submarines (SSBNs);
- to help achieve a broader goal of becoming a regional hegemon in its part of Eurasia.

### Timelines and Incidents

More is also involved than competing claims discussed in the previous chapter. Chinese actions in these areas have helped increase tensions with the U.S and its neighbors, have included a wide range of recent incidents and tensions, and were expanded in 2013 to include Air Defense Zones.

The following sequence of events – which draws on work by Center for a New American Security project for the period up to February 5, 2013 and further from work done by the China Power Project at the Center for Strategic and International Studies – provides an illustrative timeline of such incidents between Asian powers in the South and East China Seas.<sup>999</sup>

- "Between May and July 2010, Chinese and Indonesian naval ships seize control of fishing vessels suspected of illegal fishing. During several instances Indonesian naval ships confront armed Chinese vessels, including a heavily armed Chinese fishing management vessel."
- September 7, 2010: "A Chinese fishing boat rams a Japanese Coast Guard patrol vessel after it attempts to interdict the fishing vessel. The trawler and crew members are detained."
- December 18, 2010: "The crew of a Chinese fishing trawler and a South Korean Coast Guard ship clash, leaving two fishermen dead. The clash reportedly happens as the Korean Coast Guard tries to prevent Chinese boats from illegally fishing off South Korea's west coast."
- February 25, 2011: "A Chinese frigate allegedly fires warning shots at a Philippine vessel after warning it to leave the area near Jackson Atoll in the Spratly Islands, 140 nautical miles from Palawan Island."

- May 21-24, 2011: "Chinese marine surveillance vessels and People's Liberation Army Navy ships are suspected of unloading building materials near Likas and Patag islands on the contested Iroquois Reef-Amy Douglas Bank claimed by the Philippines."
- May 26, 2011: "Vietnamese officials accuse a Chinese marine surveillance ship of severing the exploration cables of the Binh Minh 02 seismic vessel chartered by the Vietnam Oil and Gas Corporation while it is conducting a seismic survey along the continental shelf off Vietnam."
- June 9, 2011: "A Chinese fishing vessel is ensnared on the lines of a Vietnamese survey ship, disabling the ship near Block 136-03, approximately 1,000 kilometers off China's Hainan Island."
- July 5, 2011: "Chinese soldiers reportedly assault a Vietnamese fisherman and threaten crew members before expelling them from waters near the disputed Paracel Islands."
- August 21, 2011: Chinese fisheries patrol boats violate the 12 nautical-mile area around the Senkaku islands, which Japan considers its territorial waters."
- October 18, 2011: "Chinese marine surveillance vessels and People's Liberation Army Navy ships are suspected of unloading building materials near Likas and Patag islands on the contested Iroquois Reef-Amy Douglas Bank claimed by the Philippines."
- November 6, 2011: "The Japanese Coast Guard arrests a Chinese fishing boat captain after a chase near the Goto Islands off Nagasaki."
- February 22, 2012: "According to Vietnamese state media, Chinese authorities use force to prevent 11 Vietnamese fishermen trying to seek refuge from a storm from reaching the Paracel Islands. Vietnam lodges a protest with the Chinese Embassy in Hanoi – China denies the allegations."
- March 23, 2012: "According to reports citing Vietnamese officials, China detains 21 fishermen near the Paracel Islands and demands \$11,000 for their release."
- April 10, 2012: "Filipino surveillance aircraft identify Chinese fishing vessels at Scarborough Shoal causing the Philippines Navy to deploy its largest warship - newly acquired from the United States – to the area. According to Filipino authorities, the fishing boats contained illegal catches. In response, China sends surveillance ships to warn the Philippine Navy to leave the area, claimed by both countries, prompting the standoff. On June 18, the Chinese fishing boats departed the area after Filipino vessels left the shoal in anticipation of typhoon season."
- April 17, 2012: "The Government of Japan purchased three of the eight islands known as the Senkaku/Diaoyu/Tiaoyutai from a private Japanese owner on September 11, 2012. The islands are in the East China Sea and are claimed by Japan, China and Taiwan. The purchase sparked outrage in China and Taiwan, spurring protests and flotillas of boats seeking to dispute Japanese ownership of the islands."
- July 2012: China creates Sansha City on what it calls Yongxing Island in the Spratlys.<sup>1000</sup>
- September 11, 2012: "The Government of Japan purchased three of the eight islands known as the Senkaku/Diaoyu/Tiaoyutai from a private Japanese owner on September 11, 2012. The islands are in the East China Sea and are claimed by Japan, China and Taiwan. The purchase sparked outrage in China and Taiwan, spurring protests and flotillas of boats seeking to dispute Japanese ownership of the islands."
- September 25, 2012: "On September 25, dozens of Taiwanese fishing vessels - flanked by Taiwanese coast guard ships - approached the disputed islands, known to Taiwan as the Tiaoyutai and the Japanese as the Senkaku. Though some of the boats came within three miles of the islands - within the 12-mile territorial waters of Japan, who administers the islands - none reached their destination. Japanese coast guard ships fired water cannons at the vessels to prevent them from reaching the islands and some Taiwanese vessels shot water back at the Japanese ships. Ultimately, the Taiwanese vessels were turned away."
- November 28, 2012: "State-run media announced that police in Hainan Province, China will have the authority to board and search vessels deemed to be violating Chinese territorial waters beginning January 1, 2013. Neighboring countries reacted negatively to the announcement in light of ongoing territorial disputes in the surrounding waters of the South China Sea. According to the new regulations, Hainan police can "take over" foreign ships and/or their communication assets."



- November 30, 2012: "According to reports, Chinese fishing boats severed the seismic survey cables of a Vietnamese ship near Con Co Island between the Vietnamese coast and China's Hainan Island. The same state-owned ship, the Binh Minh 02, had its cables cut by Chinese ships on May 26, 2011. The CEO of PetroVietnam later explained that the cables in the November 30 incident were cut by accident, not intentionally as they were in 2011.
- December 2012-January 2013: "On December 13, a Chinese maritime surveillance airplane flew over the Senkaku/Diaoyu Islands - which are administered by Japan - causing the Japanese Air Self Defense Forces to scramble eight F-15 fighter jets. Japanese officials said that the flight by the twin-turboprop Y-12 aircraft of the State Oceanic Administration represents the first airspace intrusion by a Chinese state-owned aircraft since monitoring began in 1958. Three further incursions in December prompted Japan to dispatch F-15s and suggest that it might authorize the firing of "warning shots" on any Chinese planes that violate the airspace over the Senkaku/Diaoyu Islands. On January 11, Japan again scrambled two F-15s after spotting Chinese military aircraft, including J-7 and J-10 fighter jets, near the islands – an exercise China's Foreign Ministry described as a "routine flight.""
- February 5, 2013: "On February 5th, 2013, Japan's Defense Minister Itsunori Onodera announced that Japan had lodged a protest with China, alleging that on January 30th a People's Liberation Army Navy (PLAN) frigate directed fire control radar, used for weapons targeting, at a Japan Maritime Self-Defense Forces (JMSDF) destroyer. No shots were ultimately fired. Japan launched an investigation into the possibility that a similar incident may have occurred on January 19th, with a PLAN frigate training fire control radar on a JMSDF SH-60K helicopter. China's defense ministry denied the allegations on February 8th, and Japan responded by refuting China's denial.
- February 2013: Frequent patrols by Chinese Coast Guard ships—some observers refer to them as harassment operations—at the Senkaku Islands.<sup>1001</sup>
- March 2013: Ongoing Chinese pressure against the Philippine presence at Second Thomas Shoal, a shoal in the Spratly Islands.
- November 23, 2013: China's announcement of an air defense identification zone (ADIZ) for the ECS that includes airspace over the Senkaku Islands. The incident was followed by unannounced flyovers by American warplanes.
- December 5, 2013: Incident in which a Chinese navy ship put itself in the path of the U.S. Navy cruiser *Cowpens*, forcing the *Cowpens* to change course to avoid a collision;
- January 1, 2014: Establishment of fishing regulations administered by China's Hainan province applicable to waters constituting more than half of the SCS, and the reported enforcement of those regulations with actions that have included the apprehension of non-Chinese fishing boats.
- March 9-March 29, 2014: "China and the Philippines were involved in an incident over Second Thomas Shoal. China temporarily disrupted the Philippines' delivery of supplies to the *Sierra Madre* for several weeks. On March 9, the Philippines sent two civilian vessels under contract with the navy to supply the *Sierra Madre*, a World War II-era warship beached on Second Thomas Shoal in 1999 and staffed with marines to bolster Philippine sovereignty claims. Two Chinese coast guard ships, the *Haijing 3112* and *Haijing 3113*, blocked the vessels, and demanded that they leave the area. The resupply ships aborted the mission. On March 29, the Philippines sent a survey vessel, the *BRP Fort San Antonio*, to resupply the *Sierra Madre*. A Chinese coast guard vessel, the *Haijing 1141*, attempted to halt its progress. A Filipino sailor radioed: "This is the Republic of the Philippines . . . we are here to provision the troops." The Chinese demanded they leave, noting: "You will take full responsibility for the consequences of your action." The *BRP Fort San Antonio* was eventually able to resupply the *Sierra Madre*.<sup>1002</sup>
- May 1, 2014: CNOOC moves oil rig Haiyang Shiyu 981 into disputed waters off the Paracel Islands. Many vessels escort and protect the oil rig. On May 26, a Vietnamese vessel is rammed by a Chinese vessel and sinks.
- June 2014: Chinese and Japanese military aircraft fly in very close proximity to each other, sparking an exchange of insults.
- June 14, 2014: China begins construction of a school on the largest island in the Paracels.<sup>1003</sup>

- January 2015: Construction begins on a military airstrip on Fiery Cross Reef after dredging efforts over the past year. Fiery Cross Reef has undergone the most land reclamation in the Spratly Islands and has military installations.<sup>1004</sup>
- January 29, 2015: “Chinese coast guard ships and Philippine fishing vessels were involved in a confrontation near Scarborough Shoal, prompting a complaint from the Philippines. The Chinese coast guard vessel *Haijing 3412* and the Philippine fishing vessels the *Barbie*, *Ocean Glory 2*, and *Ana Marie* confronted each other near Scarborough Shoal. The Philippines claimed that the Chinese coast guard intentionally rammed the fishing vessels, while China contends that the fishing vessels ignored coast guard warnings and only sustained “a slight scratch” during the confrontation.”<sup>1005</sup>
- April 11, 2015: “The Chinese coast guard confronted Philippine fishing vessels near Scarborough Shoal. The fishermen claim that their vessels were boarded by officers from three Chinese coast guard ships, who threatened the fishermen at gunpoint, stole the fishermen’s catch, and destroyed fishing equipment.”<sup>1006</sup>
- April 18, 2015: “The Chinese coast guard fired water cannons at Philippine fishing vessels near Scarborough Shoal. Filipino fishermen were approaching Scarborough Shoal when they were met by three Chinese coast guard vessels, including the *Haijing 3402*. The Philippines claimed that the coast guard ships fired water cannons and used bullhorns to drive away the fishermen.”<sup>1007</sup>
- June 7, 2015: “The Chinese coast guard used water cannons on Vietnamese fishermen in the waters near the disputed Paracel Islands. Vietnamese fishermen were operating in waters around the Paracel Islands when they were approached by the Chinese coast guard.”<sup>1008</sup>
- June 10, 2015: “The Chinese coast guard confronted Vietnamese fishermen in the waters near the disputed Paracel Islands. Vietnamese fishermen were operating in the waters around the Paracel Islands when they were approached by four Chinese coast guard vessels, which dispatched two speedboats. Chinese officers boarded the fishing vessel. The Vietnamese fishermen claimed that the Chinese officers damaged their property and stole their catch and equipment.”<sup>1009</sup>
- July 31, 2015: The Chinese coast guard confronted Vietnamese fishermen in the waters near the disputed Paracel Islands. A Vietnamese fishing boat, the QNg 96507 TS, was operating near the Paracel Islands when three Chinese coast guard vessels, the *Haijing 46102*, *Haijing 45101*, and *Haijing 37102*, approached the fishing vessel. Chinese coast guard officers boarded the fishing boat, beat the Vietnamese fishermen with electric batons, and seized their catch and equipment.<sup>1010</sup>
- September 29, 2015: “A Vietnamese fishing boat was rammed and boarded by the crew of at least one Chinese vessel near the disputed Paracel Islands. A Vietnamese fishing vessel was anchored in the waters near the Paracel Islands while its crew rested at night when a Chinese vessel rammed into the side of their boat. Five Chinese men boarded the fishing vessel, threatened the fishermen with electric bludgeons and knives, and stole navigation equipment and the catch. The boat sunk some 12 hours later. The crew was rescued by another fishing vessel, QNg 90440 TS, which later transferred the crew to a third fishing vessel, QNg 096697 TS.”<sup>1011</sup>
- November 13, 2015: “A Vietnamese supply vessel was confronted by Chinese coast guard and naval vessels near Subi Reef in the disputed Spratly Islands. A Vietnamese supply vessel, the *Hai Dang 05*, was operating in waters near Subi Reef when two Chinese coast guard vessels, the *Haijing 35115* and *Haijing 2305*, approached the Vietnamese boat and threatened to ram it. A Chinese naval vessel, the *Wanyan Shan 995*, repeatedly fired flares towards the *Hai Dang 05* and pointed weapons at the Vietnamese supply ship.”<sup>1012</sup>
- February 5, 2016: The Chinese coast guard and navy harassed a Philippine naval supply ship near Half Moon Shoal.<sup>1013</sup>
- February 28, 2016: “The Chinese coast guard prevented Philippine fishing boats from entering Jackson Atoll. Starting on February 28th, Chinese naval and coast guard vessels chased Filipino fisherman away from Jackson Atoll in the Spratly Islands. The Chinese vessels prevented the Philippine fishing vessels from accessing the fishing areas near the atoll until March 2.”<sup>1014</sup>
- March 5, 2016: “The Chinese coast guard rammed the Philippines’ fishing boats in order to deny access to Scarborough Shoal. On March 5, three Chinese coast guard officers in rubber boats approached Filipino

fisherman near Scarborough Shoal, and said in English, “This is China coast guard. Go back to Subic.” After a short hiatus, the coast guard returned and rammed the Philippine fishing boat. On March 6, the coast guard used laser devices and powerful lights to blind the fishermen. The Filipinos responded by brandishing knives and harpoons before retreating.”<sup>1015</sup>

- March 14, 2016: “Filipino fishermen were denied access to Scarborough Shoal by the Chinese coast guard. Filipino fishermen aboard the Joenel 3 fished near Scarborough Shoal for eight days within sight of the Chinese coast guard. A coast guard vessel approached and shouted “Filipino, go!” The coast guard vessel approached the fishing vessel with blinking lights. Conflict erupted when both crews hurled rocks and bottles.”<sup>1016</sup>
- March 19, 2016: “The Chinese coast guard prevented Indonesia from arresting a Chinese fishing boat operating near the Natuna Islands. An Indonesian vessel owned by the Ministry of Marine Affairs and Fisheries discovered a Chinese fishing boat, the trawler Kway Fey 10078, operating near the Natuna Islands within Indonesia's exclusive economic zone. Indonesian personnel boarded the Kway Fey 10078, detained the crew, and attempted to tow the vessel to a base. A Chinese coast guard vessel rammed the Kway Fey 10078 in an attempt to free it, while another coast guard vessel approached the scene. Indonesia released the Kway Fey 10078, though the Chinese crew remained under detention; the Chinese coast guard vessels steered the fishing vessel away from Indonesian waters.”<sup>1017</sup>
- March 22, 2016: “Filipino fishermen and the Chinese coast guard had a physical confrontation near Scarborough Shoal. Filipino fishermen approached Scarborough Shoal, and were met by Chinese coast guard forces. A violent exchange ensued, the details of which are disputed. China contended that the Philippine fishermen hurled firebombs and brandished knives, while the Philippines claimed that Chinese officers threw bottles and rammed a fishing vessel with a coast guard ship.”<sup>1018</sup>
- May 25, 2016: “Chinese fishermen operating near the Philippines’ island province of Camiguin rammed a Philippine coast guard ship in an attempt to avoid arrest. Ten Chinese fishermen on the Lady Luck 020 were operating close to Camiguin, an island province of the Philippines while flying an upside down Philippines flag in a vessel marked “Subic.” The MCS 3007 and MCS 3010, Bureau of Fisheries and Aquatic Resources vessels with the Philippines coast guard on board, chased the Lady Luck 020. The Chinese fishermen rammed MCS 3010 in an attempt to escape capture. The Philippines arrested the fishermen, impounded their vessel, and fined them for poaching coral.”<sup>1019</sup>
- June 17, 2016: “A Chinese coast guard vessel prevented the arrest of a Chinese fishing vessel by an Indonesian naval vessel near the Natuna Islands. Indonesian warship Imam Bonjol detected twelve Chinese fishing vessels near the Natuna Islands, within Indonesia's exclusive economic zone. The warship fired warning shots at the Chinese fishing boat Yueyandong Yu 19038. China claimed that the shots injured a Chinese citizen, while Indonesia claimed there were no injuries. Two Chinese coast guard vessels, the Haijing 3303 and Haijing 2501, attempted to prevent the arrest of the Yueyandong Yu 19038. With the assistance of three additional warships, Indonesia detained the crew.”<sup>1020</sup>
- July 9, 2016: “Chinese coast guard ships rammed Vietnamese fishing vessels near Discovery Reef in the disputed Paracel Islands, prompting a complaint from the Vietnamese government. Two Vietnamese fishing boats, the QNg 90479 TS and QNg 95001 TS, were operating in waters near Discovery Reef in the Paracel Islands. Two Chinese coast guard vessels, the Haijing 46101 and Haijing 35103, rammed the ship, sinking it. Vietnam claimed that the coast guard vessels did not assist in rescuing the stranded fishermen, and may have prevented other fishermen from assisting.”<sup>1021</sup>

O’Rourke also summarized the EEZ issues affecting many of the incidents as follows:<sup>1022</sup>

China’s view that it has the legal right to regulate foreign military activities in its EEZ appears to be at the heart of multiple incidents between Chinese and U.S. ships and aircraft in international waters and airspace, including incidents in March 2001, September 2002, March 2009, and May 2009 in which Chinese ships and aircraft confronted and harassed the U.S. naval ships *Bowditch*, *Impeccable*, and *Victorious* as they were conducting survey and ocean surveillance operations in China’s EEZ, and an incident on April 1, 2001, in which a Chinese fighter collided with a U.S. Navy EP-3 electronic surveillance aircraft flying in international airspace about 65 miles southeast of China’s Hainan Island in the South China Sea, forcing the EP-3 to make an emergency landing on Hainan island.

The issue of whether China has the right under UNCLOS to regulate foreign military activities in its EEZ is related to, but ultimately separate from, the issue of maritime territorial disputes in the SCS and ECS. The two issues are related because China can claim EEZs from inhabitable islands over which it has sovereignty, so accepting China's claims to islands in the SCS or ECS could permit China to expand the EEZ zone within which China claims a right to regulate foreign military activities.

The EEZ issue is ultimately separate from the territorial disputes issue because even if all the territorial disputes in the SCS and ECS were resolved, and none of China's claims in the SCS and ECS were accepted, China could continue to apply its concept of its EEZ rights to the EEZ that it unequivocally derives from its mainland coast—and it is in this unequivocal Chinese EEZ that most of the past U.S.-Chinese incidents at sea have occurred.

If China's position on whether coastal states have a right under UNCLOS to regulate the activities of foreign military forces in their EEZs were to gain greater international acceptance under international law, it could substantially affect U.S. naval operations not only in the SCS and ECS, but around the world, which in turn could substantially affect the ability of the United States to use its military forces to defend U.S. interests overseas.

Significant portions of the world's oceans are claimable as EEZs, including high-priority U.S. Navy operating areas in the Western Pacific, the Persian Gulf, and the Mediterranean Sea. The legal right of U.S. naval forces to operate freely in EEZ waters is important to their ability to perform many of their missions around the world, because many of those missions are aimed at influencing events ashore, and having to conduct operations from more than 200 miles offshore would reduce the inland reach and responsiveness of ship-based sensors, aircraft, and missiles, and make it more difficult to transport Marines and their equipment from ship to shore. Restrictions on the ability of U.S. naval forces to operate in EEZ waters could potentially require a change in U.S. military strategy or U.S. foreign policy goals.

### **China's View of Disputes with Japan Involving the Senkaku/Diaoyu Islands**

The risks involved are also shaped by the fact that China has very different views of these tensions and risks than the U.S., and many of its neighbors. The maritime and territorial disputes with Japan regarding the East China Sea and Senkaku/Diaoyu islands are emotionally charged issues for the Chinese. South Korea also has an EEZ dispute with China in the East China Sea over the Ieodo/Suyan Rock. However, this dispute has a markedly calm tone that does not have any of the emotion and stigma that is attached to the disputes with Japan.

The Chinese Foreign Ministry published a white paper in 2012 detailing the Chinese view and arguments for claiming rightful ownership of the Senkaku/Diaoyu Islands.<sup>1023</sup> The following quotes from Chinese government officials and Chinese state media characterize their view of the security issues and tensions growing out of the Senkaku/Diaoyu dispute:

- *Foreign Minister Wang Yi:*
  - September 21, 2013 – “We can sort out a way to deal with the situation if Tokyo first admits there is an ownership dispute over the islands.”<sup>1024</sup>
  - March 2014 - Regarding our disputes with some countries over territorial and ocean rights and interests, we are willing to peacefully and properly handle them through equal consultations and talks on the basis of respecting historical facts and of international laws. In this regard we will also absolutely not change in the future. We will absolutely not bully small countries just because we are a big country, nor will we accept small countries to kick up a row. China's position is resolute and clear on issues involving territory and sovereignty. We do not want an inch of territory that does not belong to us. But we will protect each inch of the territory that belongs to us.<sup>1025</sup>

- *Ministry of National Defense spokesperson Geng Yansheng*:
  - May 23, 2014 - Our determination and will to defend national territorial sovereignty and maritime rights and interests are unswerving; on this issue there is absolutely no room for bargaining, and any provocative actions will not be tolerated... At present, we have with certain periphery countries some disputed issues regarding territorial sovereignty and maritime rights and interests; these problems are all provoked by other countries, and the responsibility is not on China.
- *Former Vice Foreign Minister Zhang Zhijun*<sup>1026</sup>
  - March 4, 2013 - Right-wing forces in Japan instigated the farce of the “island purchase.” The Japanese government did not act to stop this. Instead, it deliberately pandered to it and used it... In the past, this kind of dangerous trend [in a rightward direction] had created enormous catastrophe for the rest of Asia. So if the current trend is not stopped—or worse, if it is used, pandered to and condoned out of domestic political needs—then the arrogance of these people will be further inflated and Japan will move further down the dangerous path. One day, it is not unlikely that the tragedies of history will be repeated.
  - March 4, 2013 - The broader context of this [i.e., the purchase of the islands—author] is the increasing tilt to the right in Japanese politics. You may take a look at what has been said and done in Japan in recent years: denial of the Nanjing Massacre, denial of the so-called “comfort women,” disavowal of the Murayama statement and the Kono statement [i.e., statements by a former Japanese prime minister and a former chief cabinet secretary, respectively, apologizing for Japan’s overall misdeeds and for the use of “comfort women” by the Japanese army during the Second World War—author], the visits by Japanese leaders to the Yasukuni war shrine, advocacy of military buildup and preparation for war and abandonment of Japan’s pacifist constitution.
- *Foreign Ministry spokesperson, Qin Gang*<sup>1027</sup>
  - January 20, 2013 - “[United States] has unshirkable historical responsibility on the Diaoyu Islands issue.”
  - January 20, 2013 – (US policy of opposition to any efforts to unilaterally undermine Japan’s administrative authority over the S/D islands, “disregard[s] the facts and confuse[s] right and wrong. China expresses strong dissatisfaction and resolute opposition to that. We urge the US side to be responsible on the Diaoyu Islands issue, be discreet in word and deed and take concrete actions to safeguard regional peace and stability as well as overall interests of China-US relations so as to win trust from the Chinese people. (1/20/2013)
- *President Xi Jinping*
  - January 26, 2013 - The Japanese side should face up to history as well as reality and make joint efforts with China through real action to seek effective methods for appropriately controlling and resolving the issue through dialogue and consultation... Under the new circumstances, we should shoulder national and historical responsibilities as well as display political wisdom, just like the elder generations of leaders of the two countries, to overcome difficulties and advance China-Japan relations.<sup>1028</sup>
- *Taiwan Affairs Office spokesperson, Ma Xiaoguang*
  - January 15, 2014 - “People across the Taiwan Strait should bear responsibility for China’s sovereignty and territorial integrity.”<sup>1029</sup>
- *Foreign Ministry spokesperson, Liu Weimin*
  - March 12 2012 – “China’s position on the Suyan Rock is clear. The Suyan Rock is situation in the waters where the exclusive economic zone of China and the ROK overlap. The ownership of the rock should be determined through bilateral negotiation, pending which, neither of the two should take unilateral moves in these waters. China and the ROK have a consensus on the Suyan Rock, that is, the rock does not have territorial status, and the two sides have no territorial disputes.”<sup>1030</sup>

- March 13, 2012 - “The area is located in an area over which China and South Korea have overlapping Exclusive Economic Zone (EEZ) claims. The two sides need to work out sovereignty through bilateral consultations. Both countries have no territorial dispute over the area.”<sup>1031</sup>
- *Defense Minister, Chang Wanquan*
  - May 6, 2014 - “We will not compromise on, concede or trade on territory and sovereignty, nor will we tolerate them being infringed on even a little bit.”<sup>1032</sup>
- *Vice Foreign Minister Fu Ying*
  - October 22, 2012 – The Vice Foreign Minister took question from Japanese journalists at a press conference in Japan<sup>1033</sup>

Q: The Japanese government’s explanation for its “purchase” of the islands was to prevent an earlier “purchase” proposal by Tokyo Governor Shintaro Ishihara, which would involve development and construction on the islands. The Japanese government feared that Ishihara’s “purchase” would make it difficult for it to manage the islands and would lead to damaged relations with China. Why has such a course of action still caused a strong backlash from the Chinese side?

A: Why the Chinese side has responded so strongly to the Japanese government’s “purchase” of the islands? The simple reason is that according to international, Japan has no right to buy or sell the Diaoyu Islands when it does not even have sovereignty over them in the first place. China on its part has exercised self-restraint on the bases of the common understanding reached between the leaders of the two countries years ago on the Diaoyu Islands dispute. And this has largely contributed to the maintenance of peace and stability around these islands over the past decades. Should such common understanding be denied or reneged on, what basis would there be for China to continue exercising restraint?

Like people in other countries, the Chinese are capable of strong emotions over things they truly care about. What the Japanese government has done over the Diaoyu Islands was like rubbing salt into a deep open wound on the heart of the Chinese people. The Diaoyu Islands issue is highly sensitive as it not just concerns territory and sovereignty, but also brings back memories of the Sino-Japanese sea war of 1895 and Japan’s invasion of China during World War II. It’s hardly surprising that it should have stirred strong emotions among the Chinese people, who expect and trust that today’s China is better able to protect its national interests.

What the two sides should do is to put this issue in a bigger international context, and seek to address the profound perception gap between the two sides. The world around us is changing fast. The most important and pressing task for China and Japan as two major countries in the world is to address the lingering effect of the international financial crisis. China and Japan working together to address common challenges is what the region expects of us...The historical facts are clear. We have full confidence in the solid historical and legal basis for our claim of sovereignty over the Diaoyu Islands. The Japanese claim does not hold water in international law. The way out from our point of view is for getting discussions started through bilateral channels to work toward a reasonable solution.

- October 14, 2012- “I have also noticed media reports about Okinawa. This is mainly because Japan’s claims to sovereignty over the Diaoyu Islands are seen to be related to Okinawa. That is how many Chinese not just in the mainland, but also in Hong Kong and Taiwan because interested in the history of Okinawa, and started to probe into questions such as what happened to Ryukyu Islands, and what is the relationship between Ryukyu and the Diaoyu Islands. Much historical evidence has been presented that serves to show that the Diaoyu Islands have never been part of Ryukyu in history. As far as I understand, the academics are trying to prove in another way that the Diaoyu Islands are part of China and became so many centuries ago.”<sup>1034</sup>
- July 21, 2015 – “Third, the Diaoyu Dao has been China’s inherent territory since antiquity. China’s patrolling and law enforcement activities in Chinese territorial waters off the Diaoyu Dao is China’s inherent right to lawfully exercise sovereignty. China will continue to take necessary measures and

stay firm in safeguarding territorial sovereignty. Japan should not have any illusions about this. Meanwhile, we stand for the proper settlement of this issue through dialogue and consultation.”<sup>1035</sup>

- *Foreign Ministry Spokesperson Hong Lei*

- January 13, 2015 - “China's position on the Diaoyu Islands is clear-cut. We urge the Japanese side to face up to history, respect facts and exert itself to properly manage and resolve the Diaoyu Islands issue through bilateral dialogue and consultation.”<sup>1036</sup>

## **China's View of Disputes with Japan Involving the East China Sea**

The following quotes provide a similar view of the security issues and tensions in the East China Sea ADIZ as seen from a Chinese perspective:

- *Defense Ministry spokesperson, Yang Yujun*

- November 28, 2013 – (Japan) ...established an ADIZ as early as 1969 and later expanded its scope many times to only 130 km toward our coastline from its west end, which covers most of the airspace of the East China Sea, so they are not qualified at all to make irresponsible remarks on China's lawful and rational act. Since September 2012, Japan has been making trouble over territorial disputes, staging a farce by announcing that it would "purchase" the Diaoyu Islands, frequently sending vessels and planes to disturb Chinese ships and planes in normal exercises or training, openly making provocative remarks such as shooting down Chinese drones, playing up the so-called China threat, escalating regional tension, creating excuses for revising its current constitution and expanding its military, trying to deny the result of the World War II, and refusing to implement the Cairo Declaration and the Potsdam Proclamation. Japan's actions have seriously harmed China's legitimate rights and security interests, and undermined the peace and stability in East Asia. China has to take necessary reactions.<sup>1037</sup>
- November 28, 2013 - So, who is it that is unilaterally altering the status quo? Also, who is it that is exacerbating regional tensions? Who is it that is continually intensifying contradictions? And who is it that is undermining regional security? I think the international community can reach its own conclusions....as long ago as 1969 Japan had established and announced that it had implemented an air defense identification zone...if they want us to withdraw [our ADIZ], then we will ask Japan to withdraw its own air defense identification zone first, then China can reconsider things 44 years later.<sup>1038</sup>

- *Foreign Ministry spokesperson, Qin Gang*<sup>1039</sup>

- November 25, 2013 – (cautioning the US to) “keep its words of not taking sides on the issue...and stop making improper comments.”
- November 25, 2013 – (hope that) relevant countries could stop unreasonable pestering or hyping, respect international law and facts and stop all the actions that undermine China's national sovereignty, interests and rights so as to create conditions for the proper settlement of the relevant issues through dialogue and negotiation.
- November 25, 2013 - Japan should tell other countries whether it has its own ADIZ or not, whether it consulted with other countries before establishing and enlarging time and again its ADIZ or not and how large its ADIZ is. It is totally unjustifiable and with ulterior motives when one, while not allowing others to exercise their legitimate rights, acts on its own will and carries out inflammatory activities hither and thither.... I want to point out that China, which has suffered greatly from external aggression since modern times, has made enormous sacrifice and remarkable contributions to the victory of the world anti-Fascist war.

- *Foreign Ministry spokesperson, Hong Lei*

- December 9, 2013 - South Korea's expansion of its ADIZ should comply with international laws. China is ready to stay in communication with them based on the principle of equality and mutual respect.”<sup>1040</sup>

- *Defense Ministry spokesperson, Geng Yansheng*
  - December 3, 2013 - “We have noticed that a very few countries have said that China’s setting up of the East China Sea ADIZ has unilaterally altered the East China Sea’s status quo, and escalated regional tension. The fact is that they established an ADIZ as early as 1969 and later expanded its scope many times to only 130km toward our coastline from its west end, which covers most of the airspace of the East China Sea, so they are not qualified at all to make irresponsible remarks on China’s lawful and rational act. Since September 2012, Japan has been making trouble over territorial disputes, staging a farce by announcing that it would “purchase” the Diaoyu Islands, frequently sending vessels and planes to disturb Chinese ships and planes in normal exercises or training, openly making provocative remark such as shooting down Chinese drones, playing up the so called China threat, escalating regional tension, creating excuses for revising its current constitution and expanding its military, trying to deny the result of the World War II, and refusing to implement the Cairo Declaration and the Potsdam Proclamation. Japan’s actions have seriously harmed China’s legitimate rights and security interests, and undermined the peace and stability in East Asia. China has to take necessary reactions. A very few countries must earnestly reflect on their actions and correct their wrong remarks and wrongdoings. Other parties concerned should also mind their words and actions, and should not do things to undermine regional stability and bilateral relations. Other parties should not be incited, or send wrong signals to make a very few countries go further on the wrong track, which will follow the same old disastrous road and undermine regional and world peace...A very few countries must earnestly reflect on their actions and correct their wrong remarks and wrongdoings.”<sup>1041</sup>
- *PLA Daily*
  - November 25, 2013 - “As everyone knows, when Japan established its air defense identification zone back in 1969, it even included three quarters of the aerial space over the East China Sea into its identification zone, making its air defense identification zone only 130km in the closest distance to the Chinese mainland. That is a genuine “dangerous” unilateral action. Moreover, it is hard to understand why some countries were not “concerned” about Japan’s extending of its identification zone to the doorway of China decades ago while they become so “concerned” about China’s mapping of its own air defense identification zone. This kind of double standard and dictatorial logic will definitely not be accepted by China.”<sup>1042</sup>
- *Foreign Ministry Spokesperson Lu Kang*
  - July 21, 2015 – “Second, China always carries out normal maritime activities following international laws and relevant domestic laws. China’s oil and gas exploration in undisputed waters of the East China Sea under China’s jurisdiction is justified, reasonable and legitimate. China’s construction on some garrisoned Nansha islands and reefs, which does not affect or target any other country, is fully within China’s sovereignty and beyond reproach. Japan’s actions of deliberately intervening in the South China Sea issue and playing up regional tensions run counter to regional peace and stability, and severely undermine the political and security mutual trust between China and Japan.”<sup>1043</sup>
  - July 23, 2015 – “The Chinese side remains unchanged on its position of implementing the principled consensus concerning the East China Sea, and is willing to maintain communication with Japan on relevant issues related to the East China Sea. The key is for Japan to create favorable environment and conditions to implement these consensus.”<sup>1044</sup>

### **US and Chinese “Incidents”**

These tensions have reinforced China’s negative views about the role that U.S. military forces play in Asia. For example, one Chinese newspaper called for the US “to rein in its unruly allies in the region including Japan and the Philippines,” in direct reference to the recent island disputes. Further, because the US has a “responsibility for sowing the seeds of conflict,” it “shoulders certain responsibilities for the chronic disputes.”<sup>1045</sup>



While neither the US nor China want such tensions to lead to clashes or conflicts, it is important to note the “accidents” and unintended escalation do present a risk. The location of these events is also depicted in **Figure 17.1**. O’Rourke notes that:<sup>1046</sup>

The dispute over whether China has a right under UNCLOS to regulate the activities of foreign military forces operating within its EEZ appears to be at the heart of incidents between Chinese and U.S. ships and aircraft in international waters and airspace, including

- incidents in March 2001, September 2002, March 2009, and May 2009, in which Chinese ships and aircraft confronted and harassed the U.S. naval ships Bowditch, Impeccable, and Victorious as they were conducting survey and ocean surveillance operations in China’s EEZ;
- an incident on April 1, 2001, in which a Chinese fighter collided with a U.S. Navy EP-3 electronic surveillance aircraft flying in international airspace about 65 miles southeast of China’s Hainan Island in the South China Sea, forcing the EP-3 to make an emergency landing on Hainan Island;
- an incident on December 5, 2013, in which a Chinese navy ship put itself in the path of the U.S. Navy cruiser Cowpens as it was operating 30 or more miles from China’s aircraft carrier Liaoning, forcing the Cowpens to change course to avoid a collision;
- an incident on August 19, 2014, in which a Chinese fighter conducted an aggressive and risky intercept of a U.S. Navy P-8 maritime patrol aircraft that was flying in international airspace about 135 miles east of Hainan Island— DOD characterized the intercept as “very, very close, very dangerous”; and
- an incident on May 17, 2016, in which Chinese fighters flew within 50 feet of a Navy EP-3 electronic surveillance aircraft in international airspace in the South China Sea—a maneuver that DOD characterized as “unsafe.”

**Figure 17.1** shows the locations of the 2001, 2002, and 2009 incidents listed in the first two bullets above. The incidents shown in **Figure 17.1** are the ones most commonly cited prior to the December 2013 involving the Cowpens, but some observers list additional incidents as well. For example, one set of observers, in an August 2013 briefing, provided the following list of incidents in which China has challenged or interfered with operations by U.S. ships and aircraft and ships from India’s navy:

- USNS Bowditch (March 2001);
- EP-3 Incident (April 2001);
- USNS Impeccable (March 2009);
- USNS Victorious (May 2009);
- USS George Washington (July-November 2010);
- U-2 Intercept (June 2011);
- INS [Indian Naval Ship] Airavat (July 2011);
- INS [Indian Naval Ship] Shivalik (June 2012); and
- USNS Impeccable (July 2013).

*Figure 17.1: U.S.-China Maritime and Airborne Incidents*



Source: Ronald O' Rourke, "Maritime Territorial and Exclusive Economic Zone (EEZ) Disputes Involving China: Issues for Congress," Congressional Research Service, R42784, May 31, 2016, p. 13, <https://www.fas.org/sgp/crs/row/R42784.pdf>

The following quotes illustrate Chinese views regarding the US and its involvement in Asia:

- *Shandong Provincial Party Committee member, Li Qun*
  - September 2012 - The Americans' "real purpose is not to protect so-called human rights but to use this pretext to influence and limit China's healthy economic growth and to prevent China's wealth and power from threatening [their] world hegemony."<sup>1047</sup>
- *PLA Daily*
  - November 25, 2013 - "We especially hope that some individual countries will give up their pride and prejudice. They shouldn't be blinded by their own selfishness so as to underestimate the Chinese people and the Chinese military's resolute determination to safeguard china's national sovereignty and security as well as the regional peace and stability."<sup>1048</sup>

- *Xinhua and Chinese Ambassador to the United States, Cui Tiankai*

- April 25, 2014 - U.S. President Barack Obama assured Japan during a visit to the country on Thursday that Washington was committed to its defense, applying the U.S.-Japan security treaty to the disputed Diaoyu Islands. China has expressed grave concerns over the statement.

Pointing out that the U.S.-Japan alliance originated in the Cold-War years, Cui said, "Is it really up-to-date? Or is it appropriate for the challenges of the 21st century? I don't think such alliance will help us."

Cui said while Washington tells Beijing that it is taking no position on the issue of Diaoyu Islands, "it seems to me that it does take some sides, and probably take the wrong side."

The convergence of interests, Cui said, helps build the bonds between China and other Asia-Pacific countries, which "are stronger, longer-lasting and more resilient than those of old-fashioned alliances."

"In this sense, there is no need for us to pivot or rebalance in Asia-Pacific, because this is our homeland. Our roots are here, and our priority never shifts," he said.

Cui added that the new model of China-U.S. relationship is seeking to build aims at win-win cooperation on the basis of mutual respect and requires "positive energy" from both sides.

"It is not about playing with words. Serious commitments have to be made and honored by both sides," the ambassador said.

Cui said China recognizes U.S. presence and interests in the Asia-Pacific region and welcomes the constructive role by the United States in regional affairs.

"We hope that the United States will join the regional quest for 21st century solutions for the challenges before us, so that Asia-Pacific will enjoy lasting peace and widespread prosperity," he said.<sup>1049</sup>

- May 20, 2014 - "I'm not questioning the intention of the US government. I'm looking at the effect, the results of the US policies towards Asia, toward China and what they have done and said recently. And honestly, I think the key to this rebalancing is to maintain a good relationship with everybody in Asia Pacific, including particularly China. And in this sense, I think this policy of rebalancing might need some rebalancing itself."<sup>1050</sup>

- *Defense Ministry Spokesman Yang Yujun*

- June 26, 2014 – "Some individuals of the US openly hyped up the 'China military threat.' It goes counter against the consensus reached by the leaders of both countries and is harmful to the healthy and stable development of the bilateral mil-to-mil relationship China has stated its solemn stance with regard to this."<sup>1051</sup>

- *Consul General to the United States, Sun Guoxiang*

- January 15, 2014 - Clearly, the China-U.S. relationship should be based on mutual respect, seeking common ground while narrowing differences. It is only natural that two nations in different regions of the world and at different stages of economic development will have disagreements. But as long as we treat each other on an equal footing, accommodate each other's core interests and major concerns, and manage our differences, we can enjoy a sound relationship and mutual development. This is a strategic imperative for our two countries. It is also necessary to maintain stability in the global economy and the welfare of the international community. At the diplomatic level, we should always make full use of dialogue and consultations, and honor our agreements with real actions.

Today, China-U.S. relations are at a new historical starting point. During their summit in California last June, President Xi Jinping and President Obama agreed to develop a new model of major-country relations between China and the U.S. At that meeting, they found common ground on the need to maintain coordination and cooperation within the multilateral and regional economic framework of the G-20 as well as the Asia-Pacific Economic Cooperation, further pursue trade and

investment liberalization, oppose protectionism, reduce greenhouse gases, and decrease the number of cross-border cyberattacks.<sup>1052</sup>

- *Chinese Defense Minister, Chang Wanquan*

- April 8, 2014 – “The China-US relationship is neither comparable to US-Russia ties in the Cold War, nor a relationship between container and contained. China’s development can’t be contained by anyone.”<sup>1053</sup>

- *Deputy Chief of the General Staff of the PLA, Wang Guanzhong via Xinhua*

- May 31, 2014 – “Deputy Chief of the General Staff of the Chinese People’s Liberation Army, Lieutenant General Wang Guanzhong said Hagel’s speech demonstrated US’ hegemony. He says the speech is filled with instigation, threat and intimidation.

It wanted to incite the destabilizing factors of Asia-Pacific region to stir up disputes. It was a totally non-constructive speech. Hagel’s repeatedly denouncement over China was entirely groundless.

He also said as the great powers of the world, both China and the US should expand shared interests, narrow differences and clear up misunderstanding. But Hagel’s speech made no contribution to develop new relationship between the two countries.”<sup>1054</sup>

- *Foreign Ministry spokesperson, Hong Lei*

- May 21, 2014 – “This morning, Director-General of the Department of North American and Oceanian Affairs of the Foreign Ministry Cong Peiwu met with American Deputy Assistant Secretary for East Asian and Pacific Affairs Kin Moy who came to China for consultation. China once again lodged solemn representations with the US side on the US Justice Department’s indictment of five Chinese military officers the other day. The Chinese side pointed out that the “indictment” by the US is purely ungrounded with ulterior motives, which further exposes the hypocrisy and hegemony of the US on cyber security issues. The Chinese side emphasized its firm commitment to upholding cyber security. The Chinese government, Chinese military and relevant personnel have never engaged or participated in cyber theft for trade secrets. The “indictment” by the US grossly violates the basic norms governing international relations and disrupts and jeopardizes China-US relations. China once again urges the US side to correct its mistakes and revoke the “indictment”. ”<sup>1055</sup>

- *Foreign ministry Spokesperson Hua Chunying*

- May 30, 2015 – “The Chinese side has noted the relevant remarks by US Defense Secretary Carter. In disregard of the history, jurisprudence and facts, the US side made inappropriate remarks on China’s long-standing sovereignty as well as rights and interests in the South China Sea to foment dissension and criticized China’s normal and justified construction activities on islands and reefs. The Chinese side is firmly opposed to that.”<sup>1056</sup>
- May 30, 2015 – “Sixth, the US is not a party to the South China Sea issue. It is not and shall not become an issue between China and the US. We strongly urge the US to keep the big picture of China-US relationship and regional peace and stability in mind, honor its commitment of not taking sides on issues concerning territorial sovereignty, show earnest respect to regional countries’ efforts to safeguard peace and stability in the South China Sea, be discreet with words and deeds and refrain from any of them that are detrimental to peace and stability in the South China Sea and China-US relations.”<sup>1057</sup>
- May 10, 2015 – “The US report makes willful speculations and comments on China’s military growth in defiance of the facts. By hyping up “China’s military threat and the lack of transparency in military strength”, the report questions China’s normal defense building and strategic intention, and makes inappropriate remarks on China’s justified actions of safeguarding territorial sovereignty and security interests in the South China Sea. The Chinese side hereby voices strong opposition to this.

China unswervingly follows the path of peaceful development and a national defense policy that is defensive in nature, and remains a staunch force in maintaining peace and stability of the Asia-Pacific and the world. China's national defense building, a right China is entitled to as a sovereign state, is for the sole purpose of safeguarding national independence, sovereignty and territorial integrity. It is hoped that the American side would abandon the cold-war mentality, view China's military development with objectiveness and reason instead of prejudices, stop issuing such kind of report or doing and saying anything that jeopardizes bilateral relations and military-to-military mutual trust, and make tangible moves to ensure the sound and steady development of state-to-state and military-to-military relations between China and the US.”<sup>1058</sup>

- May 28, 2015 – “The Chinese side has repeatedly elaborated on its principled position on the relevant issue. I'd like to underscore that the US chooses to be mute about a few countries' enduring construction on illegally occupied Chinese islands and reefs, but keeps talking improperly about China's lawful, justified and reasonable normal construction within its own sovereignty. If this is not a habitual application of double standard, then there must be hidden motives behind this. I want to reiterate that the size and pace of China's construction on relevant maritime features is commensurate with the international responsibilities and obligations undertaken by China as a major country. The Chinese people have their own judgment as for what to do. No one else has the right to tell China how to behave.”<sup>1059</sup>

### ***The Japanese Response and the ADIZ Debate***

The tensions between China and Japan have increased even more than the tensions between the U.S and China. The 2016 Japanese Defense White Paper addressed the impact of Chinese sovereignty disputes in the East China Sea as follows:<sup>1060</sup>

Regarding the activities of naval forces, the number of Chinese naval surface vessels advancing to the Pacific Ocean has increased in recent years, and such advancements continue to be conducted with high frequency. Since 2008, Chinese naval fleets have transited the sea area between the main island of Okinawa and Miyako Island several times every year. Furthermore, every year since 2012, naval fleets have passed through the Osumi Strait and the sea area between Yonaguni Island and Nakanokami Island near Iriomote Island. In March 2015, naval fleets navigated the sea area between Amamiyoshima Island and Yokoatejima Island westward. Naval fleets transited the Tsugaru Strait in October 2008 and February 2016 and the Soya Strait in July 2013, December 2014, and August 2015. In this regard, naval fleets are beginning to routinely pass through waters north of Japan. As such, the Chinese naval fleets' advancements and homing routes to and from the Pacific Ocean continue to become diverse by incorporating the areas north of Japan, and it is understood that China seeks to improve its deployment capabilities to the open ocean. In October 2013, China conducted Maneuver 5, the first joint exercise by its three naval fleets in the western Pacific Ocean. In December 2014, a similar joint exercise involving the three fleets was reportedly conducted.

In addition, Chinese naval vessels appear to conduct operations in the East China Sea continuously. Stating its own position regarding the Senkaku Islands China alleges that patrols by Chinese naval vessels in the sea areas under its jurisdiction are completely justifiable and lawful. In January 2013, a Chinese naval vessel directed fire-control radar at an MSDF destroyer and is suspected to have directed fire-control radar at a helicopter based on an MSDF destroyer. Moreover, in June 2016, a Jiangkai I-class frigate of the Chinese Navy entered Japan's contiguous zone near the Senkaku Islands. This was the first time a Chinese Navy combatant vessel entered Japan's contiguous zone. In recent years, Chinese Navy intelligence gathering vessels (AGIs) have also been found conducting multiple activities. A Chinese Navy Dongdiao-class AGI repeatedly navigated back and forth outside of the contiguous zone south of the Senkaku Islands in November 2015 and in waters outside of the contiguous zone southeast of the Boso Peninsula in December 2015 and February 2016. In June 2016, the same type of AGI sailed in Japan's territorial waters near Kuchinoerabu Island and Yakushima Island and then sailed within Japan's contiguous zone north of Kitadaito Island. Subsequently, the vessel repeatedly conducted east-west passages outside the contiguous zone south of the Senkaku Islands. This was the first navigation in Japanese territorial waters by a Chinese Navy vessel in approximately 12 years. It is of serious concern that recently China has unilaterally escalated

activities in waters near Japan, such as activities that are seen as actions based on their own assertions related to the Senkaku Islands and further expansion of its naval vessels' reach to include the Senkaku Islands.

China is strongly expected to recognize its responsibility in the international community, accept and comply with international norms, and play an active role in a more cooperative manner on regional and global issues. On the other hand, there have been disputes between China and other countries on issues relating to trade imbalances, currency rates, and human rights. Especially in regard to conflicts over maritime interests, China has adopted so-called assertive measures, including attempts to alter the status quo by coercive measures based on China's own assertion which is incompatible with the existing international law and order. These measures include dangerous acts that could cause unintended consequences and raise concerns over China's future direction.

With regard to activities of Chinese government vessels, in December 2008, China Maritime Surveillance vessels hovered and drifted inside Japan's territorial waters near the Senkaku Islands – operations which are not permitted under international law. In September 2010, Japan Coast Guard patrol vessels and a Chinese fishing trawler collided in Japan's territorial sea surrounding the Senkaku Islands. Subsequently, in August 2011 as well as in March and July 2012, "China Maritime Surveillance" vessels and "China Fisheries Law Enforcement Command" vessels intruded into Japan's aforementioned territorial waters. As these examples demonstrate, "China Maritime Surveillance" and "China Fisheries Law Enforcement Command" vessels have gradually intensified their activities in Japan's territorial waters. Such activities increased considerably and Chinese government vessels began to intrude into the aforementioned territorial waters intermittently after September 2012, when the Japanese government acquired property rights to and ownership of three of the Senkaku Islands (Uotsuri Island, Kitakojima Island, and Minamikojima Island). In April and September 2013, eight Chinese government vessels intruded into the aforementioned territorial waters simultaneously. The way in which government vessels have carried out operations intended to intrude into territorial waters since October 2013 suggested such operations had been routinized. In this light, an operations manual or other codes may have been developed.

Since December 26, 2015, Chinese government vessels carrying weapons that appear to be cannons have begun to repeatedly intrude into Japan's territorial waters. Additionally, government vessels deployed to seas near the Senkaku Islands are increasingly larger in size, with at least one of the government vessels intruding into Japan's territorial waters being a 3,000 t or larger-class vessel since August 2014. In February 2015, three 3,000 t or larger-class government vessels entered Japan's territorial waters simultaneously for the first time. China is also building the world's largest 10,000 t-class patrol vessel, and two vessels have reportedly already carried out sea trials. In this way, China is seen to be steadily strengthening an operational posture intended to use Chinese government vessels to intrude into Japan's territorial waters.

In October 2012, vessels of the East Sea Fleet of the Chinese Navy, along with "China Maritime Surveillance" and "China Fisheries Law Enforcement Command" vessels, conducted a joint exercise with a focus on maintaining and defending China's territorial sovereignty and maritime interests. Furthermore, the Navy is believed to be supporting maritime law enforcement agencies both in terms of operation and equipment. For example, the Navy is thought to have handed over retired Navy vessels to the China Coast Guard that was formally launched in July 2013. In 2014, the Navy and the China Coast Guard conducted a coordinated drill. Also, the Navy and the Maritime Safety Administration conducted the joint drill Poseidon 2014.

A Chinese Defense Ministry spokesman stated in response to the Japanese claims that China made repeated intrusions into Japanese territorial waters and airspace – and that China made use of aggressive tactics to expand its maritime power – that the Chinese military was "strongly discontented and resolutely against" the Japanese accusations. Further, the Chinese Defense Ministry said that Japan was undermining regional stability with its claims to the disputed Diaoyu/Senkaku Islands – an unusually strong rebuttal for the PRC, which rarely mentions other countries by name.<sup>1061</sup>

These disputes in the East China Sea reached a new level in November 2013 when China established an Air Defense Identification Zone (ADIZ) in the East China Sea. Within the ADIZ

are the disputed Senkaku/Diaoyu Islands (claimed by Japan and China), the Socotra Rock (claimed by South Korea as Ieodo and China as Suyan Jiao), and sections of the Japanese and South Korean ADIZ's.

The Chinese claimed that this ADIZ would enhance regional security and good order in the air. They also viewed the establishment of the ADIZ as an equalizing move, as China did not have an ADIZ in the East China Sea like Japan, South Korea, or Taiwan. Furthermore, they stated that the ADIZ was established partly to respond to "changes in foreign and Chinese aircraft capabilities and early warning technologies."<sup>1062</sup>

Despite these Chinese claims, the timing and lack of consultation with neighbors regarding the establishment of the ADIZ raised serious concerns about the true purpose of the ADIZ. These concerns were also increased by a unique characteristic of this ADIZ: aircraft that are not planning to enter Chinese airspace still must file a flight plan with Chinese authorities.

American ADIZ's, which China referred to in establishing their own, only place a requirement to file a flight plan on aircraft intending to enter American airspace.<sup>1063</sup> Although there may have been coordination issues between the military and the diplomatic/foreign affairs systems regarding the development and presentation of the ADIZ, there was broad agreement within the Chinese government that the ADIZ should be established.<sup>1064</sup>

A number of outside Observers believe that the ADIZ is a way to enhance Chinese claims in the region, demonstrate effective control, and help create a *fait accompli* in China's favor.<sup>1065</sup> The building of this *fait accompli* is effectively the bit-by-bit strengthening, also called "salami slicing," of *de facto* claims of sovereignty.<sup>1066</sup>

The establishment of the ADIZ, although claimed to target no one, does appear to be a response to Japanese claims in the East China Sea. Indeed, although the ADIZ overlaps with Japanese, South Korean, and Taiwanese ADIZ's, Chinese responses to Japanese protest are particularly strong and harsh. On the contrary, Chinese responses to South Korean and Taiwanese protests are more accommodating and friendly.<sup>1067</sup>

In any case, the creation of such an ADIZ increases the likelihood of accidents and miscalculated escalation. China will commit ships and aircraft to enforce the ADIZ and current crisis management mechanisms, such as actively used hotlines between disputing states, are lacking.<sup>1068</sup> China's enforcement of its controversial ADIZ has led to close encounters in the air between Chinese and Japanese military aircraft, where military aircraft from both countries were flying in close proximity to each other.<sup>1069</sup> While incidents at sea are relatively easy to avoid because of the slower operating speeds of vessels, the high speed and small size of aircraft can make avoiding accidental collisions much more difficult.

The August 2016 Japanese defense white paper noted numerous concerns regarding Chinese violations of Japanese airspace as well as China's ADIZ over the East China Sea:<sup>1070</sup>

In recent years, activities by Chinese Navy and Air Force aircraft, which appear to be gathering information about Japan of some form, have been intensified. The number of scrambles by the ASDF against Chinese aircraft is also increasing dramatically.

With regard to activities of air forces in the airspace above the East China Sea, Chinese aircraft have been diversifying their flight patterns. Multiple H-6 bombers in September 2007 and a Y-8 early warning aircraft in March 2010 flew into Japan's ADIZ above the East China Sea and advanced near the Japan-China median line. In March 2011, a Y-8 patrol aircraft and Y-8 intelligence gathering aircraft crossed the Japan-China median line and approached within approximately 50 km of Japan's airspace near the Senkaku Islands. In

2012, China intensified the activities of its aircraft, including fighters. In January 2013, the Chinese Ministry of National Defense made public the fact that Chinese military aircraft regularly conducted warning and surveillance activities and that Chinese fighters conducted activities believed to be Combat Air Patrols (CAP) in the East China Sea. In addition, in the same Chinese defense white paper, the phrase “air vigilance and patrols at sea” was added for the first time.

On November 23, 2013, the Chinese government announced that it established the “East China Sea ADIZ” including the Senkaku Islands which China described as if they were a part of China’s “territory,” and that the Chinese Armed Forces would take “defensive emergency measures” in the case where aircraft does not follow the relevant rules set forth by the Chinese Ministry of National Defense. On the same day, a Tu-154 intelligence gathering aircraft and a Y-8 intelligence gathering aircraft respectively flew over the East China Sea. On these, the Chinese Air Force announced that it conducted its first patrol flight since the establishment of the ADIZ. On December 26, 2013, the Chinese Armed Forces announced that in the one month that passed since the establishment of the ADIZ, a total of 87 reconnaissance aircraft, early warning aircraft and fighters were mobilized to the relevant airspace.

In March and April 2011 and in April 2012, Chinese helicopters and other aircraft that appeared to belong to the State Oceanic Administration (SOA) flew close to MSDF destroyers which were engaged in monitoring and surveillance in the East China Sea. Further still, in May and June 2014, two Su-27 fighters of China flew abnormally close to the aircraft of MSDF and ASDF that were conducting routine monitoring and surveillance activities in the East China Sea. The Chinese Ministry of National Defense announced that SDF aircraft conducted dangerous acts against Chinese aircraft. However, the operations of SDF aircraft were legitimate in compliance with the international law. There is no truth to the Chinese assertion that SDF aircraft carried out dangerous acts.

With respect to Chinese air forces’ advancement into the Pacific Ocean, ASDF’s scrambling fighters confirmed for the first time that a Y-8 early warning aircraft flew over waters between the main island of Okinawa and Miyako Island to the Pacific Ocean in July 2013. In 2015, similar flights were conducted by a Y-9 intelligence gathering aircraft on two consecutive days in February, by two H-6 bombers in May, by a Y-9 intelligence gathering aircraft, a Y-8 early warning aircraft, and two H-6 bombers (total: four aircraft) on two consecutive days in July, and by four H-6 bombers, a Tu-154 intelligence gathering aircraft, and a Y-8 intelligence gathering aircraft (total: six aircraft) in November, respectively. In late January 2016, a total of two aircraft, namely, a Y-9 intelligence gathering aircraft and a Y-8 early warning aircraft, flew over the Tsushima Strait before conducting operations in the Sea of Japan for the first time. As such, China is further intensifying activities of its aircraft.

Regarding Japan’s airspace over and around the Senkaku Islands, territorial airspace intrusion by a fixed-wing aircraft of the SOA in December 2012 marked the first such instance by a Chinese aircraft. Subsequently, fixed-wing aircraft of the SOA were frequently observed flying near the airspace up through March 2014.

Recently, Chinese PLA aircraft have also been seen flying in the southward direction near the Senkaku Islands. In June 2016, ASDF fighters scrambled against Chinese PLA aircraft that flew southward closer to the Senkaku Islands. The Chinese Ministry of National Defense released an official announcement stating that SDF aircraft conducted provocations against Chinese PLA aircraft.

However, SDF aircraft conduct scrambles in accordance with international law and the Self-Defense Forces Law, and it is not true that SDF aircraft conducted provocations against Chinese PLA aircraft. With stronger interests, attention will need to be paid to activities carried out by Chinese PLA aircraft recently near the Senkaku Islands.

One commentator also suggested that the creation of the ADIZ shows that China is less willing to leave regional security up to the United States, wants to “consolidate” its national interests, and believes that there is nothing China can do to become a “responsible stakeholder” without giving up on its national interests. With this more pessimistic view of the US, China believed that the establishment of an ADIZ would be a rather low-risk move that could still serve to solidify Chinese claims, galvanize public sentiment, and examine American intentions through the response to its ADIZ.<sup>1071</sup>



## *The Japanese Reinterpretation of the Its Constitution and Collective Self Defense*

Shifts in Japan's strategy are also creating increased tensions – not only with China, but with South Korea and other Asian states. In July of 2014, Japan made a controversial move to reinterpret the Constitution in order to allow the JSDF to engage in collective self-defense. While the US welcomed the move, China, South Korea, and large parts of the Japanese public strongly protested the reinterpretation. Collective self-defense would allow Japanese forces to come to the aid of an ally if that ally is under attack. However, Japanese forces are still highly constrained as strict conditions remain regarding when Japanese forces can engage opposing forces.

**Figure 17.2** shows a chart from the 2014 Japanese Defense White Paper that outlines Japan's policies regarding collective self-defense, as well as UN collective security measures, UN peacekeeping operations, and other instances where the SDF may need to be deployed.

**Figure 17.2 Japanese Constitutional Interpretation and Legal Policies**

Fig. II-1-3-1 Outline of the report

	Right of Collective Self-Defense	Collective Security Measures of the U.N. Entailing Military Measures	U.N. PKOs/ Protection and Rescue of Japanese Nationals Abroad/ International Security Cooperation	Response to an Infringement that does not Amount to an Armed Attack
Constitutional Interpretation	<ul style="list-style-type: none"> <li>○ The provisions of Article 9 of the Constitution should be interpreted as prohibiting the threat or the use of force as means of settling international disputes to which Japan is a party and not prohibiting the use of force for the purpose of self-defense.</li> <li>○ Even from the view of the Government to date that "these measures necessary for self-defense should be limited to the minimum extent necessary," it should be interpreted that the exercise of the right of collective self-defense is also included in "the minimum extent necessary."</li> <li>○ When a foreign country that is in a close relationship with Japan comes under an armed attack and</li> <li>○ If such a situation has the potential to significantly affect the security of Japan</li> </ul> <p>⇒ Japan should be able to participate in operations to repel such an attack by using forces to the minimum extent necessary, having obtained an explicit request or consent from the country under attack.</p>	<ul style="list-style-type: none"> <li>○ Participation in collective security measures of the U.N. will not constitute the use of force as means of settling international disputes to which Japan is a party and therefore they should be interpreted as not being subject to constitutional restrictions.</li> </ul>	<ul style="list-style-type: none"> <li>○ These activities should be interpreted as not constituting the "use of force" prohibited under Article 9 of the Constitution. The use of weapons in the course of the following activities should be interpreted as not being restricted constitutionally.</li> </ul> <ol style="list-style-type: none"> <li>1. To come to the aid of geographically distant unit or personnel that are engaged in the same U.N. PKO etc., and to use weapons, if necessary, to defend them, in the event that such a unit or personnel are attacked ("kaketsuke-keigo")</li> <li>2. To remove obstructive attempts against its missions</li> </ol>	<ul style="list-style-type: none"> <li>○ Even in the case of an infringement which cannot be judged whether it constitutes "an armed attack (an organized and planned use of force)," action to the minimum extent necessary by the SDF to repel such an infringement should be permitted under the Constitution.</li> </ul>
Legislative Policies etc.	<ul style="list-style-type: none"> <li>○ The Diet: Legal source is needed. The approval, either prior or ex post facto, of the Diet should be required.</li> <li>○ The Government: Discussion and approval by the National Security Council under the leadership of the Prime Minister and a Cabinet Decision should be required. (After a comprehensive assessment, a policy decision not to exercise the right of collective self-defense could be made.)</li> <li>○ In the case that Japan would pass through the territory of a third country, the consent of that third country should be obtained.</li> </ul>	<ul style="list-style-type: none"> <li>○ The Diet: Legal source is needed. The approval, either prior or ex post facto, of the Diet should be required.</li> <li>○ The Government: Proactive contribution should be made. Decisions should be made carefully, based on comprehensive examination on the political significance etc.</li> </ul>	<ul style="list-style-type: none"> <li>○ Requirements in the Rules of Engagements etc. should be amended in line with U.N. standards.</li> <li>○ The so-called Five Principles on Japan's Participation in U.N. PKOs also need to be examined in view of its revision.</li> </ul>	<ul style="list-style-type: none"> <li>○ It is necessary to enhance the legal system within a scope permitted under international law to enable a seamless response.</li> </ul>
The Panel strongly expects that the Government will consider this report earnestly and proceed to take necessary legislative measures.				

Source: Japanese Ministry of Defense, *Defense of Japan 2014*, August 2014.

Tensions grew in 2015. On the 70<sup>th</sup> anniversary of the Japanese surrender in World War II, Prime Minister Abe repeated apologies expressed by previous Japanese administrations but refrained from offering his own.<sup>1072</sup>

Japan has repeatedly expressed the feelings of deep remorse and heartfelt apology for its actions during the war. In order to manifest such feelings through concrete actions, we have engraved in our hearts the histories of suffering of the people in Asia as our neighbors: those in Southeast Asian countries such as Indonesia and the Philippines, and Taiwan, the Republic of Korea and China, among others; and we have consistently devoted ourselves to the peace and prosperity of the region since the end of the war.

Such position articulated by the previous cabinets will remain unshakable into the future.

However, no matter what kind of efforts we may make, the sorrows of those who lost their family members and the painful memories of those who underwent immense sufferings by the destruction of war will never be healed.

This lack of a direct apology had an impact on relations with China and South Korea, where the legacy of WWII is particularly sensitive. Abe cautiously expressed a sentiment that modern Japan has apologized enough for crimes perpetrated in the past:

In Japan, the postwar generations now exceed eighty per cent of its population. We must not let our children, grandchildren, and even further generations to come, who have nothing to do with that war, be predestined to apologize.

China immediately criticized Abe for failing to apologize any further. A Xinhua commentary argues:<sup>1073</sup>

Yet given the carefully calibrated context into which he has embedded those too-fundamental-to-avoid terms, the apology was a diluted one at best, thus marking only a crippled start to build trust among its neighbors.

Closely watched both at home and abroad, Abe trod a fine line with linguistic tricks, attempting to please his rightwing base on the one hand and avoid further damage in Japan's ties with its neighbors on the other.

The watered-down statement, in essence, is a retrogression from the 1995 statement by then Prime Minister Tomiichi Murayama, which bravely and honestly admitted Japan's war past and expressed "deep remorse" and a "heartfelt apology" for its war crimes.

Instead of offering an unambiguous apology, Abe's statement is rife with rhetorical twists like "maintain our position of apology", dead giveaways of his deep-rooted historical revisionism, which has haunted Japan's neighborhood relations.

By adding that it is unnecessary for Japan's future generations to keep apologizing, Abe seemed to say that his once-for-all apology can close the page of history.

However, those countries which suffered from Japan's aggression would never forget that dark period of history, as Japanese would always remember the horrific scenes of A-bombed Hiroshima and Nagasaki.

The tuned-down apology is not of much help to eliminating Tokyo's trust deficit. It fails to firm up -- if not serving to further undercut -- the credibility the Abe government needs to put Japan's interaction with its Asian neighbors back on track.

Thus the "normal country" dream Abe has long been trumpeting gets no closer. The way leading to that goal cannot be paved by reluctance to extend an unalloyed apology for the atrocities committed by imperial Japan.

China seems likely to use such anti-Japanese sentiments to boost nationalistic fervor and try drive a further wedge between Japan and South Korea.

## ***The Impact of Shifts in US and Chinese Strategy and Forces in the Pacific and IOR***

These tensions between China, the U.S., and Japan are only part of the story helping to drive Chinese force modernization and change Chinese strategy. The previous analysis of the Southeast Asia Sub-region has shown that many of China's neighbors – including several key states in the Eastern IOR -- have become increasingly concerned about China's ambitions. As the previous chapter has shown, this aided the US by making such states more willing to be its strategic partners.

### **The Asian States**

According to the June 2015 Pew Global Attitudes poll, of the 35 countries surveyed, China has become more favorable since 2014 with an increase in positive view to 54 percent and a drop in negative views from 38 percent to 34 percent. However, the positive image does not show similar favorability ratings with human rights with 45 percent of 39 countries surveyed that say that "Chinese government does not respect the personal freedoms of its people."<sup>1074</sup>

In comparison, a 2013 study showed Asia-Pacific nations surveyed (Japan, Philippines, South Korea, Australia, China, Indonesia, Malaysia, and Pakistan), 64% view the US favorably and 58% view China favorably. Japan is the outlier. While 69% of Japanese citizens see the US favorably, only 5% see China favorably.<sup>1075</sup>

At the same time, the reaction of Asian states has not been uniform, and even formal treaty allies of the US such as the Philippines and Thailand have had mixed reactions. There is significant domestic political opposition in the Philippines to expanded basing rights for the US. It was reported in mid-July 2013 that the US and the Philippines were in the midst of negotiations for increased positioning of US military equipment and personnel rotation into the country, though the issue of re-establishing US bases was being side-stepped.<sup>1076</sup> Thailand has recently increased relations with China – including in defense-related areas. Singapore has increased its quasi-basing facilities available to the US Navy but refuses to give up its neutrality and be drawn into any sort of alliance.<sup>1077</sup> Other Asian states have been even more cautious; Vietnam, despite territorial disputes with China, has continued strict rationing of US Navy port calls in order to not undermine its relations with China. Indonesia and Malaysia must both be careful not to alienate domestic constituencies by increasing relations with the US, while Malaysia has kept a positive attitude towards China – its most important trading partner – and has recently increased defense and security ties. As a 2012 IISS report noted,<sup>1078</sup>

Policymakers throughout Southeast Asia and the wider Asia-Pacific are acutely conscious of and concerned about the implications for their countries' foreign and security policy orientations of the changing regional distribution of power, particularly in terms of China's growing power and assertiveness. At the same time, though, remaining on good terms with Beijing is important for their economic health, and most Southeast Asian states (the Philippines being the exception) have been unwilling to jeopardize their trade and investment links with China.

But Southeast Asian governments also harbor substantial doubts over the durability of America's role, and have not been easily convinced by the rhetoric of the US rebalance. They understand well that there is a significant public-relations element in pronouncements about the long-term viability of the US security role. Southeast Asians have seen a series of outside powers come and go. They recognize that, as the US reduces its forces in Europe and withdraws from Afghanistan, the Asia-Pacific will naturally be the main defence focus for America. But they also know that Washington's longer-term regional commitment could become hostage to fiscal realities and to changes of administration. In these circumstances, most Southeast Asian states are keeping their strategic options open.

Meanwhile, India appears to welcome America's strengthened regional presence as a counterbalance to China and as a chance for India to assert its strategic role in the region. Japan, especially in the context of territorial disputes over islands, has also welcomed increased US presence.

### ***The Broader Strategic Impact of Chinese Military Modernization***

It is still unclear how much China's steady emergence as a major military power will increase these risks. One needs to be careful not to underestimate the gaps between China's future strategic goals and its current military capabilities. In spite of the growing Chinese rate of military modernization, it may well be a decade before China can seriously compete with the combination of USPACOM and USCENTCOM forces that the US can deploy. In the near to mid-term, China is likely to focus on the Eastern Pacific. It is only likely to try to play a major role outside the airspace and "blue water" distant from its coast if it feels it faces a major threat to its energy exports or that it faces a major threat to its maritime commerce in the Strait of Malacca.

### **The Key Impact of China's Energy Imports**

China and the U.S. also seem likely to retain important common strategic interests. China is likely to remain strategically dependent on some aspects of U.S. military capability. In the near term, China's role in the Indian Ocean region and the Gulf seems most likely to remain limited to roles like being part of the antipiracy force off the coast of Somalia and the Gulf of Aden, growing numbers of port visits, and a focus on expanding its ties to Pakistan and Myanmar.

China may come to see the Indian Ocean and the Gulf as areas where will be ready to play a major air-sea-missile role in securing its critical sources of energy imports and be able to challenge India and the U.S. China's growing economic ties to Africa and Latin America may also lead it to develop broader global capabilities for power projection.

In the near term, however, it is important to counterbalance what seem to be exaggerated fears of the broader strategic emergence of China's military modernization with the fact China is finding other ways to reduce its strategic vulnerability to an interruption of its energy imports.

As the EIA reports, this is part of a Chinese strategy that goes well beyond the Eastern and South Pacific:<sup>1079</sup>

China's oil production from its overseas equity shares and acquisitions grew significantly over the past several years, from 1.36 million bbl/d in 2010 to an estimated 2.1 million bbl/d in 2013, according to the IEA. CNPC holds the most equity production and investment overseas of all the NOCs, although Sinopec, CNOOC, and other smaller NOCs and private companies have rapidly expanded their overseas investment profiles over the past five years. Chinese companies are participating in upstream activities in 42 countries, and half of the overseas oil production stems from the Middle East and Africa. Iraq is a key country where all three of the NOCs have invested in several large fields where they expect production to increase. About 26% of China's overseas oil production in 2013 was in Iraq.<sup>27</sup> Kazakhstan, Sudan, and South Sudan are other countries that have contributed to sizeable portions of China's overseas production.

In the past few years, China has diversified its overseas upstream acquisitions to include new oil formations in Brazil and North America. Not only do these assets provide commercial opportunities, they allow the NOCs to gain technical expertise in challenging and unconventional plays. Although CNOOC contributed just small amounts to China's overseas hydrocarbon production for several years, the NOC has swiftly increased oil and gas purchases since 2010 in an attempt to gain technical expertise and acreage in shale oil, shale gas, and coalbed methane and deepwater hydrocarbon resources. Following approval from Canada, CNOOC purchased the Canadian oil company Nexen for \$15.1 billion (plus \$2.8 billion in Nexen's net debt) in 2013. This deal became China's largest overseas acquisition. CNPC, Sinopec, and Sinochem have purchased stakes in producing fields in Canada, the United States, and Brazil as well.

Chinese NOCs have also invested in overseas shale gas and tight gas formations to improve their technical capacities for developing these resources domestically and to secure gas supplies. As China rapidly expands its imports of liquefied natural gas (LNG), the NOCs are seeking supply contracts by purchasing stakes in the upstream developments and liquefaction terminals in the Asia-Pacific region, Canada, and the United States.

By the end of 2013, Chinese NOCs had secured bilateral oil-for-loan deals with several countries, amounting to almost \$150 billion.<sup>28</sup> China provided loans to countries that need capital to extract energy reserves and build energy infrastructure in exchange for oil and gas imports at established prices. China extended oil-for-loan deals with Russia, Kazakhstan, Venezuela, Brazil, Ecuador, Bolivia, Angola, and Ghana and has had a gas-for-loan agreement with Turkmenistan over the past decade. Venezuela and China signed several deals for more than \$45 billion in exchange for 600,000 bbl/d of crude oil and products. Based on China's trade data, Venezuela falls short of this amount, but the country's crude oil exports to China have ramped up markedly from four years ago and were 276,000 bbl/d in 2014. The recent low oil price environment is affecting Venezuela's upstream development and export capacity in the near term, and China provided another \$5 billion in 2015 for oil investment.<sup>29</sup> Several oil and gas deals have been signed with Russia in the past few years, including two loan-for-oil deals amounting to \$50 billion, signaling China's move to diversify its energy supply. Each of the deals includes 300,000 bbl/d of oil transported through the ESPO pipeline from Russia to China. CNPC and Russia's Rosneft formed a JV, where CNPC holds a 49% stake, to develop Russia's East Siberian oil fields, which are expected to help meet the export requirements of the deals.<sup>30</sup> These agreements signal the growing energy ties between the neighboring countries and China's interest in gaining more access to Russian oil.

...China inaugurated its first transnational oil pipeline in 2006, when it began receiving Kazakh and Russian oil from a pipeline originating in Kazakhstan. The pipeline, developed by a joint venture between CNPC and Kazakhstan's KazMunayGas (KMG) and financed by Chinese loans, transports oil from the oilfields in western and central Kazakhstan to China. The pipeline, which has been developed in stages, connects Atyrau in western Kazakhstan on the Caspian Sea with Alashankou on the Chinese border in Xinjiang. The pipeline's initial capacity was 200,000 bbl/d, and an expansion in 2013 along the route from central Kazakhstan to China doubled the capacity to 400,000 bbl/d on the Atasu-to-Alashankou section. Further infrastructure expansion and export capabilities are contingent on the development of Kazakhstan's Kashagan field as well as domestic requirements on the Kazakh side.<sup>37</sup>

Russia's new East Siberian oil fields have become another source for Chinese crude oil imports. Russian state-owned oil giant Transneft constructed the Eastern Siberia-Pacific Ocean (ESPO) Pipeline, extending 3,000 miles from the Russian city of Taishet to the Pacific Coast in two stages. The first stage of the project included the construction of a 740,000-bbl/d pipeline from Taishet to Skovorodino in Russia. CNPC also built a 597-mile pipeline linking the spur with the Daqing oil field in the Northeast. The pipeline spur to China became operational in January 2011, and delivers up to 300,000 bbl/d of Russian oil to the Chinese

border under an original 20-year supply contract between the two countries. The second stage of ESPO came online at the end of 2012 and delivers oil to the Russian Pacific port of Kozmino. This port provides Russia the option to send more crude oil to China via a sea route. Russia anticipates expanding the ESPO transmission capacity to Skovorodino to 1.6 million bbl/d by 2020 and augmenting contracted supply to China through this route.<sup>38</sup>

China launched an oil import pipeline with a capacity of 440,000 bbl/d from Myanmar in January 2015.<sup>39</sup> Myanmar is not a significant oil producer, so the pipeline is envisioned as an alternative transport route for crude oil from the Middle East that would bypass the potential choke point of the Strait of Malacca, which approximately 80% of China's oil imports traverse based on crude oil import sources and routes. CNPC plans to send crude oil from the pipeline to serve the Yunnan/Anning refinery that is slated to start operations in 2016 and to the Chongqing refinery that could begin operations in 2017. In the meantime, China plans to store any oil imports from the pipeline in excess of local demand.

...Over the past four years, China has ramped up imports of natural gas via pipelines as production from Central Asia and Myanmar increased and as gas infrastructure in the region improved. China's total imports by pipeline were 1,133 Bcf/y in 2014, up 20% from 2013 imports. Pipeline imports swiftly exceeded LNG imports beginning in 2012.<sup>90</sup> China's first international natural gas pipeline connection, the Central Asian Gas Pipeline (CAGP), transports natural gas through three parallel pipelines from Turkmenistan, Uzbekistan, and Kazakhstan to the border in western China. The CAGP's current capacity is 1.9 Tcf/y (pending the launch of the eastern portion of the third West-East Pipeline in 2015) and spans 1,143 miles. The pipeline's first and second phases (Lines A and B) began operations in 2010 with 1.1 Bcf/y of capacity and link to the second West-East Pipeline at the Sino-Kazak border.

CNPC has invested in upstream stakes in Turkmenistan to facilitate gas supply development. The NOC operates the Bagtyyarlyk PSC that currently feeds the CAGP. In 2009, CNPC was awarded a production supply agreement to develop natural gas resources at Turkmenistan's massive Galkynysh gas field and signed a deal with Turkmengaz, the state-owned gas company. China imported more than 2.8 Bcf/d (1,040 Bcf/y) from Turkmenistan and Uzbekistan in 2014 and expects to increase imports as the pipeline capacities on both sides of the border expand. Turkmenistan and China signed another gas supply agreement in 2013 to extend supplies from 1.4 Tcf/y to 2.3 Tcf/y by 2020 as the new Galkynysh field ramps up production following its start of operations in September 2013.<sup>91</sup>

The CAGP is undergoing rapid expansion as more supply agreements are signed and as gas production capacity becomes available from Turkmenistan, Uzbekistan, and Kazakhstan. In 2010, CNPC signed an agreement with Uzbekistan to deliver 350 Bcf/y (1 Bcf/d) through a transmission line that connects with the CAGP. Uzbekistan began exporting natural gas to China in mid-2012 and quickly ramped up to about 400 MMcf/d by mid-2013. The third phase of the CAGP, known as Line C, added another 880 Bcf/y of capacity from the three Central Asian countries to the CAGP system and became partially operational in May 2014. This line corresponds with the commencement of the third West-East Pipeline on the Chinese side, slated for 2015. Kazakhstan and China formed a joint venture in 2010 to construct a pipeline (the Beyneu-Bozoi-Shymkent pipeline spur) starting in western Kazakhstan and connecting with the other CAGP lines. The second phase of this pipeline from Kazakhstan links this country's western fields to Line C of the CAGP and is scheduled to come online in 2015.<sup>92</sup> CNPC signed agreements with the NOCs of Uzbekistan and Tajikistan in September 2013 to build a fourth line of the CAGP (Line D) that would supply natural gas from the second stage of the Galkynysh field development and traverse Turkmenistan, Uzbekistan, Tajikistan, and Kyrgyzstan. Construction began on Line D in September 2014, and the pipeline is scheduled to increase the system's capacity by another 880 Bcf/y by 2016.<sup>93</sup>

The China-Myanmar natural gas pipeline is likely to boost gas imports to China and diversify its supply in the future. CNPC signed a deal with Myanmar in 2008 to finance the construction of a 420 Bcf/y pipeline from two of Myanmar's offshore blocks to China's Yunnan and Guangxi provinces in the southwestern region. China began importing gas from Myanmar when the pipeline became operational in mid-2013, and by 2014, CNPC imported 116 Bcf.<sup>94</sup> The pipeline is projected to ramp up to full capacity as adjacent gas fields in Myanmar are developed and as the gas price reforms take effect in China, allowing imported gas to be more economically competitive with domestically produced gas.

Russia and China signed a momentous gas deal in May 2014 after a decade of negotiations over the import price and the supply route. China agreed to purchase 1.3 Tcf/y of gas from Gazprom's East Siberian fields for

\$400 billion over a 30-year period. The proposed Power of Siberia pipeline will connect Russia's eastern Siberian gas fields and Sakhalin Island to northeastern China. The NDRC approved construction of the pipeline on the Chinese side in late 2014 and anticipates the pipeline coming online in 2018. In November 2014, Gazprom and CNPC also signed a Memorandum of Understanding (MOU) for China to import 1.1 Bcf/y from Russia's western Siberian gas fields.<sup>95</sup> However, no price has been determined, and the deal would require infrastructure expansion. China is currently weighing its projected natural gas demand against the costs of the various supply sources, and the gas-on-gas competition within the country is growing.

### **Seeking New and More Secure Routes of Energy Supply**

China is now completing two Sino-Burma pipelines in 2013 that bypass the Strait of Malacca. An oil and natural gas pipelines run in parallel. Wikipedia reports that they start near Kyaukphyu, run through Mandalay, Lashio, and Muse in Myanmar before entering China at the border city of Ruili in Yunnan province. The oil pipeline, which will eventually terminate in Kunming, capital of Yunnan province, will be 771 kilometers (479 mi) long.

The natural gas pipeline will extend further from Kunming to Guizhou and Guangxi in China, running a total of 2,806 kilometers (1,700 mi). The oil pipeline will have a capacity of 12 million tons of crude oil per year. It would diversify China's crude oil imports routes from the Middle East and Africa, and avoid traffic through the Strait of Malacca. Oil storage tanks will be built on an island near the port of Kyaukphyu. For oil processing China will build refineries in Chongqing, Sichuan, and in Yunnan. The gas pipeline would allow delivery of natural gas from Burma's offshore fields to China with an expected annual capacity of up to 12 Bcm of natural gas.<sup>1080</sup>

China may find other ways to reduce its vulnerabilities in the IOR. In the longer-term, China may find ways to bypass the IOR in obtaining energy exports from the Gulf, and increase its access to energy exports from Central Asia. There are reports that Pakistan met with Chinese officials to discuss the possibility of extending an Iranian gas pipeline to China rather than India in August of 2013.<sup>1081</sup>

China has also at least examined options for a pipeline from the Pakistani port at Gwadar to Gligit-Balistan and the Chinese border – an area that Pakistan disputes with India. These are now concepts not plans, and there are many problems in cost, terrain, and security.

In November 2015, a Chinese state-owned company Chinese, Overseas Ports Holding Company Ltd China, was officially granted operational control of the Pakistani port at Gwadar<sup>1082</sup> – a major facility near Iran and relatively near to the Strait of Hormuz that China has helped modernize.<sup>1083</sup> A Pakistani analyst – Ghulam Ali, previously noted in May 2013 that other analysts argue the port could become China's naval base in the Indian Ocean and enable Beijing to monitor Indian and US naval activities, and the port has also been called the western-most link in China's 'string of pearls' strategy.<sup>1084</sup> He also notes, however, that the port is underdeveloped, and that:

Unlike Islamabad's tall claims about the port's geo-economic significance, Beijing has taken a more cautious and realistic approach. China remains skeptical of the port's profitability. Both in 2001, when it agreed to finance the first phase of the port, and in 2013, when it took over administrative control of the port, Pakistan had to drag Beijing into the project.

Gwadar is not the only option for the Chinese in the Indian Ocean. It is not even the most viable option. Beijing has developed Hambantota port in Sri Lanka and built a container port facility in Chittagong in Bangladesh. In Myanmar, Beijing has built roads, dams and pipelines, and is looking to the ports of Kyaukpyu and Sittwe, regardless of the fact that the latter is being built by India. Beijing intends to lay a pipeline from Kyaukpyu to Yunnan province. Chinese oil ships from the Middle East and Africa will cross the Bay of Bengal and unload at these ports, allowing oil to be piped to Yunnan. China appears more

optimistic about the future of an Arakana–Yunnan pipeline than the Gwadar–Xinjiang pipeline because it considers Myanmar capable of protecting its assets.

Due to its strategic location, and because the strong military ties between China and Pakistan, Gwadar port has received excessive attention from the very beginning. Despite its being over a decade since China started construction of the first phase, no military-related activity has ever been observed there. If China intended to use a Pakistani port for naval purposes, Karachi, with its established military infrastructure, is an alternative that is available although Karachi has the strategic disadvantage of proximity to India.

It is likely that China will develop the port quickly by making a bigger investment than the PSA, but its current interests appear commercial, aimed at securing its energy supplies. Moreover, Gwadar is just one of several options for Beijing, and due to the volatile security situation in the surrounding region it may not be China's best bet. Gwadar is far from becoming a Chinese economic hub, let alone a security asset.

Indeed, in the past years since China has taken control of Gwadar, Ali's words look prescient. There remain many questions regarding the viability of the Gwadar port and what China plans to do with it. Pakistan remains a difficult partner due to the dysfunctional aspects of its domestic politics. Additionally, Gwadar's location in Pakistan's least populated province of Baluchistan is difficult due to a long-term movement for Baluchistan's independence and the Pakistan government's harsh treatment of ethnic Balochs that has perpetuated support of separatist rebel groups.



### ***Cooperation, Competition, or Conflict***

In conclusion, several key uncertainties seem likely to shape the shape the prospects for future cooperation, competition, or conflict.

- The first is the US willingness to keep strong forces in the Gulf and Pacific, and create stronger partnerships with regional powers. Anything approaching further major cuts in US forces or a US decision not to keep securing the Gulf and Pacific would create a power vacuum China would probably try to fill – and could fill much earlier if the US were absent.
- The second is that the competition between China, Japan, the Koreans, and over the East and South China Seas will escalate out of any proportion to the limited strategic value of any of the objectives involved. The reality is that the real world value of the previous disputes and claims is limited, and there sometimes is a curiously regressive character to the level of nationalism and rhetoric involved. A combination of primitive geopolitics, and the inability to forget the past rather than remember it, could drag China and the U.S. into a far more direct and serious level of confrontation and even conflict,
- The third is that China may wish to exploit its status as a rising world power on a much wider stage, and that the Gulf and Indian Ocean powers might welcome and support a Chinese presence in the Gulf and in key ports in countries Pakistan and Burma as a counterbalance to the US or a way of serving their own interests. This may create a new level of rivalry between China and India, and the Gulf states cannot ignore the extent to which Asian demand is rising as US demand for energy imports is dropping, and their tensions with the US over other issues may lead them to seek some kind of Chinese military role.
- A fourth is that Chinese cooperation with Russia may become tied to each nation's tensions with the U.S. and create a new and more global bloc of tensions.
- A final -- but opposite -- trend is that Chinese faces serious economic challenges from an aging population, its slow shift to creating effective domestic demand, and competition from other states with lower labor costs. China faces increasing challenges of its own and it may not be able to sustain either its present economic growth or its military ambitions.

It will take time to see how this complex mix of uncertainties affect the relative role of the US and China. It is also at least possible that both will find a way to cooperate in securing their interests in the IOR. Such cooperation would mean less cost and less risk for both powers, but their other goals and tensions seem more likely to keeping pushing them towards competition.

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Note: U.S. (2013), Russia (2012), UK (2011), France (2011-2012), China (2013), India (2013), Pakistan (2013), Israel (2013), DPRK (2013)

Note: Nuclear weapons programs are generally shrouded in secrecy and all of the totals listed above should be considered estimates. The numbers in the chart above are based on the most recent available estimates from the Bulletin of the Atomic Scientists Nuclear Notebook series by Robert S. Norris and Hans M. Kristensen. The specific sources include 2013 data on “Non-P5 Nuclear-Armed States” and “U.S. Nuclear Forces,” 2012 data on “Indian Nuclear Forces,” and 2011 data on “British Nuclear Forces”.

According to State Department figures from the latest New START data exchange, as of September 1, 2012 the United States had 1,722 deployed strategic warheads and Russia had 1,499 deployed strategic warheads. This is a respective drop of 15 and increase of 9 warheads since the data exchange six months previously. U.S. totals are lower than the estimates in the chart primarily because New START counts bombers as having one warhead each, even though up to 20 warheads can be assigned to each bomber. In Russia’s case, the number of warheads assigned to delivery systems in the chart also includes warheads assigned to submarines in overhaul, which are also not counted as deployed by the treaty. Under New START, both the United States and Russia must reduce their stockpiles of deployed strategic warheads to less than 1,550 warheads by 2018. According to the December 2012 State Department report, operations to reduce U.S. missile launchers will begin in 2015.

The U.S. government disclosed in April 2010 that as of September 30, 2009, the total U.S. stockpile had 5,113 warheads. On March 1<sup>st</sup>, 2013, Drs. Hans Kristensen and Robert S. Norris revised that total to an estimated 4,650 warheads. This number excludes approximately 3,000 thousand warheads awaiting dismantlement, whereas the totals in the chart above include weapons awaiting dismantlement.

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