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Chinese Strategy and Military Modernization in 2015

A Comparative Analysis

A Report of the CSIS Burke Chair in Strategy

AUTHOR

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WITH

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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.¹ 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 rising tension or conflict.

This study is intended to support such a dialogue between China, the United States, and other key Asian powers. It focuses on the current developments in China's military strategy, forces, and modernization, but does in the context of how they are influencing US. strategy and force development, the reactions of Japan, South Korea, and Taiwan. It also focuses on how Chinese military developments affect the rising tensions in areas like the East China Sea, South China Sea, and Taiwan.

This study is not meant to provide a given view of Chinese strategy, Chinese forces, or the trends in the regional military balance. It is rather intended to provide analysts with a better basis for understanding the different *official* estimates of the changes in Chinese force strength and force quality. Accordingly, it makes extensive comparisons of the assessments of Chinese military developments in official reporting by the US, China, and other Asian governments. In doing so, it relies heavily on Chinese white papers and the US Department of Defense (DoD) *Report to Congress on Military and Security*, as well as the military white papers of Japan, South Korea, and Taiwan. Key portions compare these different perspectives to work done by outside scholars and the information in databases like those developed by the IISS and IHS Jane's.

The analysis begins by focusing on Chinese strategy, the organization and structure of Chinese forces, Chinese military spending and resources, and the broad trends in Chinese military modernization. It then examines the trends in Chinese land, air, naval, paramilitary, missile, and nuclear forces. Finally, it examines how Chinese strategy and military modernization have affected the security situation in the Taiwan Straits, South China Sea, East China Sea, Northeast Asia, and the U.S. military posture in the Pacific. The balance in the Korean Peninsula, and the role played by China in this military balance, is addressed in depth in a previous Burke Chair report entitled *The Evolving Military Balance in the Korean Peninsula and Northeast Asia*.

Where possible, the study attempts to quantify key trends and the differences between the official reports and views of given countries. Accordingly, the analysis in each chapter is supported by comparative trend analyses, maps and graphics, and chronologies, and by an examination of the differences between key sources uncertainties involved.

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.

There are many debates over how realistic China's public statements of its strategy really are, but China's summary of the Peoples Liberation Army's (PLA) strategic goals in its 2015 defense white paper, *China's Military Strategy*, do provide broad insights strategic goals :²

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 interests protection, guard duties, and support for national economic and social development.

Key Trends in Chinese Military Modernization

China's 2015 White Paper also provides some broad insights into the reasons why China is making key changes taking place in its forces. The White Paper notes that:³

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. Whether or not China openly declares the full range of 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 interest 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 prefect 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.

Accordingly, 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 Developing Strategy in Asia

At the same time, China's modernization efforts have scarcely gone unnoticed by the U.S. and other states. The Executive Summary of the DoD's 2015 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 "China views 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 military modernization as follows:⁴

China's military modernization has the potential to reduce core U.S. military technological advantages. China's officially-disclosed military budget grew at an average of 9.5 percent per year in inflation-adjusted terms from 2005 through 2014, and China will probably sustain defense spending growth at comparable levels for the foreseeable future. Moreover, China is investing in capabilities designed to defeat adversary power projection and counter third-party—including U.S.—intervention during a crisis or conflict.

During 2014, the PLA continued to improve its capabilities for theater contingencies, including: cruise missiles; short- and medium-range ballistic missiles; high performance aircraft; integrated air defense; information operations; and amphibious and airborne assault. 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 that extend China's operational reach, attempting to push adversary forces—including the United States—farther from potential regional conflicts.

China is also focusing on counter-space, offensive cyber operations, and electronic warfare capabilities meant to deny adversaries the advantages of modern, informationized warfare. In 2014, China also started reclaiming land and building infrastructure at its outposts in the Spratly Islands. China will be able to use them as persistent civil-military bases of operation to enhance its presence significantly in disputed areas.

The U.S. Shift to "Rebalancing" to Asia in 2012

There was nothing new about such statements, however, or the fact that U.S. saw both opportunities and risks in its military relations with China. The US had begun to react to China's growing strength more than decade earlier. It had also announced a major shift in its strategy that called for the to rebalance its forces to Asia in a document called *Sustaining US Global Leadership: Priorities for 21st Century Defense* that the Department of Defense issued on January 5, 2012.⁵

This document – and all of the US official strategy documents that have followed – the document never referred to a "pivot" to Asia and gave the Middle East the same strategic priority as Asia. It did, however, address China's military build-up as a key factor behind this "rebalancing" of U.S. forces:⁶

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.

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

Then Secretary of Defense Leon Panetta updated the U.S. view of Chinese military developments in more detail in a speech to the Shangri-La Security Dialogue in Singapore on June 2, 2012. He did not, however, 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:

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:⁷

...[T]he world is undergoing a time of historic transformation, and Asia is at the epicenter of that change. The 21st 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 Balikitan 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 2014:⁸

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 place more somewhat 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, he 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:⁹

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 a 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 continues to evolve, although – as Chapter Sixteen explores in depth -- the U.S. has still not shaped clear plans to actually implement its concept of rebalancing its forces and strategic partnerships in Asia. The U.S. issued a new version of its Asia-Pacific Maritime Security Strategy reiterates 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 outlines four major priorities for U.S. forces in the region:”¹⁰

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 that DoD is also looking 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 also want China to cooperate in order to improve regional security.¹¹

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.

U.S. officials never directly accuse China of reckless behavior, instead focusing on ways to advance mutual self-interests and avoid confrontation.

The Chinese Response

China too has updated its view of the strategic choices between cooperation and competition. The Deputy Chief of the PLA General Staff Department, Admiral Sun Jianguo, responded very much in kind in his speech at the same Shangri-La Dialogue:¹²

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 Behaviour 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 endeavour 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.

Competition and Cooperation

The chapters that follow provide a detailed picture of how China is modernizing and expanding its regional military capabilities. At the same time, they also address areas where the U.S. and China have common security interests, like: energy security, counterterrorism, checking violent Islamic extremism, and maintaining stability in Central and South Asia.

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. The following chapters show that 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 superceded 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 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. As the following chapters show, 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 stress 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.¹³ 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 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 will show, however, these figures only tell a small part of the story and China's strategy, force structure, and modernization efforts continue to evolve.

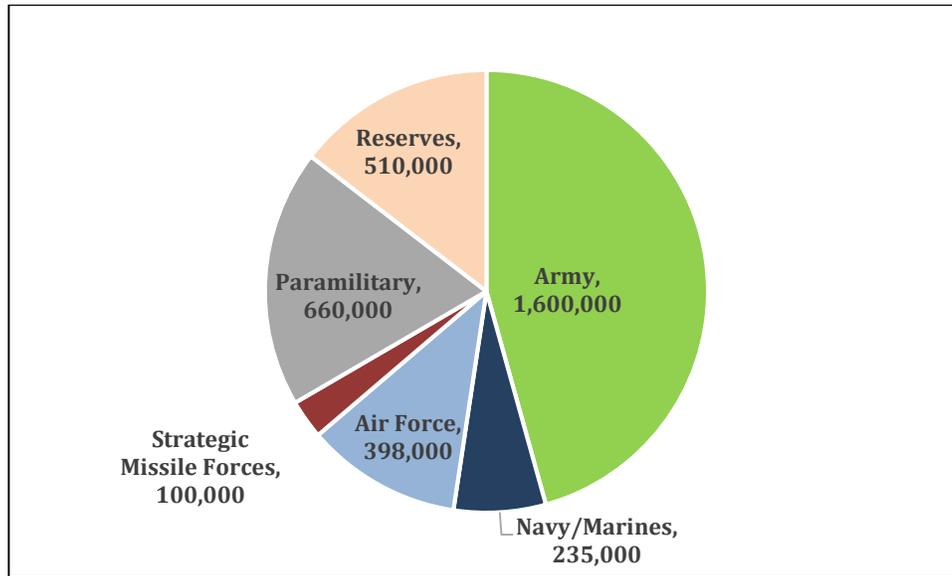
Like the US and other powers, China has a wide range of strategic expertise, and no one voice or document can be regarded as authoritative. At the 18th National Congress of the Communist Party of China in November 2012, China's leaders stated that the country was undergoing a period of strategic opportunity 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.¹⁴ 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 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.¹⁵ Likewise China's 2015 military strategy 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.

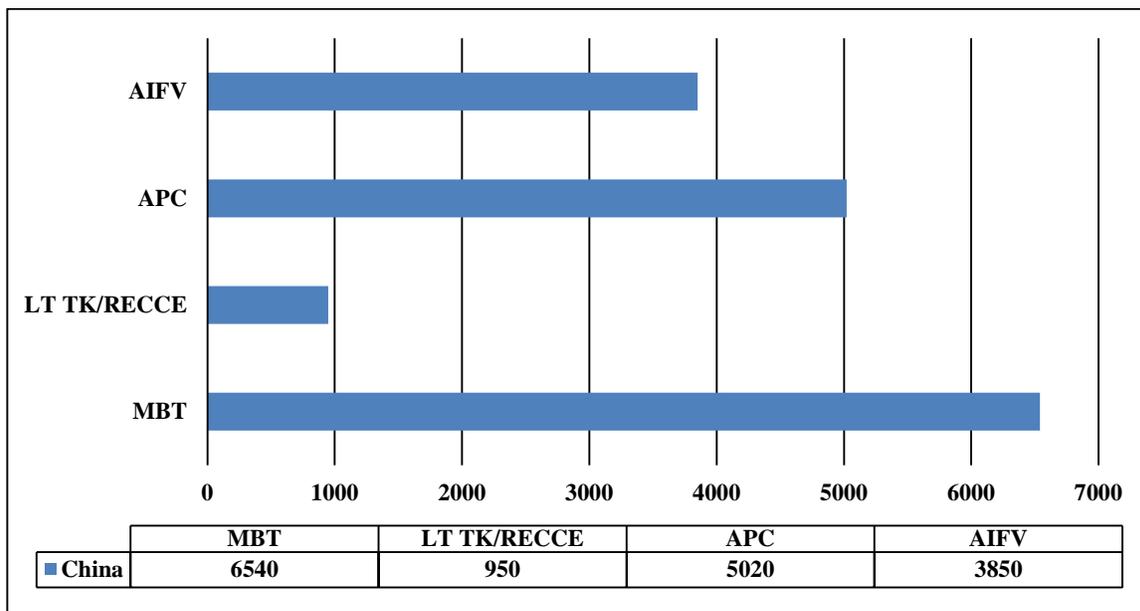
At the same time, this analysis has already shown that China's national defense white papers do provide insights into China's actions and strategy. They set the stage for understanding the pace of Chinese military development and modernization, and the extent to which China's public strategy actually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

Figure 2.1: People’s Liberation Army: Total Personnel



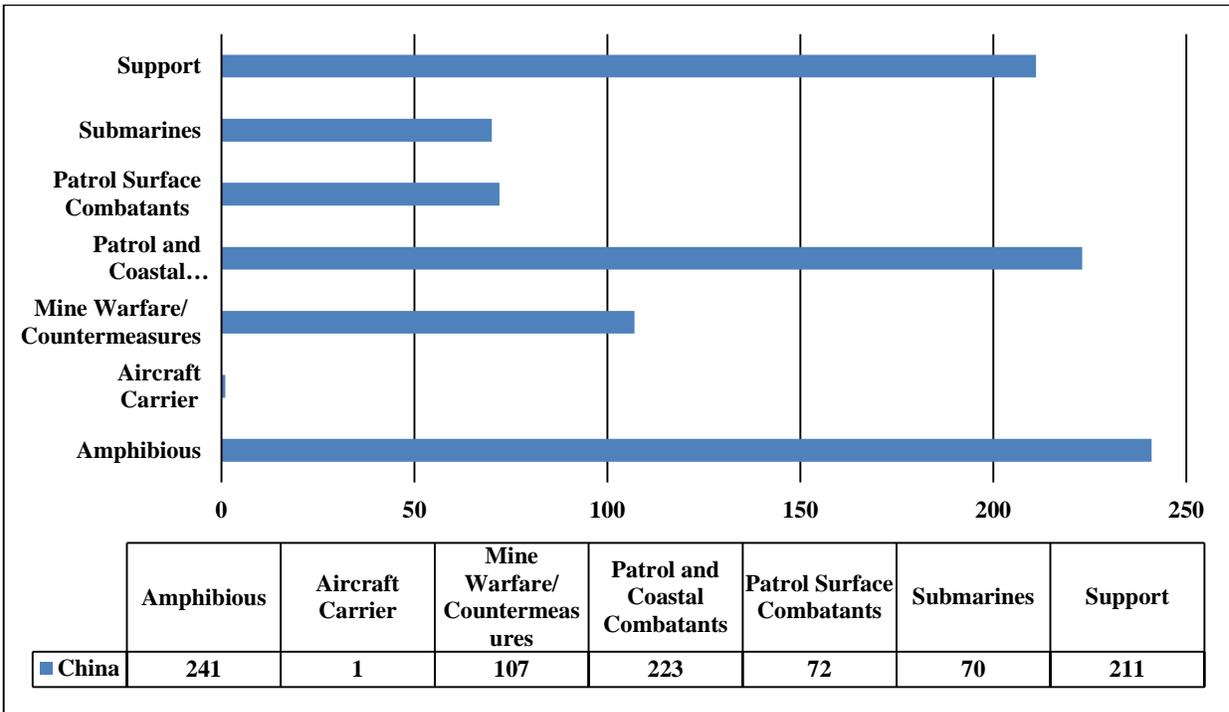
Source: IISS, *Military Balance 2015*, 237 adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 2.2: Selected PLA Army Equipment Holdings



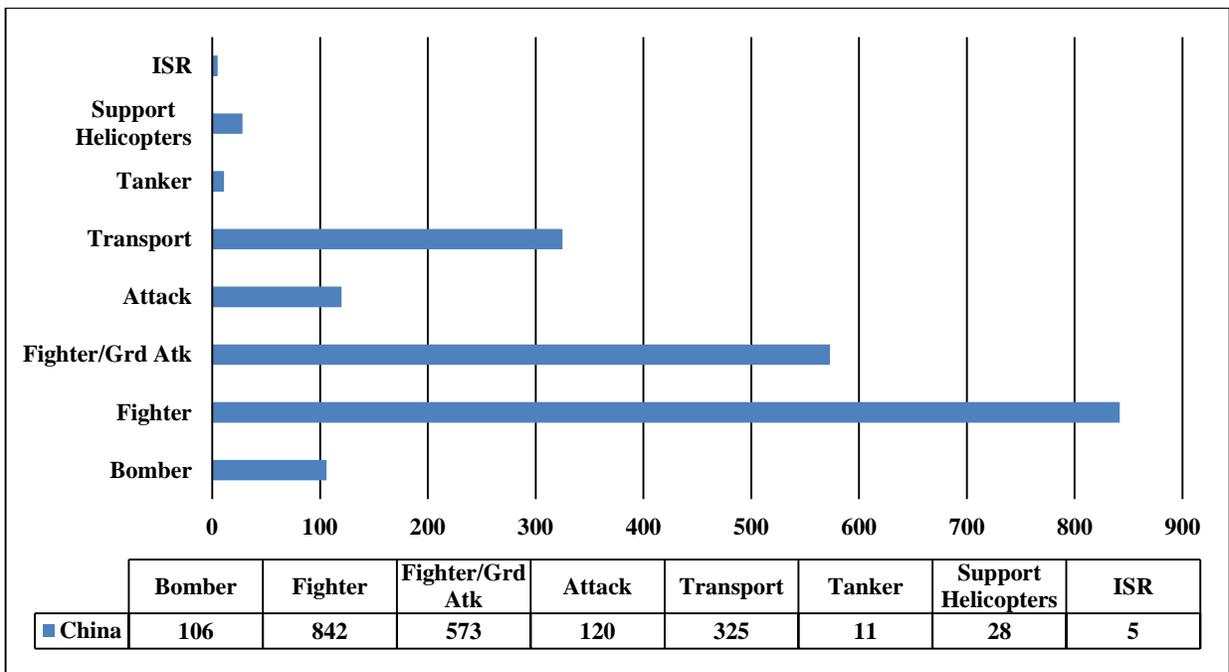
Source: IISS, *Military Balance 2015*, 238-239, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 2.3: Selected PLA Navy Equipment Holdings



Source: IISS, *Military Balance 2015*, 239-241, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 2.4: Selected PLA Air Force Equipment Holdings



Source: IISS, *Military Balance 2015*, 242, adapted by Anthony H. Cordesman and Steve Colley 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 show the recent evolution of Chinese thinking and effort.¹⁶

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:¹⁷

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:¹⁸

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 unwaveringly 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:¹⁹

- 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.²⁰

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 describes a "new situation" that called for the implementation of "a set of strategic concepts of active defense":²¹

...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:²²

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 China's defense white papers and U.S. assessments of the changes in China's forces and Chinese actions. Many sections from the 2014 and 2015 versions of the DoD's *Military and Security Developments Involving the People's Republic of China* report are virtually identical with the same wording. However, there are sections that differ in phrasing and substance. These differences are highlighted for clarity in the following section.

The U.S. View of Chinese Strategy

The 2014 and 2015 editions similarly summarized the recent trends in China's strategy, military efforts, and force posture as depicted from this excerpt of the 2015 white paper:²³

Since 2002, China's leaders — including current 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 be conducive to domestic development and 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 the Chinese Communist Party's overriding strategic objectives, which include: (pg. 21)

- 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 and, ultimately, reacquiring regional preeminence.

Though there is debate in Chinese academic circles over whether China can sustain the period of strategic opportunity though this decade, China's leaders have continued to reiterate the importance of this “period” to achieving these key strategic objectives and are seeking to prolong it.

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 life 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 great power status. These statements also indicate that China's leadership views a modern military as a critical deterrent to prevent actions by outside powers that could damage China's interests, or allow China to defend itself against such actions, should deterrence fail.

China's approach to international relations seeks to strengthen its economy, modernize the military, and solidify the CPC's hold on power. These national aspirations are reiterated in Xi Jinping's "China Dream" slogan, first propagated when Xi took the helm as Chinese Communist Party General Secretary in 2012. In a speech to the Politburo Standing Committee, Xi underscored China's goals of establishing a prosperous and powerful nation, thereby achieving a "great revival of the Chinese people." (pg. 21-22)

China continues to regard stable relations with the United States and China's neighbors as key to its development. China sees the U.S. as the dominant regional and global actor with the greatest potential to both support and, potentially, disrupt China's rise. Top Chinese leaders, including President Xi Jinping, continued to advocate for a "new type of major power relations" with the United States throughout 2014. China's "new type" of relations concept urges a cooperative U.S.-China partnership based on equality, mutual respect, and mutual benefit. The framework also reflects China's aspirations to be regarded as a great power, emphasizing conflict avoidance to sustain its "peaceful rise." As a subset of the broader relationship, the PLA in 2014 also promoted a "new type" of bilateral military relations.

China remains concerned that if regional States come to view China primarily as a threat, they may act to balance against China, potentially with the United States. China balances the imperative to persuade countries that its rise is peaceful with the imperative to strengthen its control over existing sovereignty and territorial claims. Despite its desire to project the image of a developing country engaged in a peaceful development strategy, China's efforts to defend and advance its concept of national sovereignty and territorial integrity — underpinned by growing economic and military capabilities — have manifested in more forceful rhetoric and confrontational behavior. Prominent examples of this include China's attempts to block resupply missions to the Philippine outpost at Second Thomas Shoal, its deployment of a deep water hydrocarbon rig to waters disputed with Vietnam, its use of punitive trade policies as instruments of coercion, and its actions to pressure Japan in the East China Sea. China's lack of transparency surrounding its growing military capabilities and strategic decision-making has also increased concerns in the region about China's intentions. Absent greater transparency, these concerns will likely intensify as the PLA modernization progresses.

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. The following section from the 2014 edition is similar to the 2015 report: ²⁴

Anti-Access/Area Denial (A2/AD). As part of its planning for military contingencies, China continues to develop measures to deter or counter third-party intervention, particularly by the United States. China's approach to dealing with this challenge is manifested in a sustained effort to develop the capability to attack, at long ranges, military forces that might deploy to or operate in the western Pacific, which the Department of Defense characterizes as "anti-access and area denial" (A2/AD) capabilities. China is pursuing a variety of air, sea, undersea, space and counterspace, and information warfare systems and operational concepts to achieve this capability, moving toward an array of overlapping, multilayered offensive capabilities extending from China's coast into the western Pacific. (pg. 30)

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. (pg. 30-31)

In more traditional domains, China's A2/AD focus appears oriented toward restricting or controlling access to China's periphery, including the western Pacific. The development of China's conventionally armed missiles

has been rapid, even in the context of overall Chinese military modernization. As recently as ten years ago, several hundred short-range ballistic missiles might have ranged targets in Taiwan, but China effectively had no capability to strike many other locations in or beyond the first island chain (such as U.S. bases in Okinawa or Guam). Today, however, China has more than 1,000 conventionally armed ballistic missiles. U.S. bases on Okinawa are in range of a growing number of Chinese MRBMs, and Guam could potentially be reached by air-launched cruise missiles. (pg. 31)

Chinese missiles have also become far more accurate and are now better suited to strike regional air bases, logistics facilities, and other ground-based infrastructure, which Chinese military analysts have concluded are vulnerabilities in modern warfare. China is fielding an array of conventionally armed ballistic missiles, ground- and air-launched land-attack cruise missiles, special operations forces, and cyber warfare capabilities to hold such targets at risk throughout the region. (pg. 31)

In a near-term conflict, PLA Navy operations would likely begin in the offshore and coastal areas with attacks by coastal defense cruise missiles, maritime strike aircraft, and smaller combatants and extend as far as the second island chain and Strait of Malacca using large surface ships and submarines. As the PLA Navy gains experience and acquires larger numbers of more capable platforms, including those with long-range air defense, it will expand the depth of these operations further into the western Pacific. The PLA Navy may also develop a new capability for ship-based land-attack using cruise missiles. China views long-range anti-ship cruise missiles as a key weapon in this type of operation and is developing multiple advanced types and the platforms to employ them for this purpose. These platforms include conventional and nuclear-powered attack submarines (KILO SS, SONG SS, YUAN SSP, SHANG SSN), surface combatants (LUYANG III DDG [Type 052D], LUZHOU DDG [Type 051C], LUYANG I/II DDG [Type 052B/C], SOVREMENNY II-class DDG, JIANGKAI II FFG [Type 054A], JIANGDAO FFL [Type 056]), and maritime strike aircraft (FB-7A, H-6G and the Su-30MK2). (pg. 31)

China would face several shortcomings in a near-term conflict, however. First, the PLA's deep-water anti-submarine warfare capability seems to lag behind its air and surface warfare capabilities. Second, it is not clear whether China has the capability to collect accurate targeting information and pass it to launch platforms in time for successful strikes against targets at sea beyond the first island chain. Chinese submarines do, however, already possess some capability to hold surface ships at risk, and China is working to overcome shortcomings in other areas. (pg. 32)

The same section in the 2015 version of the US document did focus on more recent developments in modernization, and contained the following different information:²⁵

As China modernizes its military and prepares for various contingencies, it continues to develop capabilities that serve to specifically 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 Chinese capabilities as anti-access/area-denial (A2/AD), though China does not specifically refer to them using this term. China's military modernization plan includes the development of capabilities to attack, at very long ranges, adversary forces that might deploy or operate within the western Pacific 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."

Disputes Over the Senkaku/Diaoyu Islands and South China Sea

The 2014 section discussed the dispute over the Senkaku/Diaoyu islands are as follows:²⁶

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:²⁷

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)

Relations Between China and India

The 2014 and 2015 reports are almost identical in regards to the bilateral relations between China and India over their border dispute:²⁸

Despite increases in China-*India* political and economic relations, tensions remain along their shared 4,057 km border, most notably 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. 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 2014 along the Line of Actual Control in Eastern Ladakh. The military stand-off lasted twelve

days and coincided with President Xi Jinping's visit to India, the first of a Chinese President in nearly a decade, casting a shadow over the visit. (pg. 27)

Counter-Space Strategies

On the topic of Chinese counter-space strategies, both the 2014 and 2015 reports stated the following:²⁹

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 went on to state:³⁰

The PLA continues to strengthen its military space capabilities, which includes advances with the Beidou navigation satellite system and 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 command and control in joint operations.

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 2014 and 2015 editions of the report added more details about China’s intent in building an “informationized” military:³¹

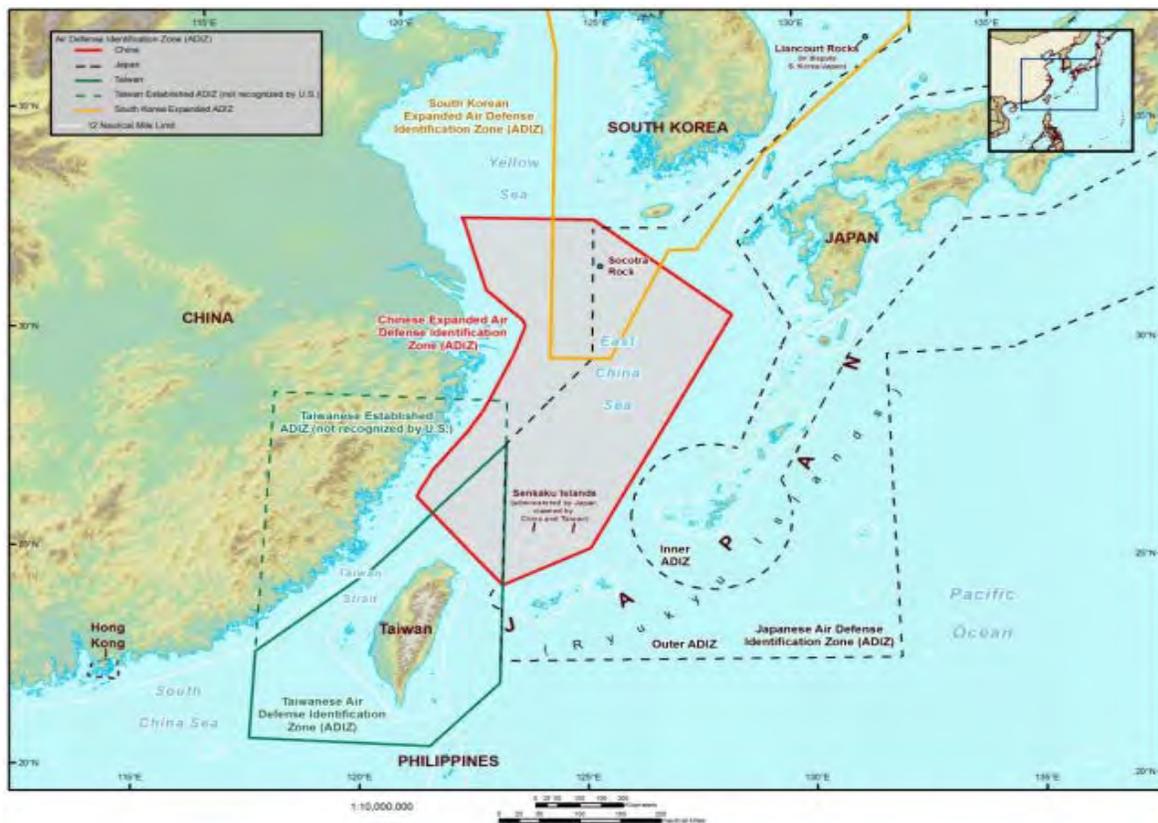
Chinese military writings describe informationized warfare as an asymmetric way to weaken an adversary’s ability to acquire, transmit, process, and use information during war, and discuss its use as a way to force an adversary to capitulate before the onset of conflict. The PLA conducts military exercises 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.

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 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 2013, 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 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 have 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:³²

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."³³ 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:³⁴

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."³⁵

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":³⁶

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 underpinned 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 7.4% in 2014, and seemed likely to drop below 7% in 2015.

China's stock market crisis in the summer of 2015 is a 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:

1. 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.

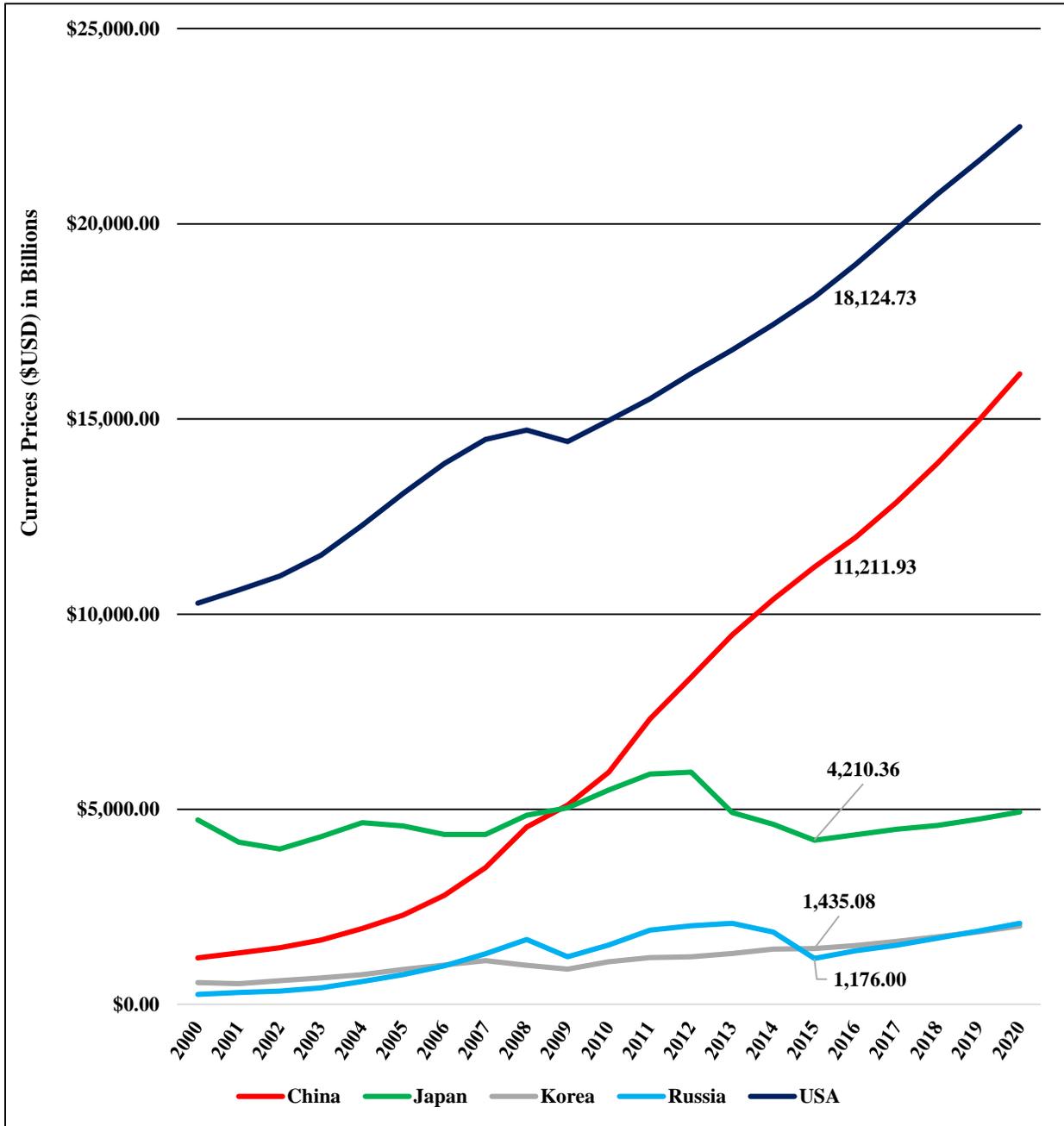
2. Slow progress in transitioning from an export-oriented economy to a consumption-based one
3. Exposure to global economic factors (such as high volatility in the Eurozone)
4. Competition from less developed nations with lower labor costs.
5. Corruption and nepotism
6. The dominance of often inefficient State Owned Enterprises
7. State-driven barriers to market driven and efficient internal economic investment and tight capital controls
8. Restrictive trade practices
9. High income inequality
10. 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
11. 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.
12. 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.
13. 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.
14. 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 is 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.
15. Uncertain monetary and currency control policies

If is far from clear that China cannot deal with these problems in the future, but they do create the warning 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 7% 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.³⁷

Even if China can sustain its current 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 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)



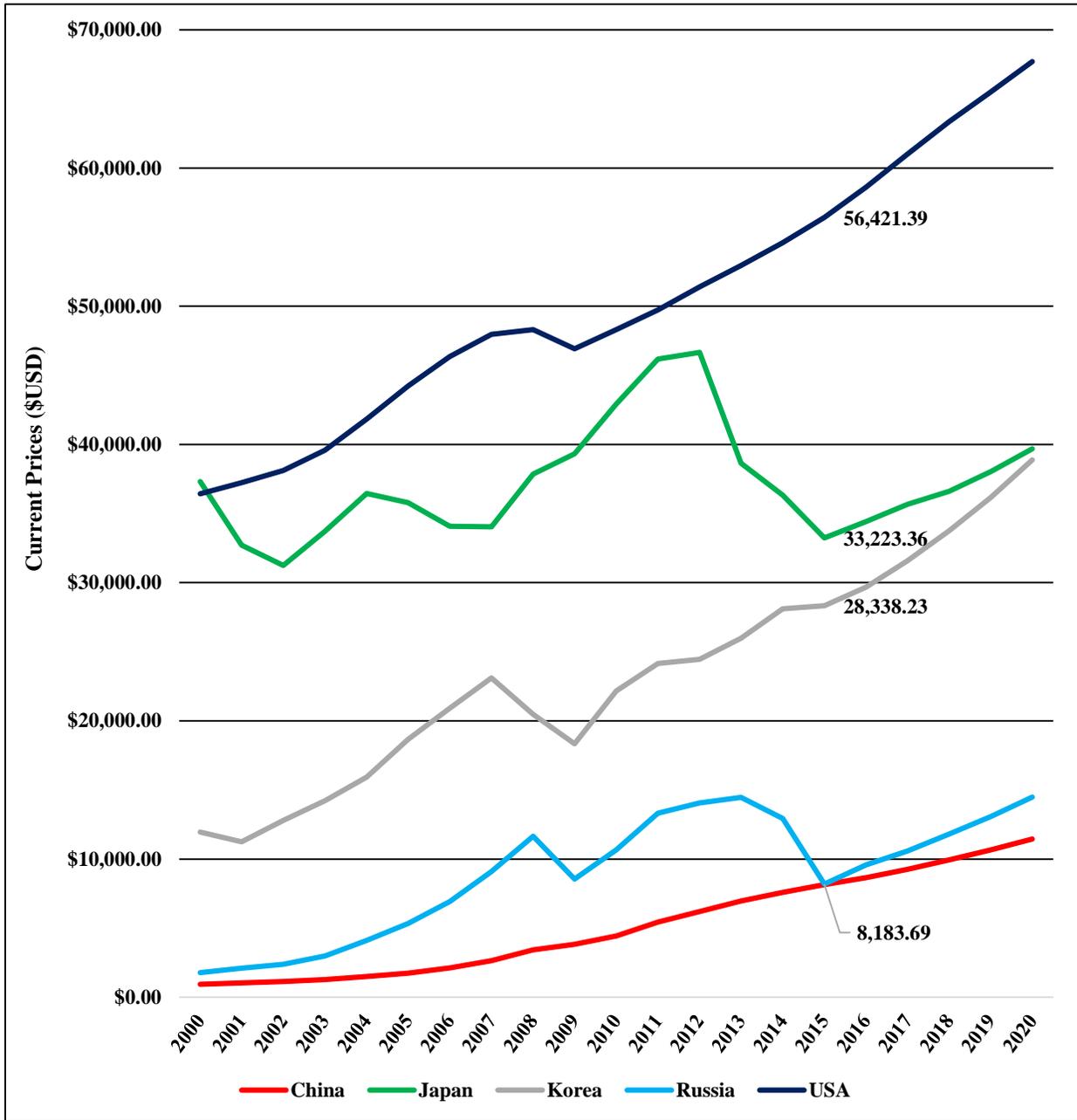
Source: IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

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	1,192.85	4,731.20	561.634	259.702	10,284.75
2001	1,317.24	4,159.86	533.05	306.583	10,621.83
2002	1,455.56	3,980.82	609.021	345.126	10,977.53
2003	1,650.51	4,302.94	680.518	430.289	11,510.68
2004	1,944.67	4,655.82	764.881	591.177	12,274.93
2005	2,287.26	4,571.87	898.137	763.704	13,093.70
2006	2,793.16	4,356.75	1,011.80	989.932	13,855.90
2007	3,504.61	4,356.35	1,122.68	1,299.70	14,477.63
2008	4,547.72	4,849.19	1,002.22	1,660.85	14,718.58
2009	5,105.77	5,035.14	901.935	1,222.65	14,418.73
2010	5,949.65	5,495.39	1,094.50	1,524.92	14,964.40
2011	7,314.48	5,905.63	1,202.46	1,904.79	15,517.93
2012	8,386.68	5,954.48	1,222.81	2,015.15	16,163.15
2013	9,469.13	4,919.56	1,304.47	2,079.13	16,768.05
2014	10,380.38	4,616.34	1,416.95	1,857.46	17,418.93
2015	11,211.93	4,210.36	1,435.08	1,176.00	18,124.73
2016	11,968.41	4,348.05	1,509.63	1,375.56	18,959.22
2017	12,864.40	4,489.30	1,613.07	1,519.58	19,864.55
2018	13,876.11	4,591.52	1,731.43	1,698.34	20,769.42
2019	14,968.59	4,750.94	1,863.36	1,880.14	21,615.36
2020	16,157.11	4,933.50	2,011.67	2,080.74	22,488.62

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

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



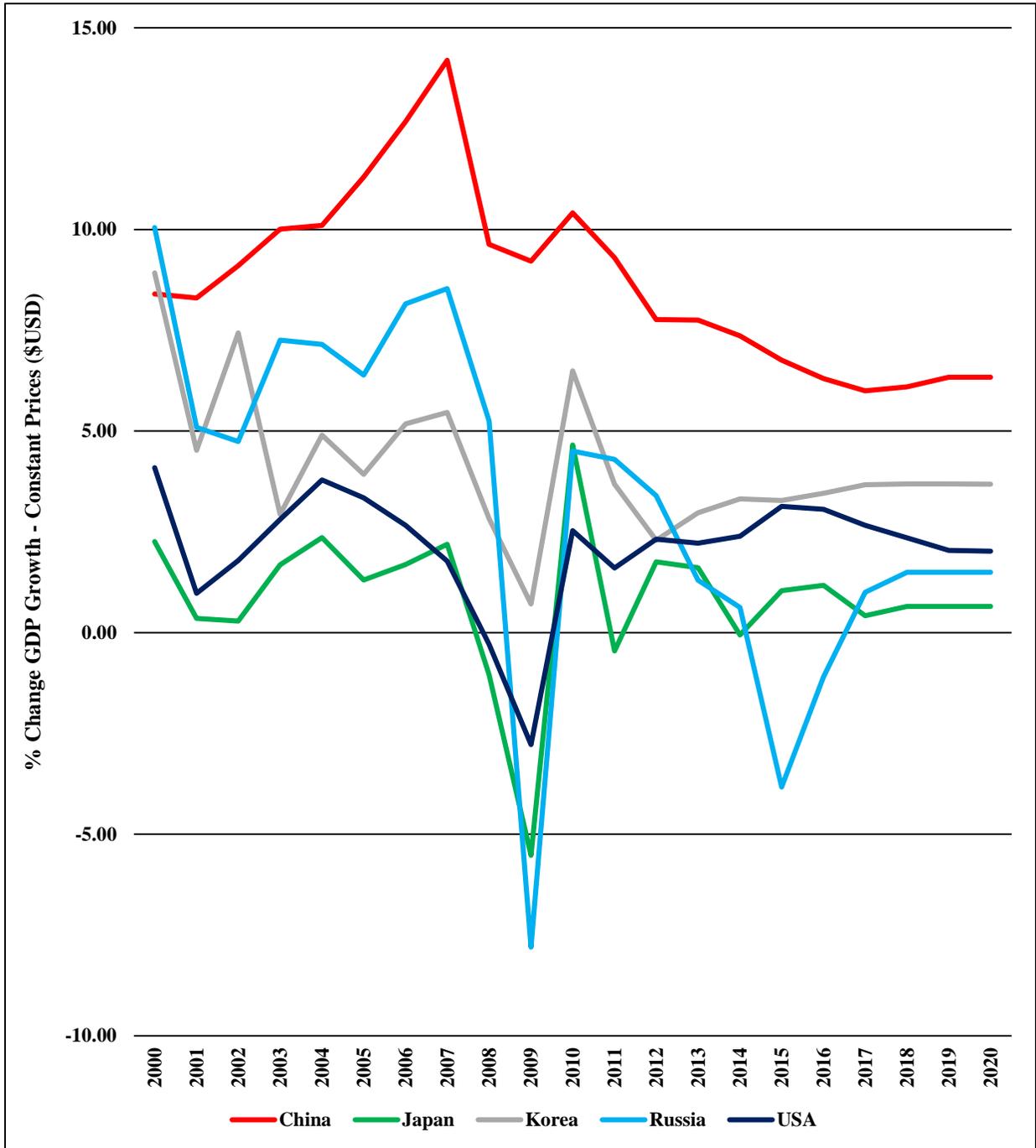
Source: IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx> adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

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

	China	Japan	Korea	Russia	USA
2000	941.159	37,303.81	11,947.60	1,775.13	36,432.51
2001	1,032.10	32,711.10	11,255.91	2,111.45	37,241.35
2002	1,133.15	31,241.17	12,788.60	2,380.18	38,113.89
2003	1,277.22	33,717.88	14,219.14	2,981.90	39,591.87
2004	1,496.04	36,444.19	15,921.95	4,111.10	41,838.46
2005	1,749.26	35,780.57	18,657.52	5,333.13	44,218.31
2006	2,124.92	34,076.75	20,917.03	6,932.30	46,351.67
2007	2,652.41	34,038.35	23,101.51	9,101.56	47,954.53
2008	3,424.43	37,865.07	20,474.89	11,638.73	48,302.28
2009	3,825.98	39,321.22	18,338.71	8,561.94	46,909.42
2010	4,437.02	42,916.74	22,151.21	10,671.21	48,309.45
2011	5,428.79	46,175.36	24,155.83	13,320.21	49,725.00
2012	6,193.82	46,661.32	24,453.97	14,062.48	51,409.13
2013	6,958.91	38,632.96	25,975.24	14,468.58	52,939.10
2014	7,589.00	36,331.74	28,100.72	12,925.96	54,596.65
2015	8,154.38	33,223.36	28,338.23	8,183.69	56,421.39
2016	8,659.39	34,414.14	29,682.71	9,572.43	58,624.59
2017	9,259.34	35,655.11	31,580.60	10,574.64	61,013.41
2018	9,935.69	36,607.91	33,752.62	11,818.65	63,366.26
2019	10,662.30	38,039.85	36,168.73	13,083.75	65,506.32
2020	11,449.16	39,675.01	38,880.21	14,479.72	67,697.20

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

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



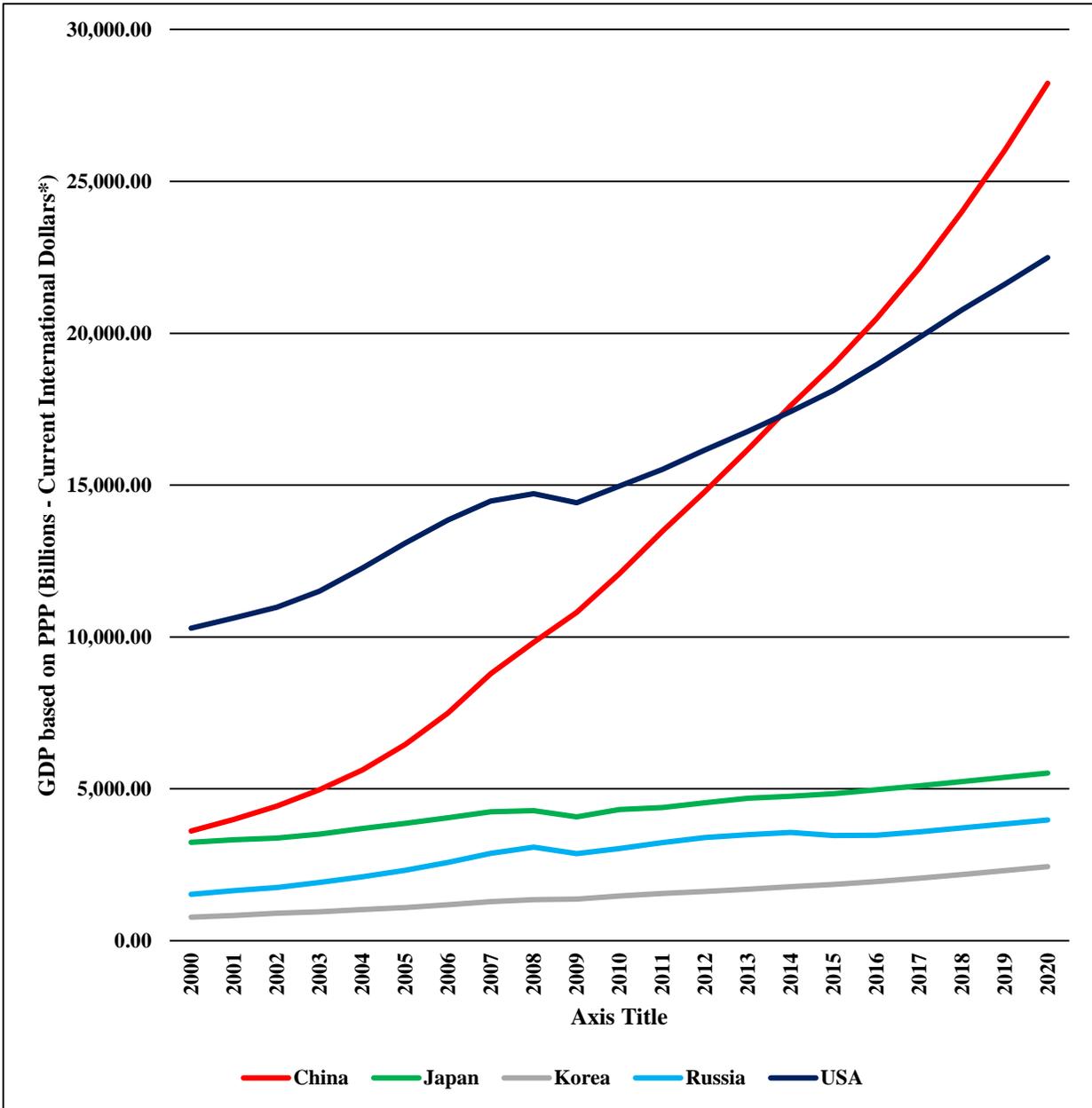
Source: IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

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	4.74	1.79
2003	10.01	1.69	2.93	7.25	2.81
2004	10.10	2.36	4.90	7.15	3.79
2005	11.30	1.30	3.92	6.39	3.35
2006	12.68	1.69	5.18	8.15	2.67
2007	14.20	2.19	5.46	8.54	1.78
2008	9.64	-1.04	2.83	5.25	-0.29
2009	9.21	-5.53	0.71	-7.80	-2.78
2010	10.41	4.65	6.50	4.50	2.53
2011	9.30	-0.45	3.68	4.30	1.60
2012	7.76	1.75	2.29	3.40	2.32
2013	7.75	1.61	2.97	1.30	2.22
2014	7.36	-0.06	3.32	0.62	2.39
2015	6.76	1.04	3.28	-3.83	3.14
2016	6.30	1.17	3.46	-1.10	3.06
2017	6.00	0.42	3.67	1.00	2.66
2018	6.10	0.65	3.69	1.50	2.36
2019	6.33	0.65	3.69	1.50	2.04
2020	6.33	0.65	3.68	1.50	2.02

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

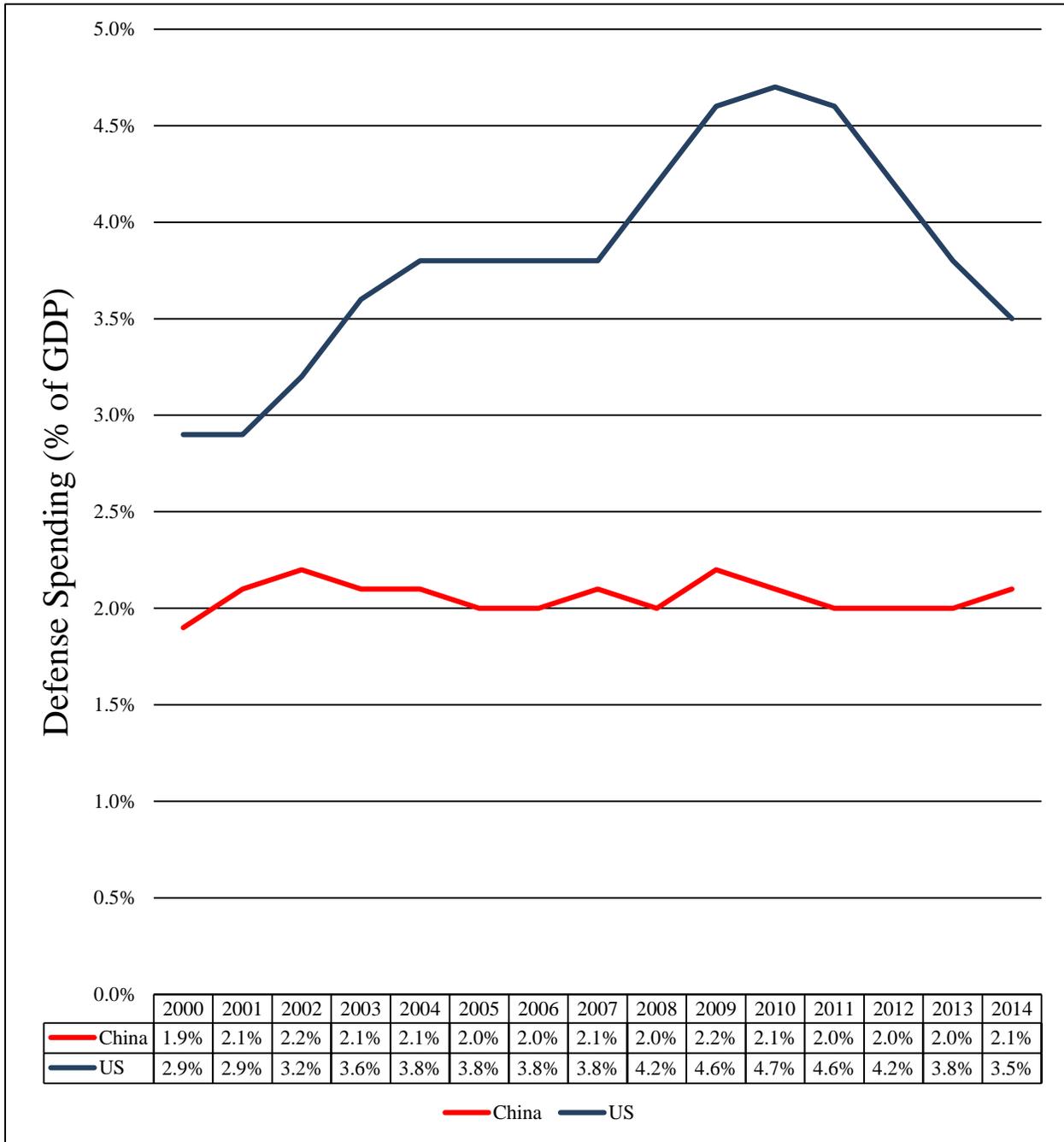
*One international dollar has the same value as one US dollar in the US. In other words, one international dollar can buy a comparable amount of goods and services a US dollar would but in the US. The term “international dollar” is used here because the IMF data uses this unit, not the US dollar. See <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	3,608.29	3,236.67	773.396	1,530.62	10,284.75
2001	3,996.84	3,322.20	826.818	1,645.20	10,621.83
2002	4,427.49	3,382.97	901.907	1,749.70	10,977.53
2003	4,967.80	3,508.57	946.873	1,914.03	11,510.68
2004	5,619.96	3,690.16	1,020.58	2,107.31	12,274.93
2005	6,456.26	3,858.50	1,094.75	2,314.04	13,093.70
2006	7,498.22	4,044.39	1,186.80	2,579.62	13,855.90
2007	8,790.82	4,243.03	1,284.94	2,874.29	14,477.63
2008	9,826.85	4,281.20	1,347.21	3,084.47	14,718.58
2009	10,813.81	4,075.29	1,367.05	2,865.47	14,418.73
2010	12,085.45	4,316.98	1,473.65	3,031.01	14,964.40
2011	13,482.08	4,386.15	1,559.45	3,226.60	15,517.93
2012	14,789.52	4,543.20	1,623.84	3,396.21	16,163.15
2013	16,173.27	4,685.29	1,697.00	3,491.62	16,768.05
2014	17,617.32	4,750.77	1,778.82	3,564.55	17,418.93
2015	18,975.87	4,843.07	1,853.52	3,458.40	18,124.73
2016	20,473.50	4,973.18	1,946.37	3,471.75	18,959.22
2017	22,148.59	5,096.91	2,059.31	3,578.64	19,864.55
2018	24,004.71	5,240.39	2,181.12	3,710.38	20,769.42
2019	26,033.62	5,379.76	2,306.58	3,841.10	21,615.36
2020	28,229.14	5,521.73	2,438.75	3,975.74	22,488.62

Source: IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley 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, 1988-2014,” accessed April 30, 2015, http://www.sipri.org/research/armaments/milex/milex_database.

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 has risen consistently compared to national income.

In 2015 China's GDP stood at \$11.2 trillion (based on the official exchange rate), while its purchasing power parity (PPP) GDP stood at an impressive \$13.8 trillion.³⁸

Downward Economic Growth Trends but Stable Forecast

In spite of a slight drop-off 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 2015, the International Monetary Fund (IMF) predicted that China's growth would drop to 6.8% and inflation was forecasted to be 1.2% in 2015. 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".³⁹

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:⁴⁰

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 ¼ and ½ 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

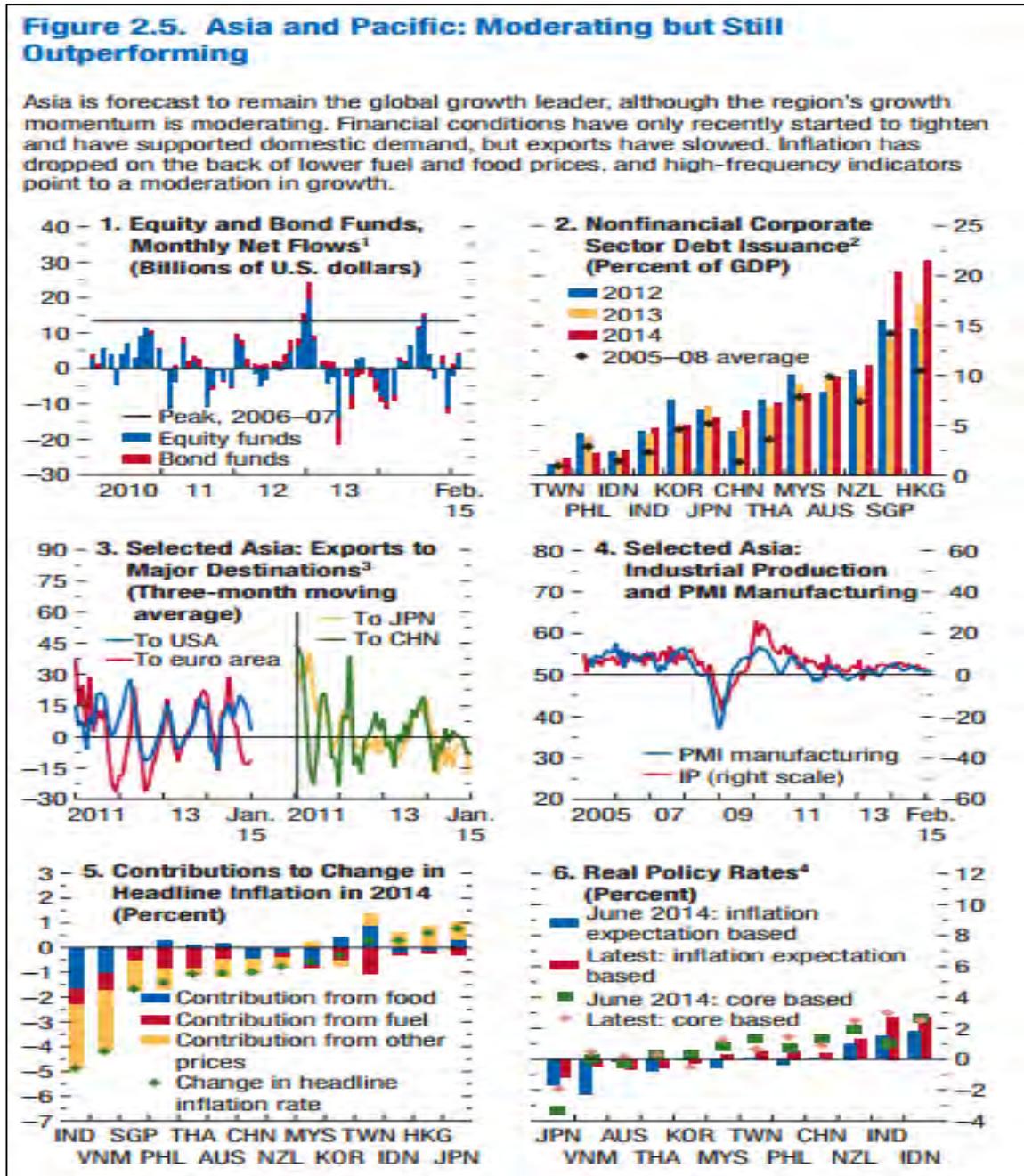
Asia's growth, as will the further tightening of international financial conditions. A slower but more sustainable growth path in China will exert additional drag. Relative to the October 2014 WEO, Asia's growth forecast has been trimmed very modestly to 5.6 and 5.5 percent in 2015 and 2016, respectively, 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)

To put these trends in a regional perspective, **Figure 3.5** 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.

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.⁴¹ The EIU predicted that after “real GDP expanded by 7% year on year in Q1, according to data released on April 15 [2015]...weak momentum behind the economy suggests that fresh stimulus measures will be forthcoming”, but they expect that “economic growth will slow to 6.8% in 2015 as a whole.”⁴²

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**:⁴³

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"⁴⁴ 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:⁴⁵

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. The World Bank also provided the following assessment of the risks to both China and the East Asia Pacific region:⁴⁶

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 in 2014 was also generally favourable, but it did note that China needed reform in additional areas:⁴⁷

...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:⁴⁸

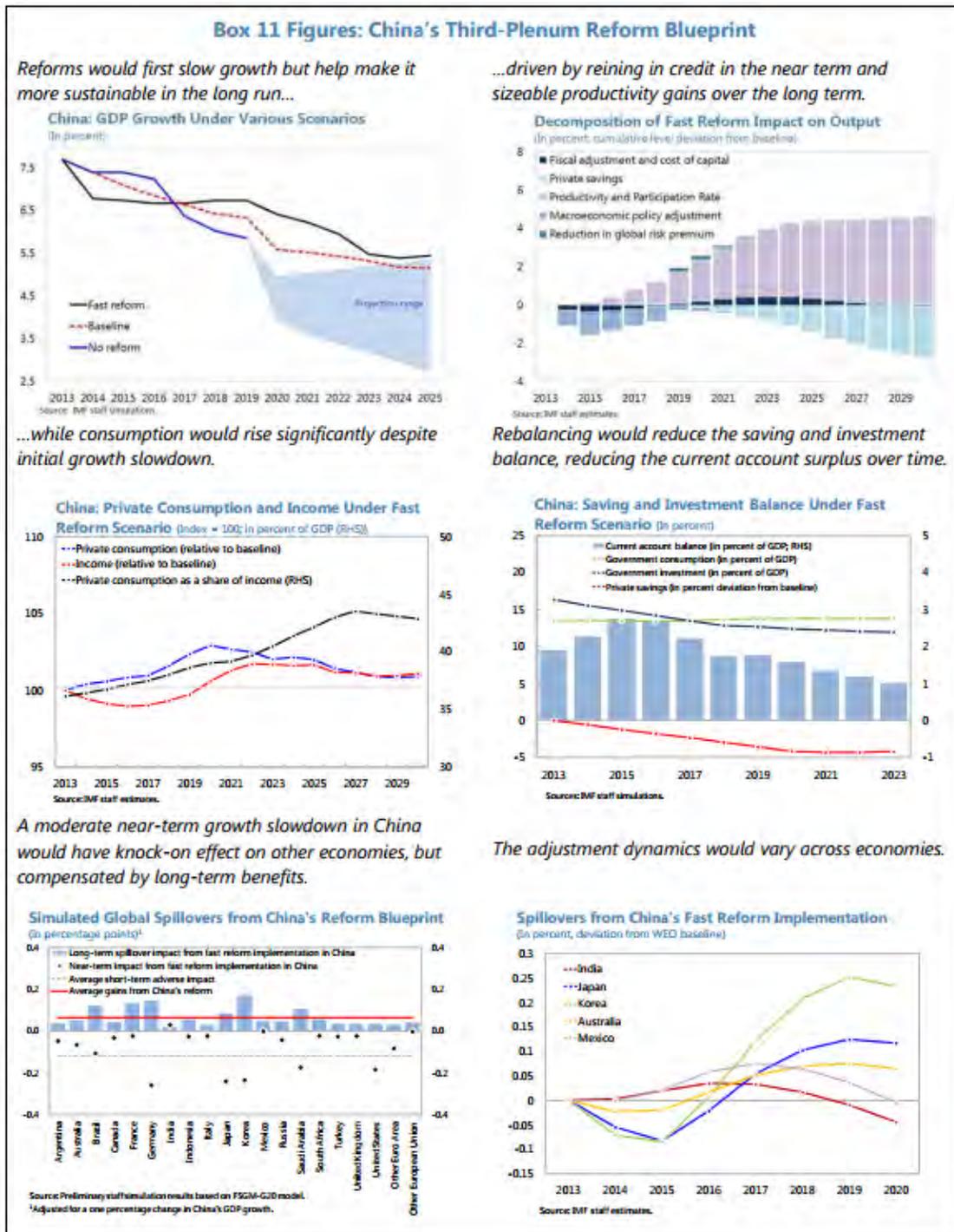
China has various domestic problems. Corruption within central and local communist party leaderships is becoming a significant political problem. As a result of China's rapid economic growth, there are emerging problems such as regional disparities between urban-rural and coastal-inland regions, wealth 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 12th 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.⁴⁹

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.⁵⁰

China also must address the effects of rising labor costs and the resultant movement of businesses to countries with cheaper labor, such as Cambodia and Vietnam, the latter of which has wages half those in China.⁵¹ Low operations costs and a large labor pool made China especially 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.⁵²

Furthermore, the country must deal with an aging population, an issue that is especially serious in the context 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.⁵³

“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 2014 report

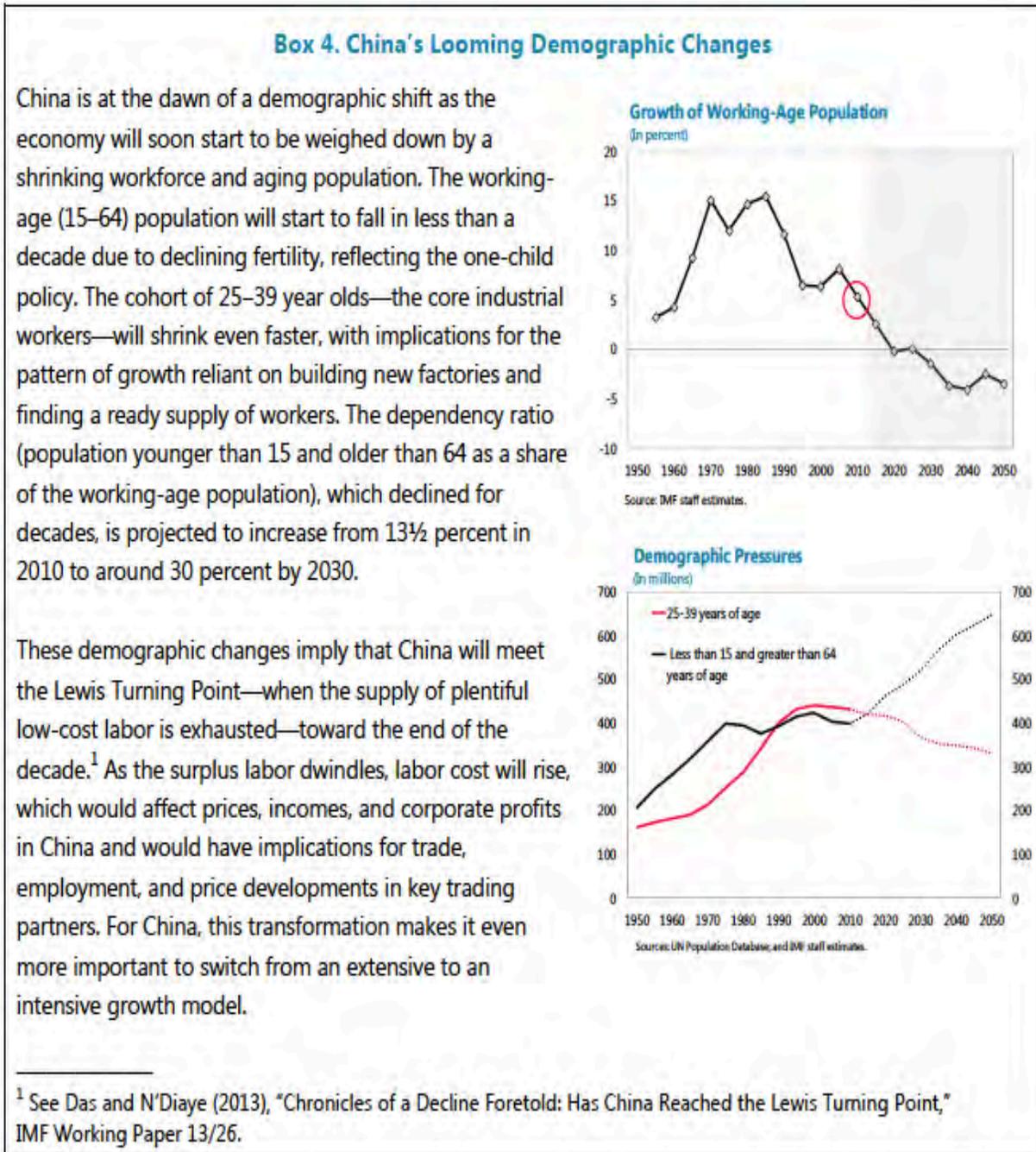
Figure 3.10 – is an IMF assessment of China's financial sector.

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.

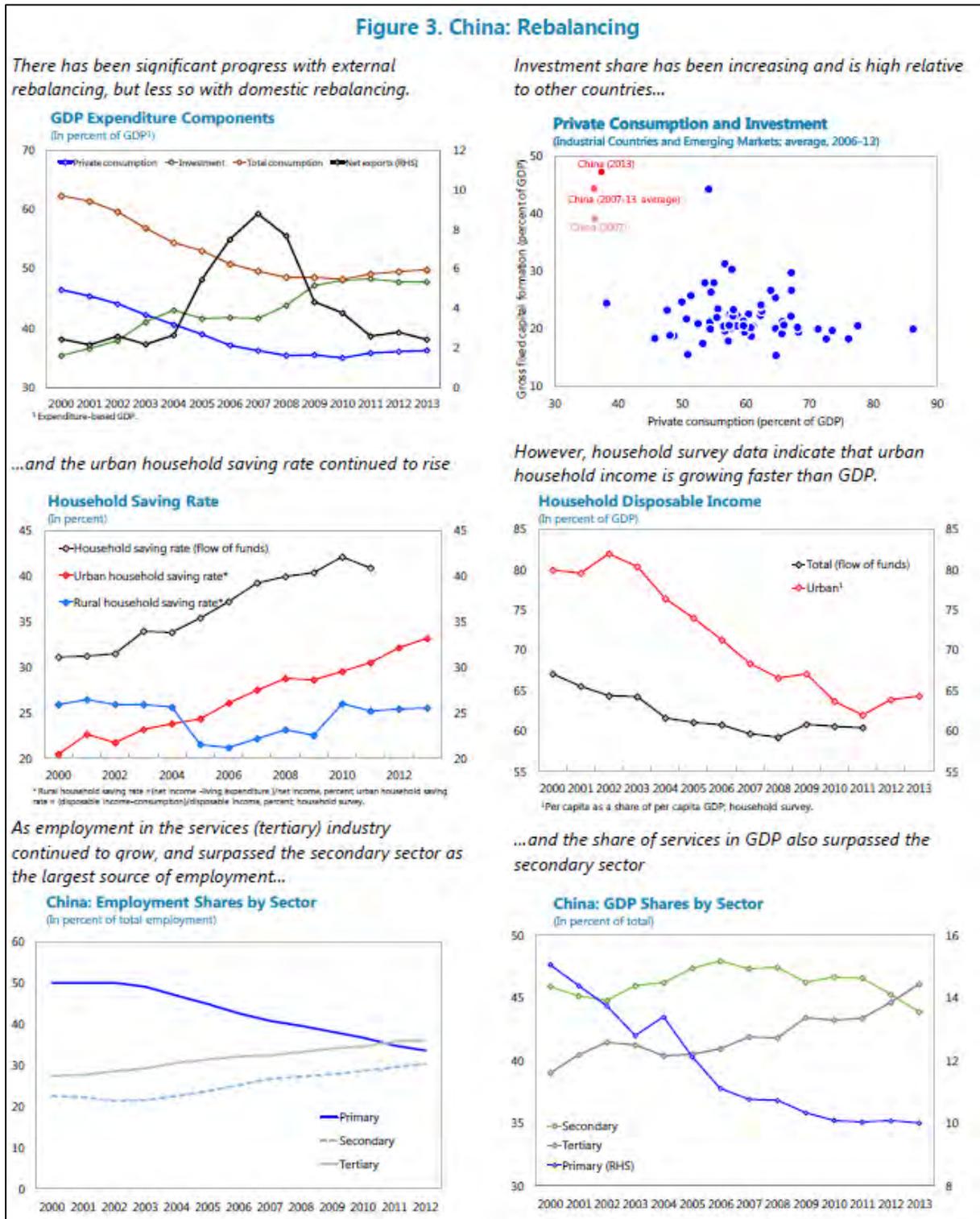
- **Figure 3.12** illustrates Chinese percentage growth rates from 2000 to a 2020 projection.
- **Figure 3.13** shows Chinese GDP based on purchasing power parity, from 2011-2020.

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



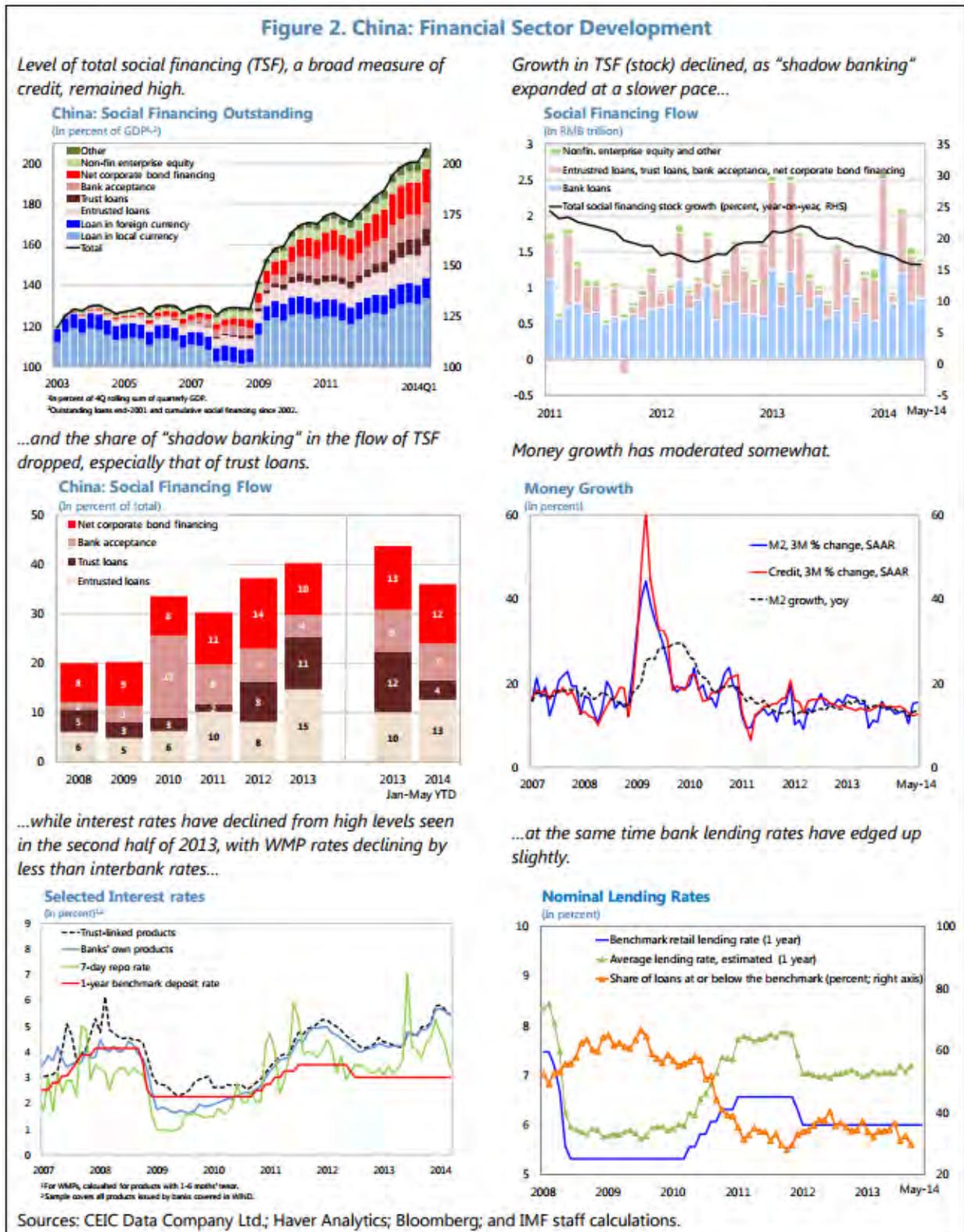
Source: IMF, *People’s Republic of China 2013 Article IV Consultation [Country Report 13/211]*, July 2013, 20.

Figure 3.9: July 2014 IMF Assessment of China



Source: IMF, *People's Republic of China 2014 Article IV Consultation [IMF Country Report 14/235]*, July 2014, 43.

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



Source: IMF, *People's Republic of China 2014 Article IV Consultation [Country Report 14/235]*, July 2014, 42.

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

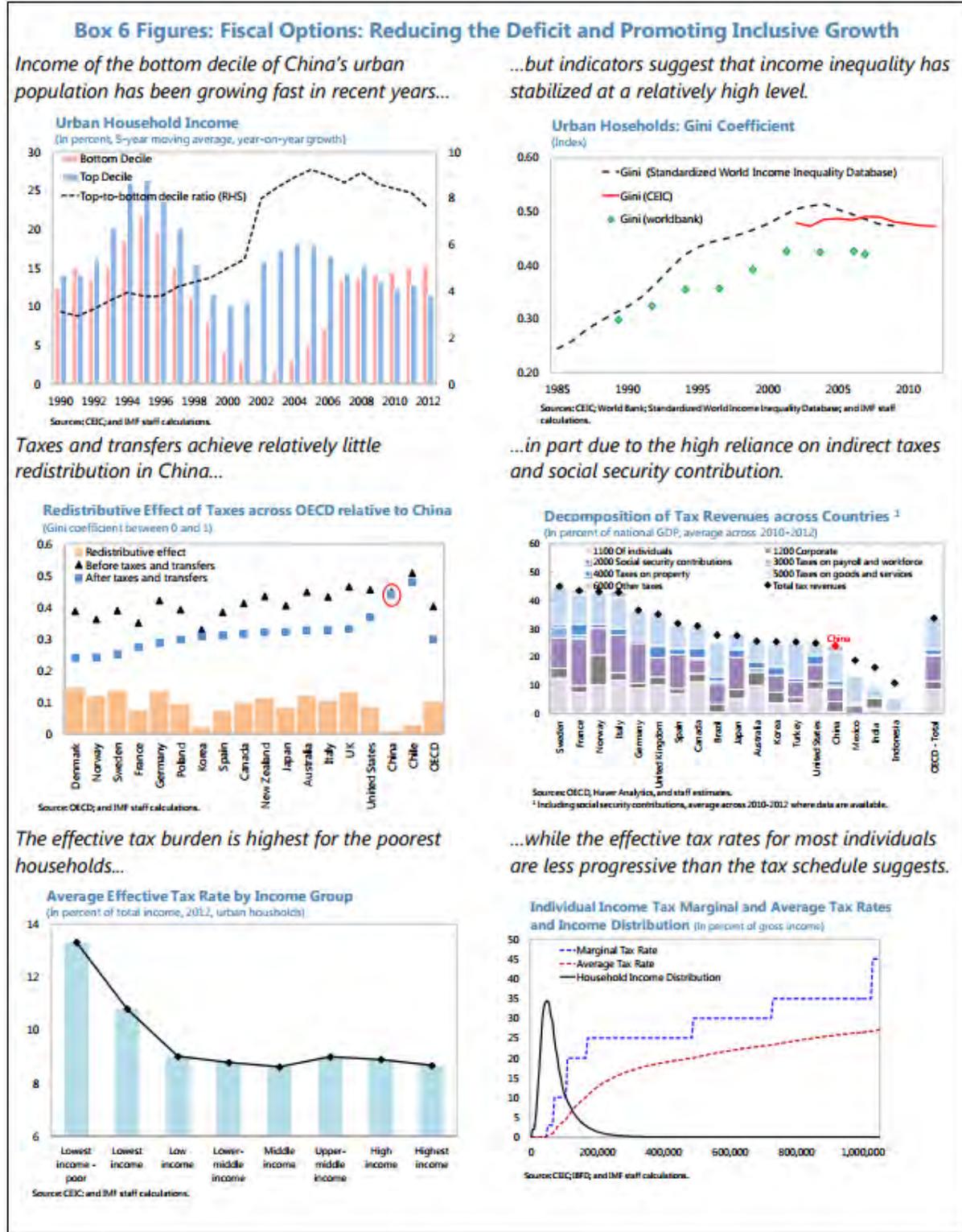
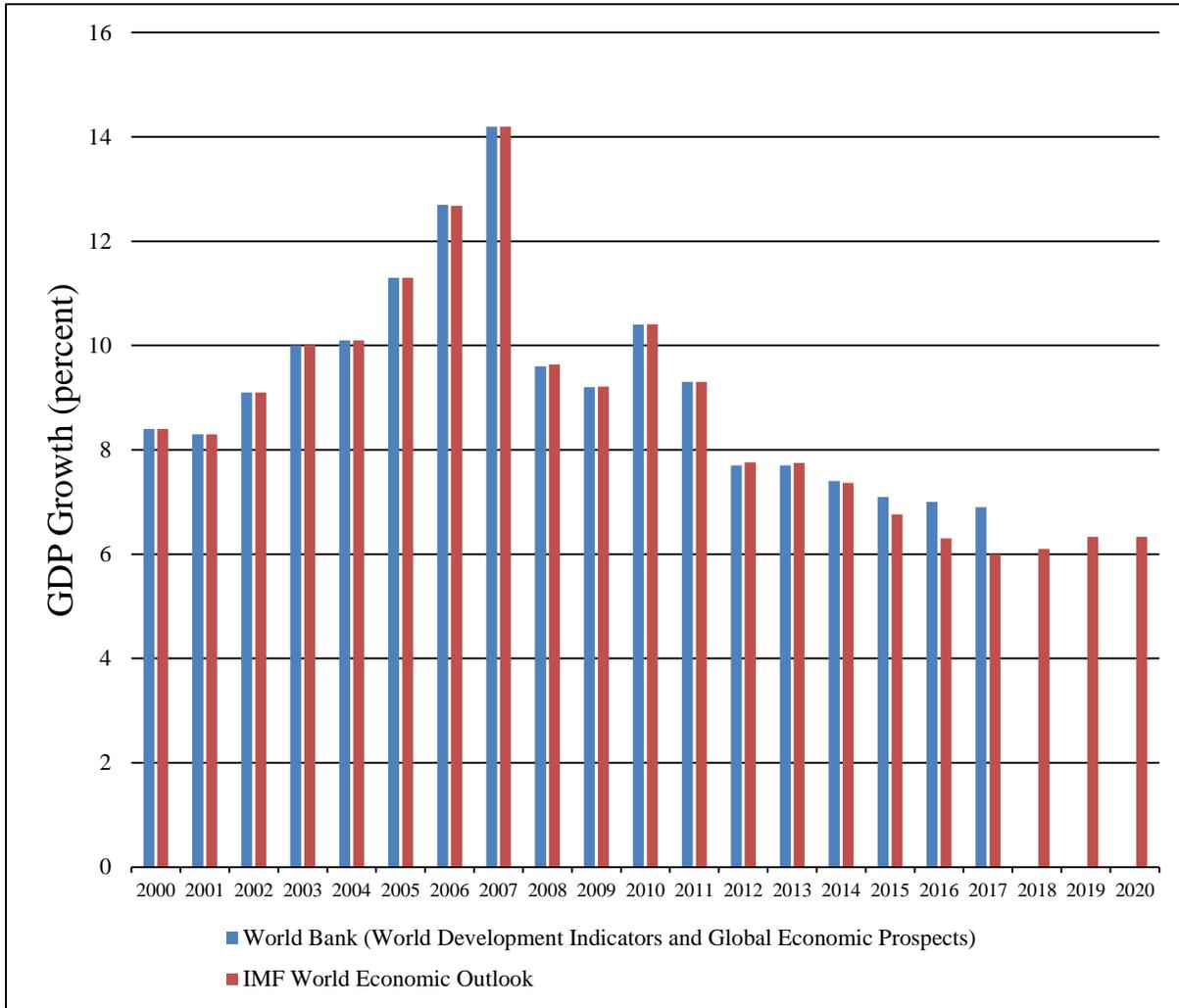
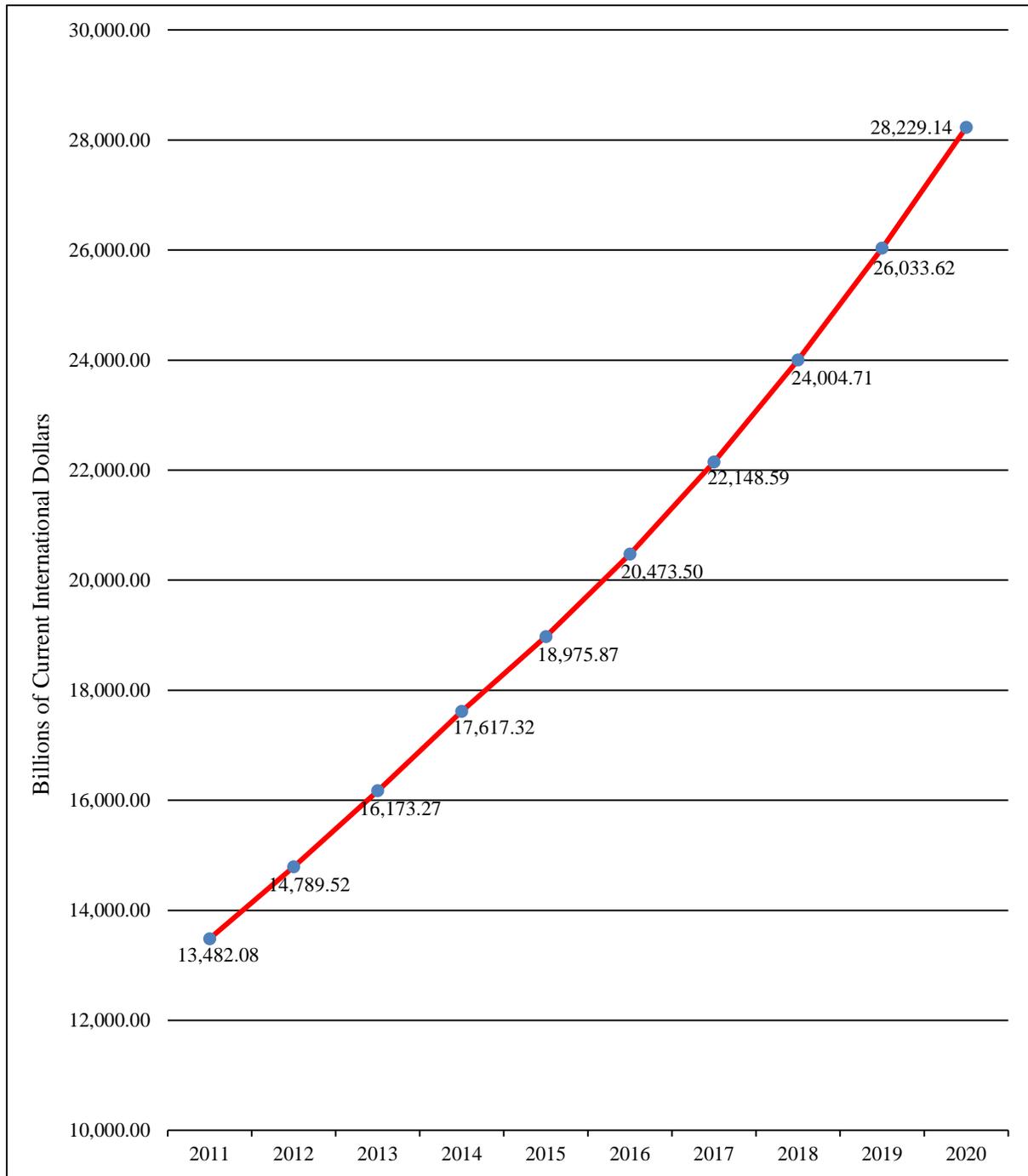


Figure 3.12: Different Estimates of Chinese GDP Growth Rates (Market Prices): 2000-2020



Sources: World Bank, “World Development Indicators,” 2015, accessed April 30 (for data 2000-2011; constant 2000 US dollars), <http://data.worldbank.org/indicator>; IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015. <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx> adapted by Anthony H. Cordesman and Steve Colley 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 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley 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 2015, stated that: **54**

On March 5, 2014, China announced a 9.3 percent inflation-adjusted increase in its annual military budget to \$136 billion, continuing more than two decades of sustained annual defense spending increases. Analysis of data from 2005 through 2014 indicates China's officially-disclosed military budget grew at an average of 9.5 percent per year in inflation-adjusted terms over the period. China has the fiscal strength and political will to support defense spending growth at comparable levels for the foreseeable future.

Using 2014 prices and exchange rates, the DoD estimates that China's total military-related spending for 2014 exceeds \$165 billion U.S. dollars (USD). However, it is difficult to estimate actual PLA military expenses due to China's poor accounting transparency and incomplete transition from a command economy. China's published military budget omits several major categories of expenditure, such as procurement of foreign weapons and equipment, and research and development.

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: ⁵⁵

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 Force⁶, 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.

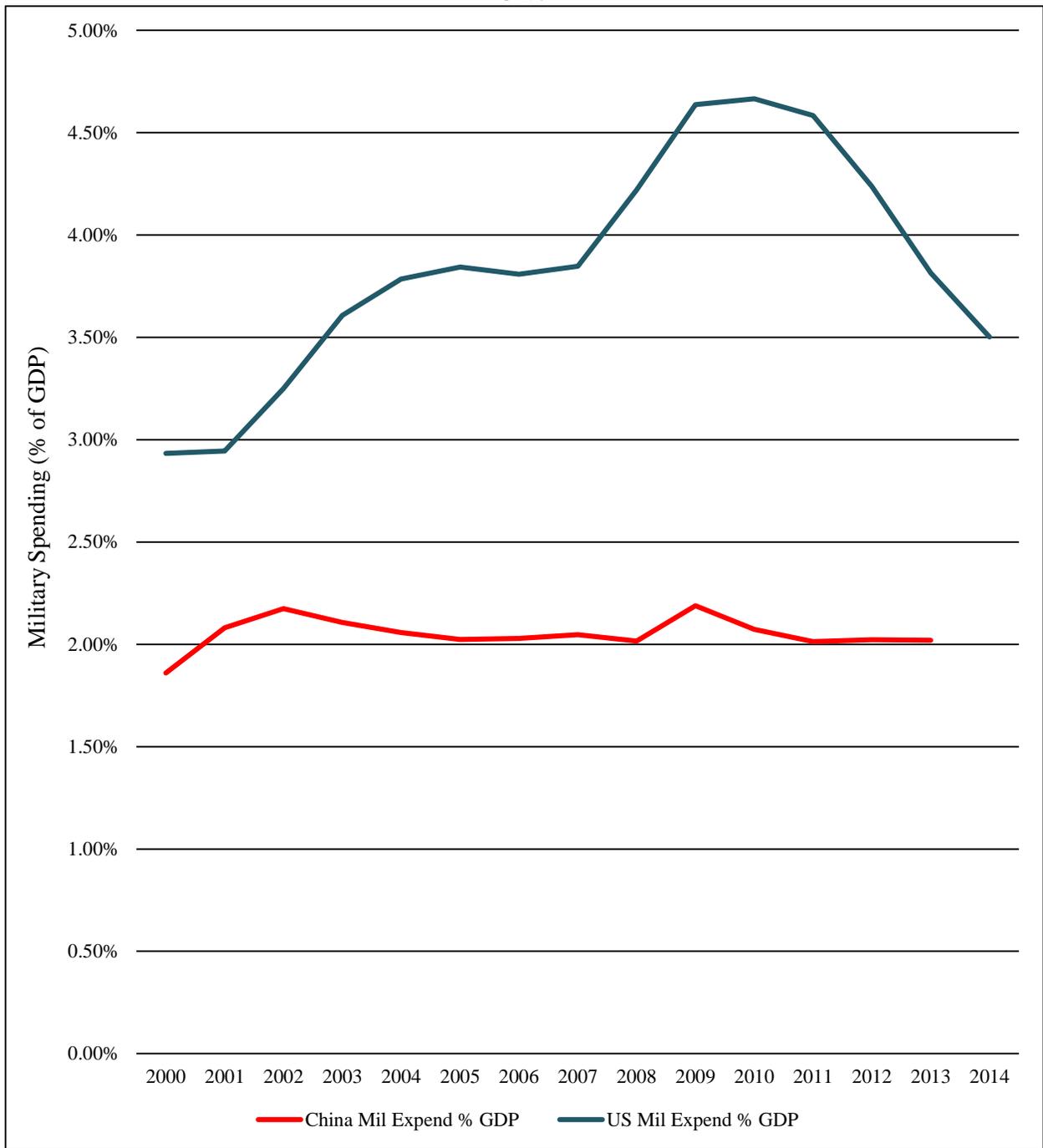
In addition, it must be noted that the amount of the defense budget announced by China is considered to be only a part of its actual military expenditures. For example, it is believed that the announced defense budget does not include all the equipment procurement costs and research and development expenses.

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 in 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 1900.⁵⁶

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



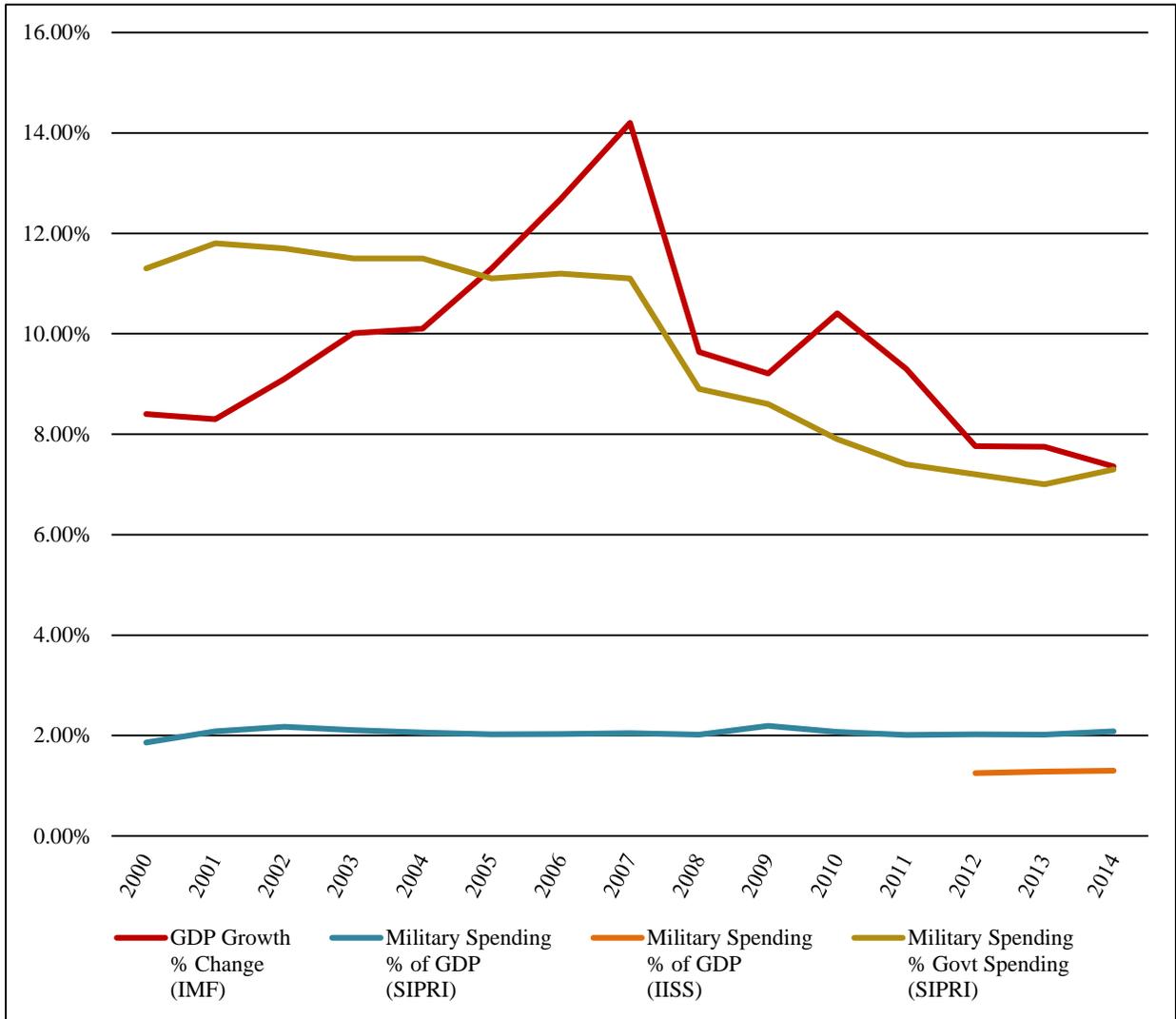
Sources: IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies; and SIPRI Indexes for military spending..

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 Expend % GDP	USA GDP (In Billions \$USD)	SIPRI Index (In Billions \$USD)	US Mil Expend % GDP
2000	\$1,192.85	\$22.19	1.86%	\$10,284.75	\$301.68	2.93%
2001	\$1,317.24	\$27.41	2.08%	\$10,621.83	\$312.74	2.94%
2002	\$1,455.56	\$31.64	2.17%	\$10,977.53	\$356.72	3.25%
2003	\$1,650.51	\$34.77	2.11%	\$11,510.68	\$415.22	3.61%
2004	\$1,944.67	\$40.02	2.06%	\$12,274.93	\$464.68	3.79%
2005	\$2,287.26	\$46.29	2.02%	\$13,093.70	\$503.35	3.84%
2006	\$2,793.16	\$56.66	2.03%	\$13,855.90	\$527.66	3.81%
2007	\$3,504.61	\$71.75	2.05%	\$14,477.63	\$556.96	3.85%
2008	\$4,547.72	\$91.66	2.02%	\$14,718.58	\$621.13	4.22%
2009	\$5,105.77	\$111.78	2.19%	\$14,418.73	\$668.57	4.64%
2010	\$5,949.65	\$123.33	2.07%	\$14,964.40	\$698.18	4.67%
2011	\$7,314.48	\$147.26	2.01%	\$15,517.93	\$711.34	4.58%
2012	\$8,386.68	\$169.60	2.02%	\$16,163.15	\$684.78	4.24%
2013	\$9,469.13	\$191.23	2.02%	\$16,768.05	\$639.70	3.82%
2014	\$10,380.38	\$216.37	2.08%	\$17,418.93	\$609.91	3.50%

Sources: IMF, *World Economic Outlook Database*, April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley 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 2015* (London: Routledge, 2015) using 2014 dollar; 2014 SIPRI Military Expenditure Database, *Stockholm International Peace Research Institute*, <http://www.sipri.org/databases/milex>; and IMF, “World Economic Outlook,” April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley 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%		1.86%		11.30%
2001	8.30%		2.08%		11.80%
2002	9.10%		2.17%		11.70%
2003	10.01%		2.11%		11.50%
2004	10.10%		2.06%		11.50%
2005	11.30%		2.02%		11.10%
2006	12.68%		2.03%		11.20%
2007	14.20%		2.05%		11.10%
2008	9.64%		2.02%		8.90%
2009	9.21%		2.19%		8.60%
2010	10.41%		2.07%		7.90%
2011	9.30%		2.01%		7.40%
2012	7.76%		2.02%	1.25%	7.20%
2013	7.75%		2.02%	1.28%	7.00%
2014	7.36%		2.08%	1.30%	7.30%

Sources: Based primarily on material from International Institute for Strategic Studies, *The Military Balance 2015* (London: Routledge, 2015) using 2014 dollar; 2014 SIPRI Military Expenditure Database, *Stockholm International Peace Research Institute*, <http://www.sipri.org/databases/milex>; and IMF, “World Economic Outlook,” April 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley 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.

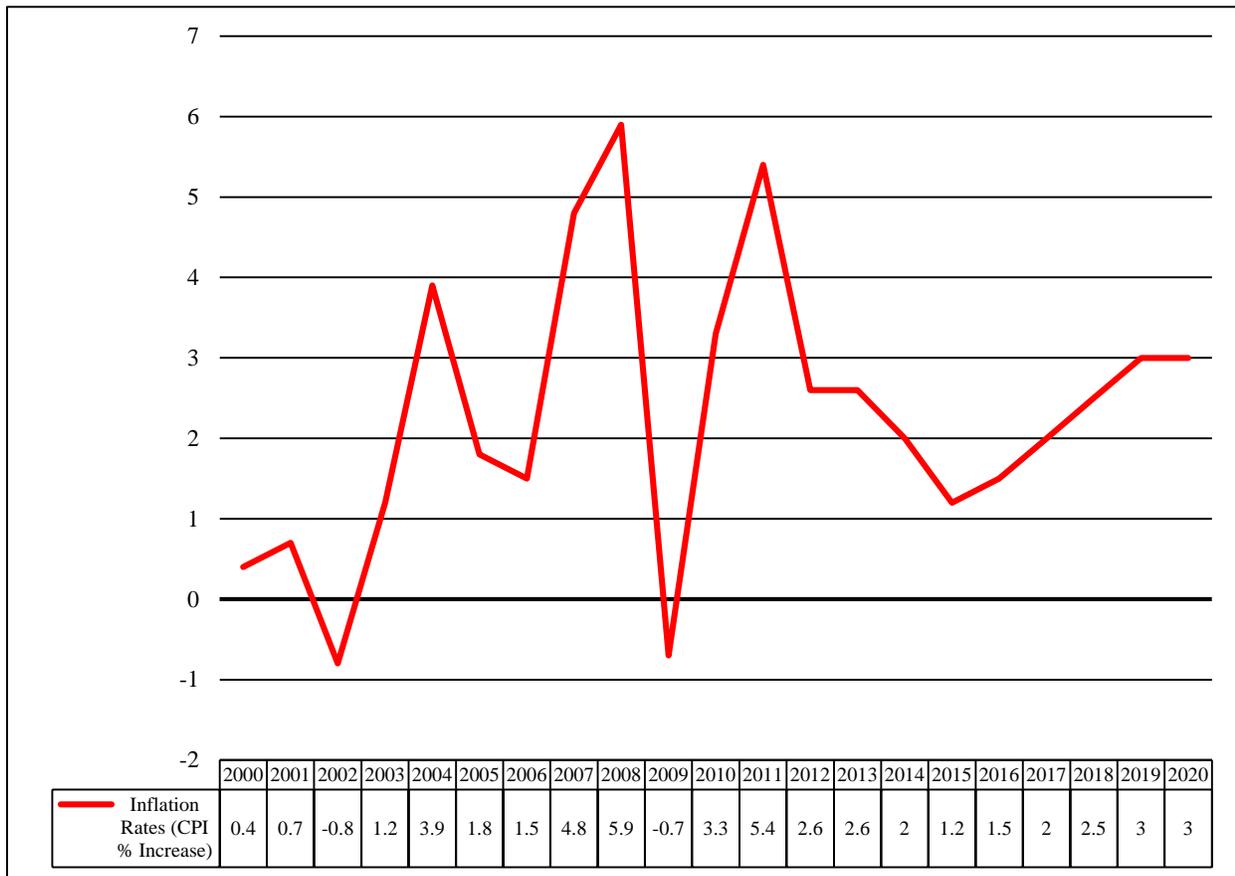
Inflation

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.”⁵⁷ 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,”⁵⁸ 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].”⁵⁹

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.⁶⁰ 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%,⁶¹ while the inflation target was set at 3.5%.⁶² 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 2015 is averaging 1.49%.

Figure 3.16 displays Chinese inflation rates for the years 2000-2020.

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 2015, accessed April 30, 2015, <http://www.imf.org/external/pubs/ft/weo/2015/01/weodata/index.aspx>, adapted by Anthony H. Cordesman and Steve Colley 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.⁶³ 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 2011.⁶⁴ 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.⁶⁵

As of 2010, approximately 47% of all FDI was invested in the manufacturing sector, with services making up a roughly equivalent amount.⁶⁶ 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.⁶⁷

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.⁶⁸

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 2011.⁶⁹ In 2010, China was credited with \$68.81 billion in total FDI (\$8.63 billion financial and \$60.18 billion non-financial).⁷⁰ 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.⁷¹

In light of these trends, China's current account balance has generated significant surpluses during the first decade of the 21st 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.⁷² 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.⁷³

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.”⁷⁴

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.⁷⁵

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.⁷⁶ 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.⁷⁷

- **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.⁷⁸ 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.⁷⁹ 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.⁸⁰

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

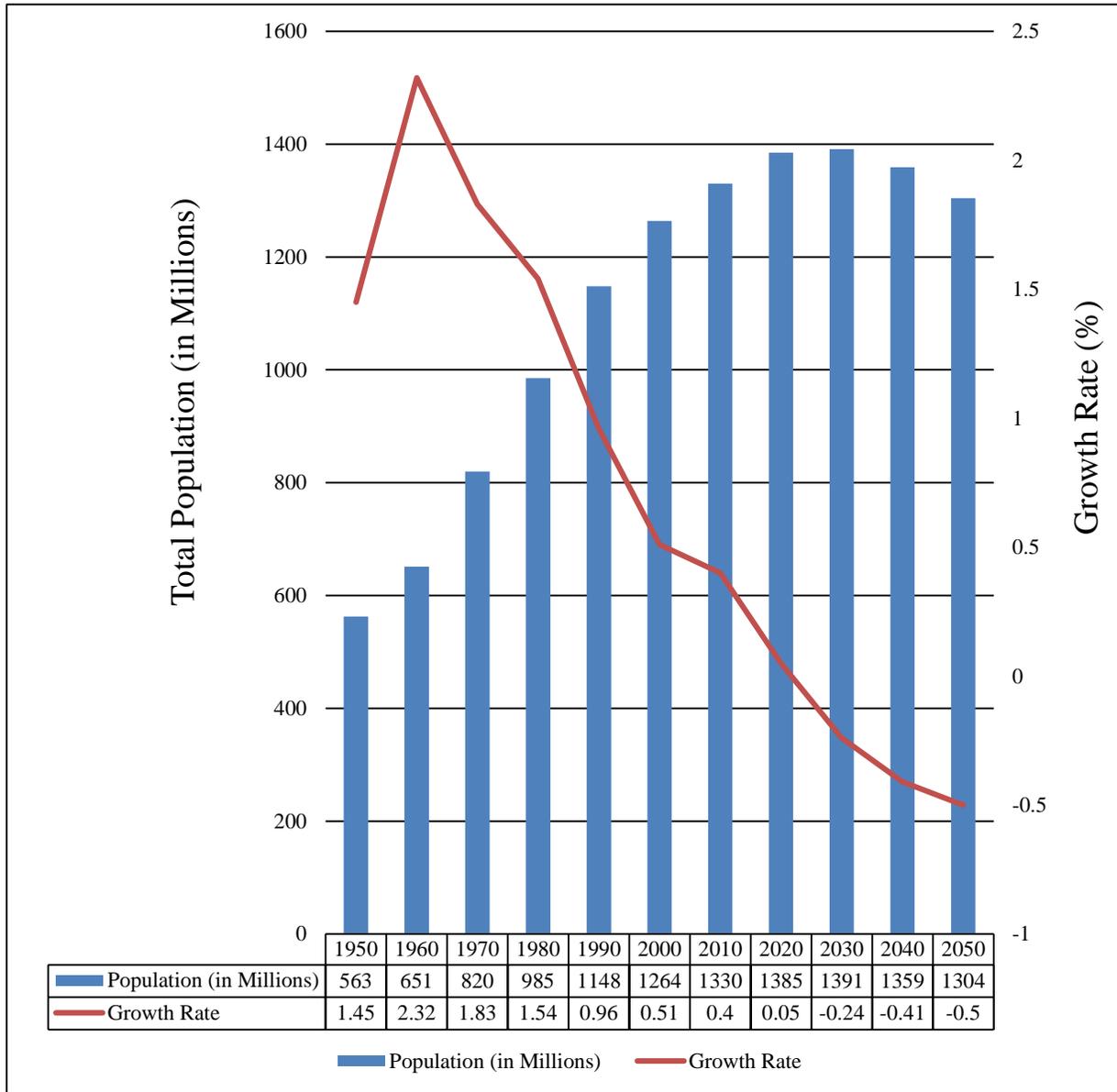
China's future personnel pool and economic growth will also be affected by the combined societal impact of population change and economic transformation. The erosion of traditional social security networks in rural China has already introduced difficulties in the recruitment of soldiers and absorption 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 2017.⁸¹ 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.⁸² 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.

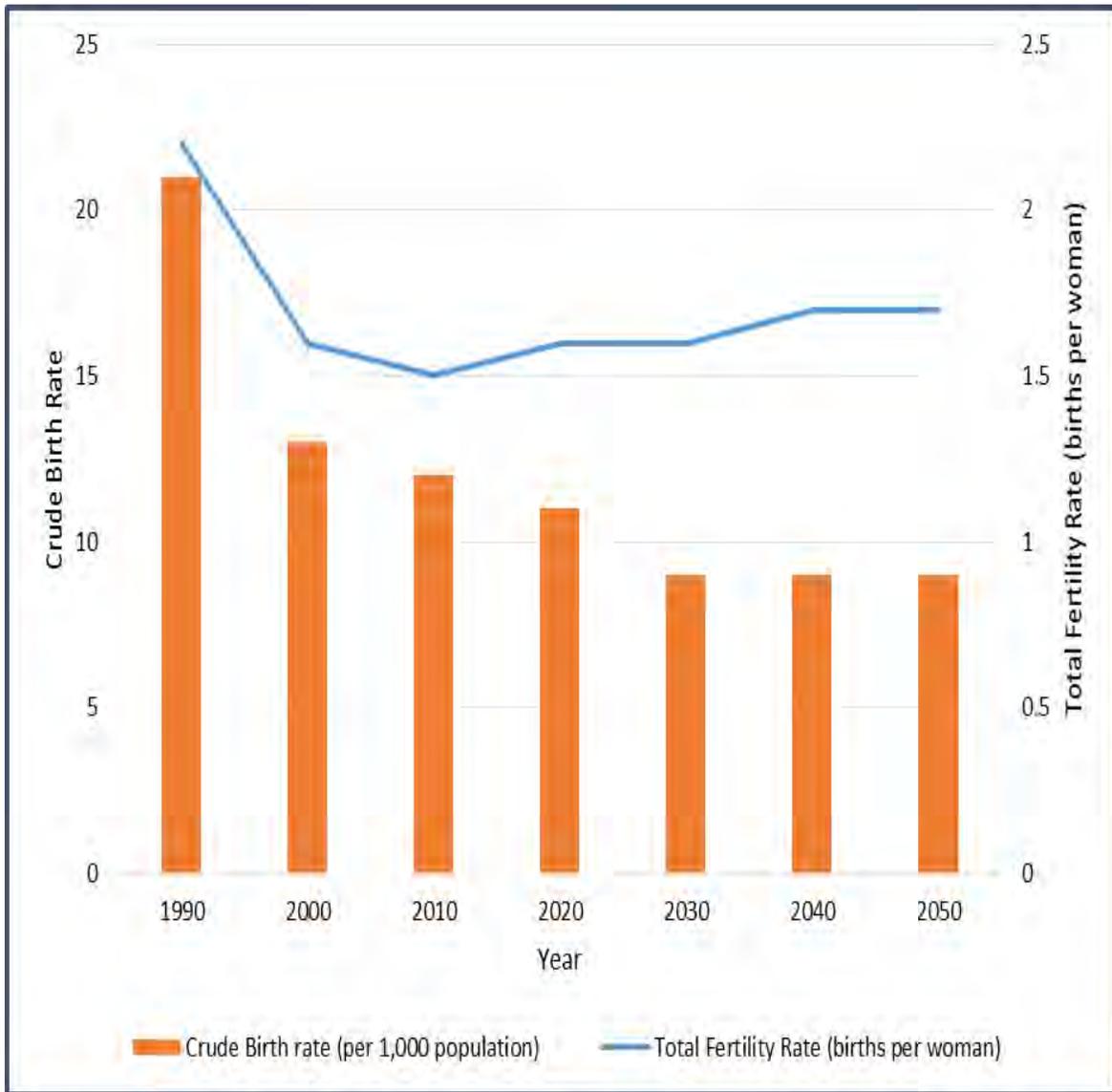
The cultural preference for male children in conjunction with the One Child Policy has led to an increase in female infanticide, sex selection abortion and abandonment, creating an unnatural gap between the two sexes. Currently there are 1.06 males per female; there are projected to be 30 million more 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)



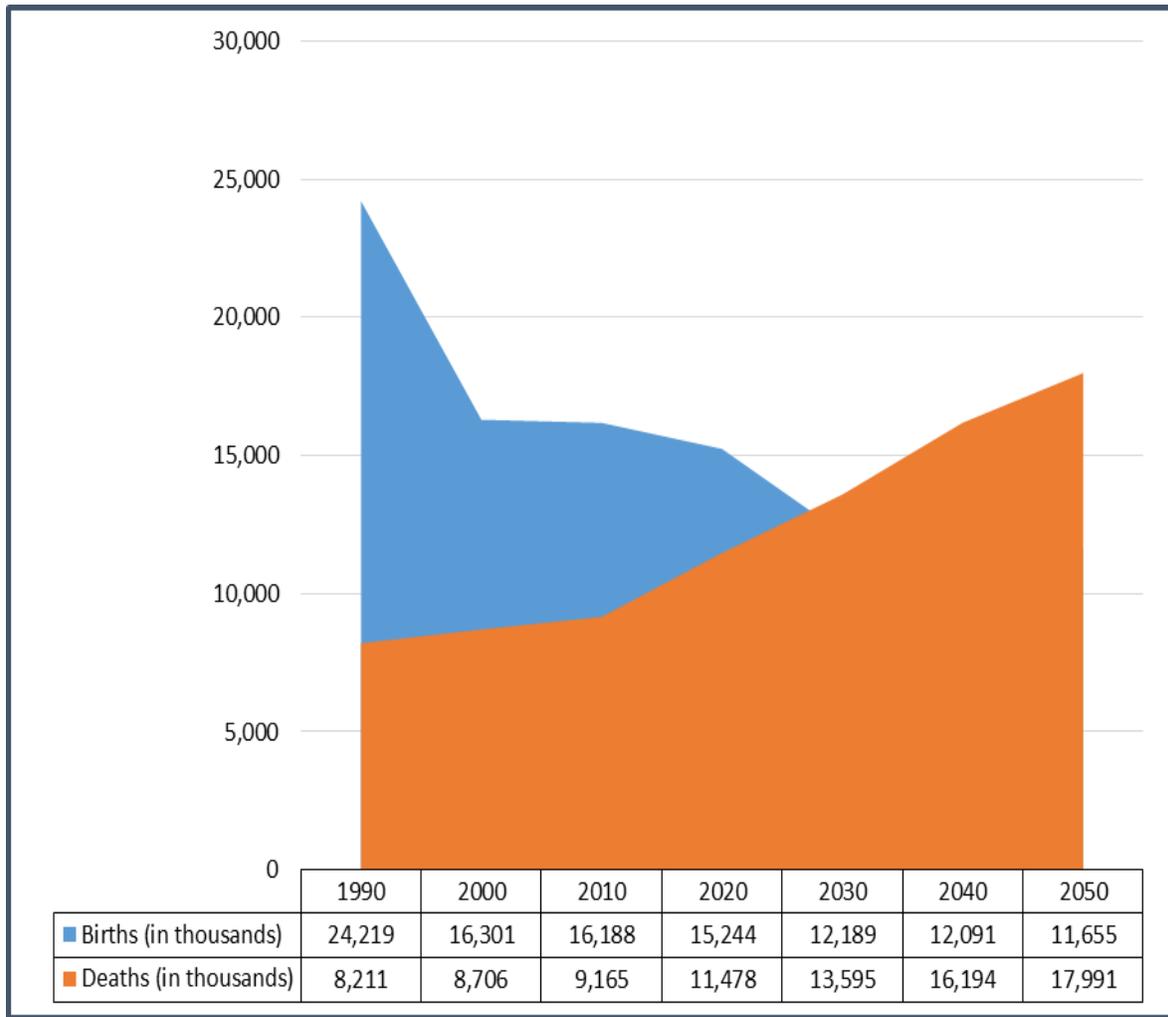
Source: US Census Bureau, International Programs, International Database, accessed April 2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.
<http://www.census.gov/population/international/data/idb/informationGateway.php>.

Figure 3.18: Chinese Population Growth Indicators



Source: US Census Bureau, International Programs, International Database, accessed April 2015, adapted by Anthony H. Cordesman and Steve Colley 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

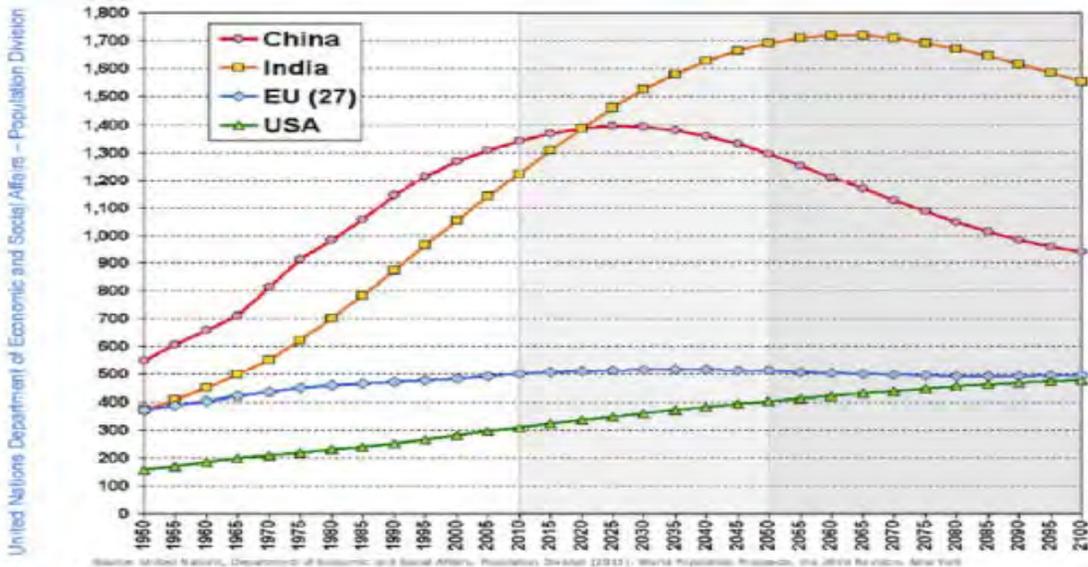


Source: US Census Bureau, International Programs, International Database, accessed April 2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.
<http://www.census.gov/population/international/data/idb/informationGateway.php>.

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

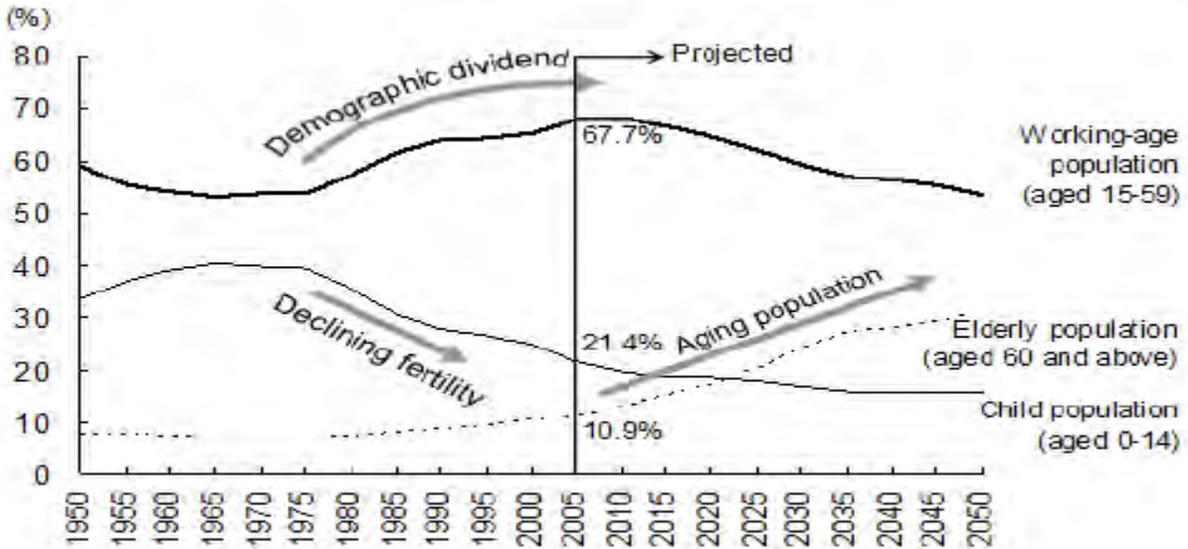
(Note Graphics are Dates and Data Shift with Time)

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/>.

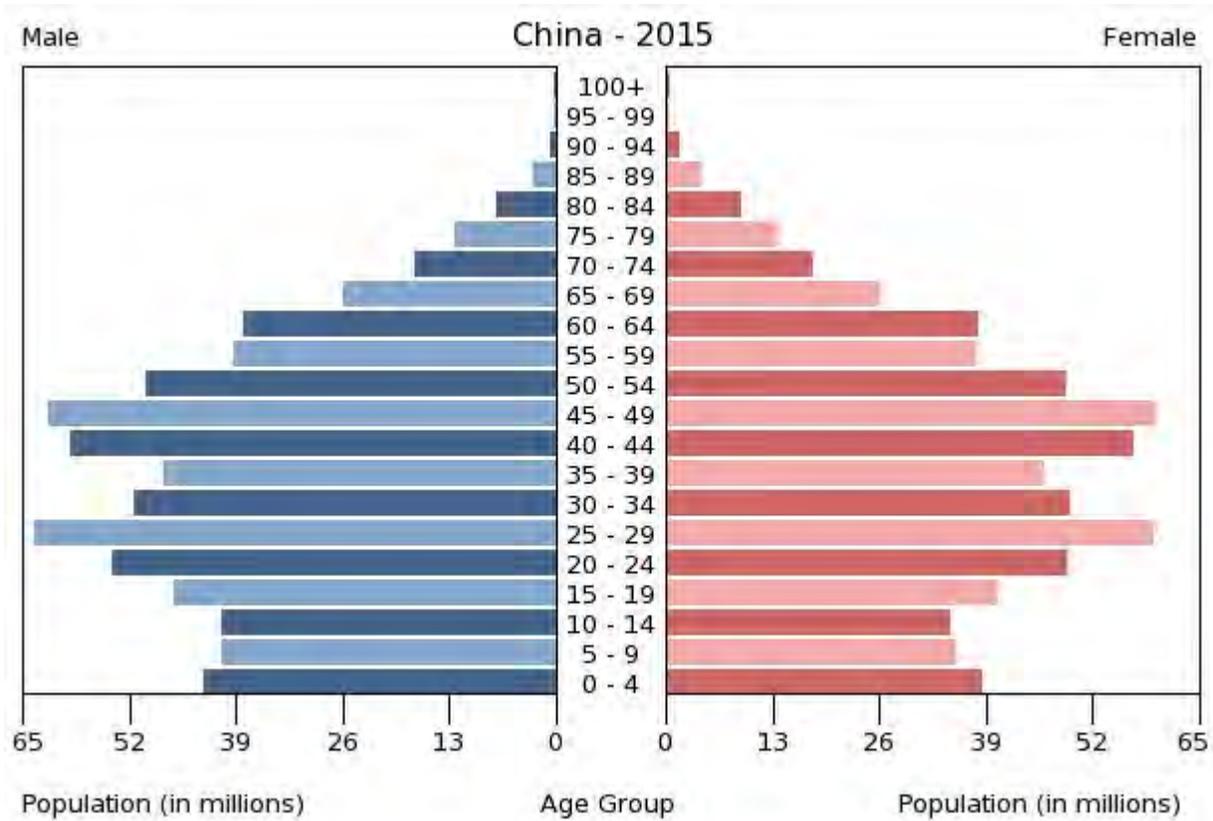
Impact on Labor Force and Youth and Aged Dependency



(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 June 2015, <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>.

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, few observers agree 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.

A Western analyst, Richard Bitzinger, points out in a March 2015 article in *Foreign Affairs* that:⁸³

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 far from 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.

The most extensive official outline of Chinese military spending is a brief historical statement on the website of the Ministry of National Defense of the PRC:⁸⁴

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 also 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:⁸⁵

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 RMB417.876 billion in 2008 and RMB495.11 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 available.

Figure 4.1: Official PRC Defense Budget Allocation for 2009 (in RMB billion)

	Active Force	Reserve Force	Militia	Total	
				Amount	Percentage
Personnel	167.063	1.465	0	168.528	34.04
Training & Maintenance	152.171	1.965	12.859	166.995	33.73
Equipment	157.426	1.431	0.73	159.587	32.23
Total	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.

2013 Defense White Paper

China's 2013 Defense White Paper did not discuss military spending in any 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."⁸⁶

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."⁸⁷ 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 offered limited clarity regarding Chinese military expenditures. It provided a brief strategic overview of its security situation, “active defense” concept, and guidelines for its military forces⁸⁸.

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 \$145 billion and making China the second largest military spender in the world.⁸⁹

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 12th 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:⁹⁰

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.⁹¹

The 2015 Defense White Paper provide an official explanation of the strategic guidelines of the Chinese military branches and critical security domains:

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".⁹²

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 y decreased from 9.5% in 1994 to approximately 5% in 2015.⁹³ These data provide some support to official Chinese statements that China's principal objective is economic development – and thus that defense.⁹⁴

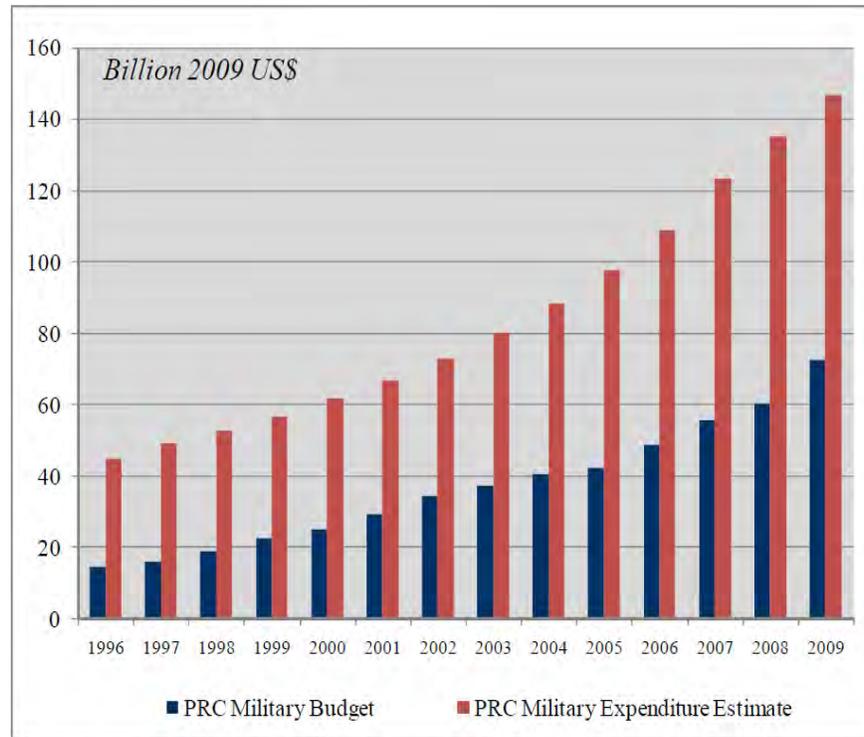
US Analyses of Chinese Defense Budgets

The US Department of Defense (DoD), however, has long questioned Chinese official reporting on the size of its defense budgets. The DoD has consistently said that it is difficult to estimate Chinese military spending "due to China's poor accounting transparency and incomplete transition from a command economy".⁹⁵ It has done so on the grounds that China's official military budget does not include major categories of defense-related expenditures, but includes line items that are not usually included in other countries' military budgets.

Recently unclassified DoD and US Intelligence reports have, however, provided some assessments of the PLA budget and expenditures. **Figure 4.2** is taken from the now-dated 2010 DoD report on China, showing a comparison of official Chinese defense budgets and US estimates of the actual size of the Chinese budget over 1996-2009. These US estimates tried to take into account all military-related expenses. This effort resulted in a low and a high estimate, suggesting that the real amount of Chinese defense spending, could be somewhere in between. A detailed explanation of

the methodology used to make these estimates is not available. However, they illustrate trends that may still characterize the current PLA budget and expenditures.

Figure 4.2: Historical PRC Defense Budget Compared to US Estimates of Total Defense Spending



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.

The DoD estimated that China's actual military-related spending for 2010 was over \$160 billion.⁹⁶ The DoD estimated China's actual military spending at \$120-180 billion in 2011, compared to the official figure of \$91.5 billion. 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."⁹⁷

The 2015 DoD report on China estimated that "China's total military-related spending for 2014 exceeds \$165 billion U.S. dollars (USD)."⁹⁸ The 2015 DoD did not provide the same range of estimates or seem to use the same methodology. The U.S. estimate was, however, again much higher than the Chinese government report that China's military budget increased to \$132 billion in 2014.

Figure 4.3 is taken from the 2015 DoD report and compares China's official 2014 defense budget to other regional powers. If such estimates are correct, Chinese defense spending has far surpassed those of its neighbors.

Figure 4.3: DoD Comparison of Chinese and Other Regional Defense Budgets

2014 Defense Budget Comparison (Adjusted for Inflation)	
	Billion (USD)
China (Official Budget)	\$136.3
Russia (National Defense Budget)	\$76.3
Japan	\$47.6
India	\$38.2
Republic of Korea	\$33.4
Taiwan	\$10.3

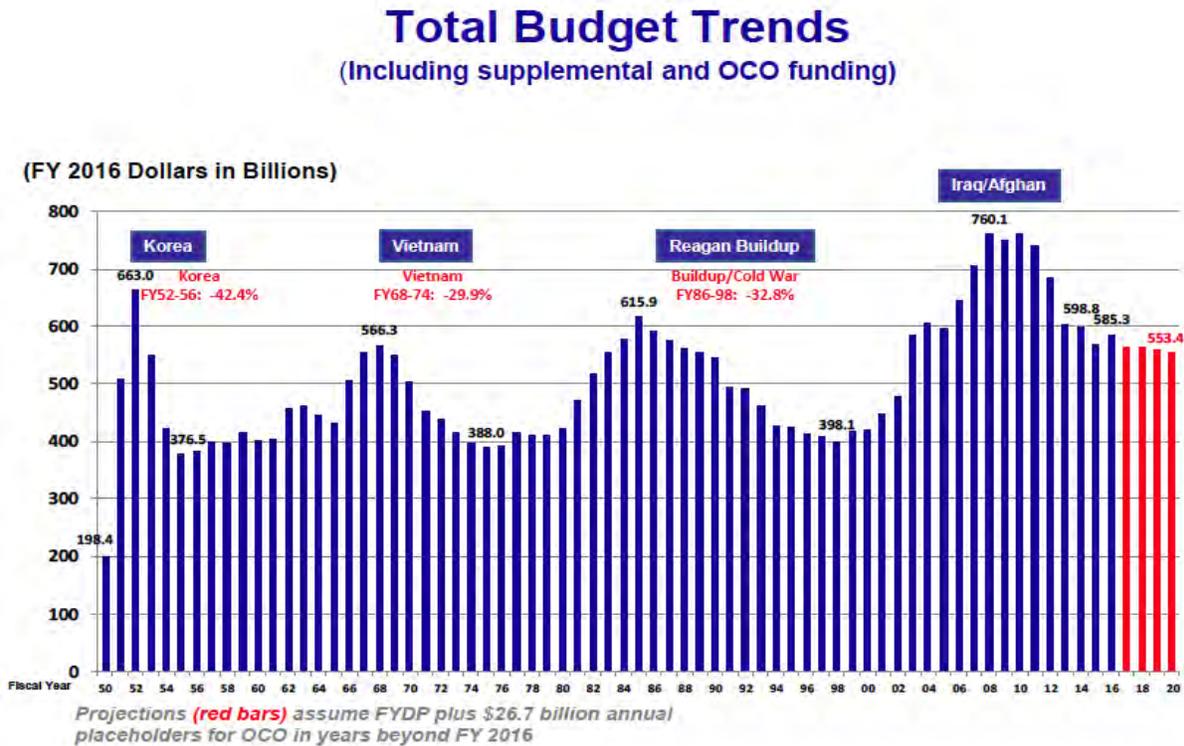
Comparison of China's official defense budget with those of other regional powers

Source: Department of Defense, *Military and Security Developments Involving the People's Republic of China 2015*, April 2015.

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 US. 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 US 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 a 7-10% growth for Chinese spending to rival that of the U.S.

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

Neither China nor the U.S. forecast future Chinese military spending, or provide a clear basis for doing so. 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 Department of Defense annual report -- *Military and Security Developments Involving the People's Republic of China 2015* – did not mention of China's 2015 defense appropriation, even though it was announced a month prior to the publication of the US report. The 2015 DoD report did, however, provide the following overview of China's resources for force modernization and defense spending:⁹⁹

China has the fiscal strength and political will to support continued defense spending increases, which will support PLA modernization toward a more professional 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 repatriated 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/science and technology base, dual-use technologies, and foreign technology acquisition.

Other Outside Assessments of Chinese Military Spending

Other outside experts question China's reporting. The IISS has consistently estimated that China actually far outspends its declared budget. 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 has developed the analysis of China's defense budget trends and estimates over 2009-2011, depicted in **Figure 4.5**.

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 2050:¹⁰⁰

.... 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).

The IISS carried a similar analysis in 2015, and attempted to explain the increase in Chinese spending as follows:¹⁰¹

The rapid growth of China's defence budget ... has generally outpaced increases seen in the rest of Asia, as the country intensifies its efforts to build a globally competitive defence science, technology and industrial (DSTI) base. Despite its slowing economy, China's 12.2% official defence-budget increase in 2014 (to RMB805 billion, or US\$129bn) was higher than the 10.7% and 8% increases seen in 2013 and 2012, and accounted for nearly two-thirds of the total rise in Asian defence outlays in 2014 (see pp. 210-11).

The official budget, however, does not include disbursements on the People's Armed Police (PAP), which are instead included under the Public Security budget. It is also widely held to exclude some other military-related expenditure, such as science, technology and innovation funding. A useful proxy indicator of defence R&D growth is the change in the overall level of investment in national R&D. China's R&D expenditure in 2014 was set at RMB1.34 trillion (US\$215bn). This was around 2.2% of GDP and a sizeable increase over the 2013 level of RMB1.19tr (US\$192bn), although the proportion of this allocated to defence-related activities is uncertain.

The government has set a target for science and technology spending to reach 2.5% of GDP by 2020, which indicates the potential for higher rates of defence-related R&D growth over the next few years. If estimates of these additional items are included, Chinese defence spending in 2013 rises by a factor of approximately 1.4 relative to officially published figures, to an estimated RMB1.13tr (US\$181bn) using market exchange rates.

Figure 4.5 provides a comparison of IISS and SIPRI estimates based on various editions of the IISS *Military Balance*, and SIPRI estimates released in January 2015. The detailed methodology used by SIPRI was not provided with the data, but in an article from Bloomberg explained SIPRI's assessment of the figures in that they, "take into account items including military research and development, arms imports, military construction and People's Liberation Army pension costs that aren't included in the official budget." SIPRI has made consistently higher estimates of Chinese spending than the IISS – ranging from twice as high in the early 2003s to roughly one-third higher in 2014.

A 2013 analysis by Adam P. Liff and Andrew S. Erickson reached a different conclusion. It provided the data on Chinese defense spending shown in **Figures 4.6 and 4.7**. 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 placing on the Chinese economy:¹⁰²

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 5.7**]: 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.

The 2014 Japanese White Paper provided still another estimate of the PRC Defense Budget, which is shown in **Figure 4.8**. Like the DoD estimate, it concluded that China's increases in defense spending were real and well in excess of 10% per year. **Figure 4.9**, also from the 2014 Japanese Defense White Paper, shows regional defense budget trends over the past ten years.

**Figure 4.5: Chinese Military Budget Trends versus IISS and SIPRI
Estimates: Part I**

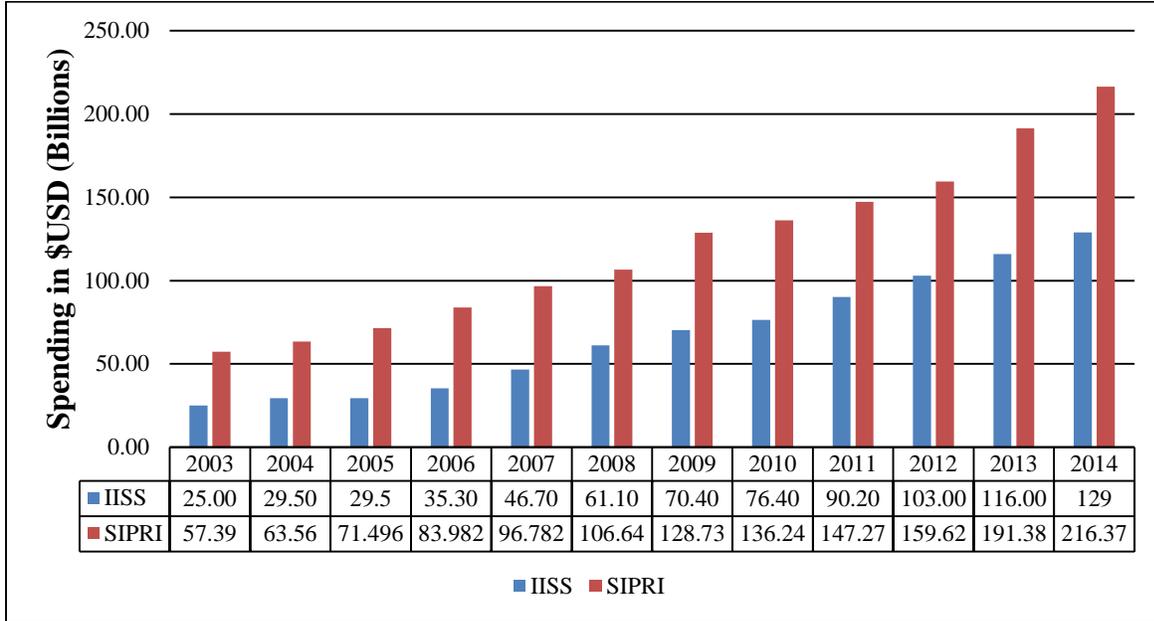
Chinese vs. IISS Estimates

	2009	2010	2011
Chinese GDP (RMB, billions)	34,090	40,151	47,156
Chinese GDP Growth	9.2%	10.4%	9.2%
Official Defense Budget (RMB, billions)	495.1	533.3	583.0
Nominal Percentage Change	18.5%	7.7%	9.3%
Real Percentage Change	19.2%	1.8%	4.7%
Official Defense Budget as a Percentage of Total Outlays	6.5%	5.9%	5.3%
Official Defense Budget as a Percentage of GDP	1.45%	1.33%	1.24%
Total Estimated Defense Spending (RMB, billions)	671.8	753.4	883.3
Nominal Percentage Change	16.3%	12.1%	17.2%
Real Percentage Change	17.0%	6.0%	9.1%
Total Estimated Defense Spending as a Percentage of Total Outlays	8.8%	8.4%	8.1%
Total Estimated Defense Spending as a Percentage of GDP	1.97%	1.88%	1.87%
Official Defense Budget (USD, billions)	72.5	78.7	90.2
Total Estimated Defense Spending (USD, billions)	98.4	111.1	136.7
Total Estimated Defense Spending	6.83	6.78	6.46

Source: IISS, *Military Balance 2013*, 256.

Figure 4.5: Chinese Military Budget Trends versus IISS and SIPRI Estimates: Part II

IISS Versus SIPRI Estimates



Source: IISS, *Military Balance 2013-2015*, and SIPRI data accessed in April 2015.

Figure 4.6: 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 4.7: PRC Official Defense Budget Annual Data, 2002-2012

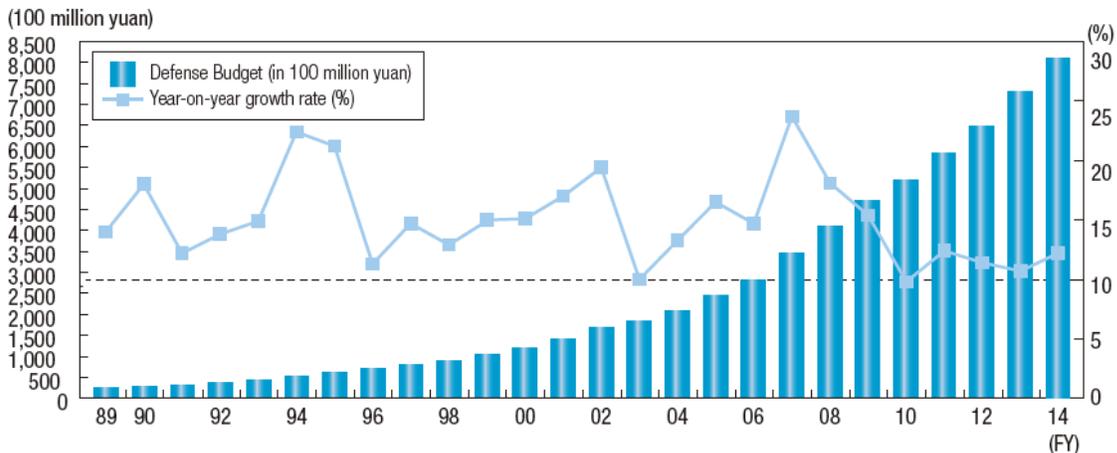
	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012*
GDP growth rate at current prices	9.1%	10.0%	10.1%	11.3%	12.7%	14.2%	9.6%	9.2%	10.4%	9.2%	N/A
Defense budget (RMB billions)...											
... At current prices	170.8	190.8	220.0	247.5	297.9	355.5	417.9	495.1	533.3	602.7	670.0
... At 2002 constant 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

Note: 2012 defense budget is an estimated figure reported in Xinhua.

Source: Adam P. Liff and Andrew S. Erickson, "Demystifying China's Defence Spending: Less Mysterious in the Aggregate," *China Quarterly*, March 2013, 10.

Figure 4.8: Change in China's Defense Budget

Fig. I-1-3-1 Change in China's Announced Defense Budget

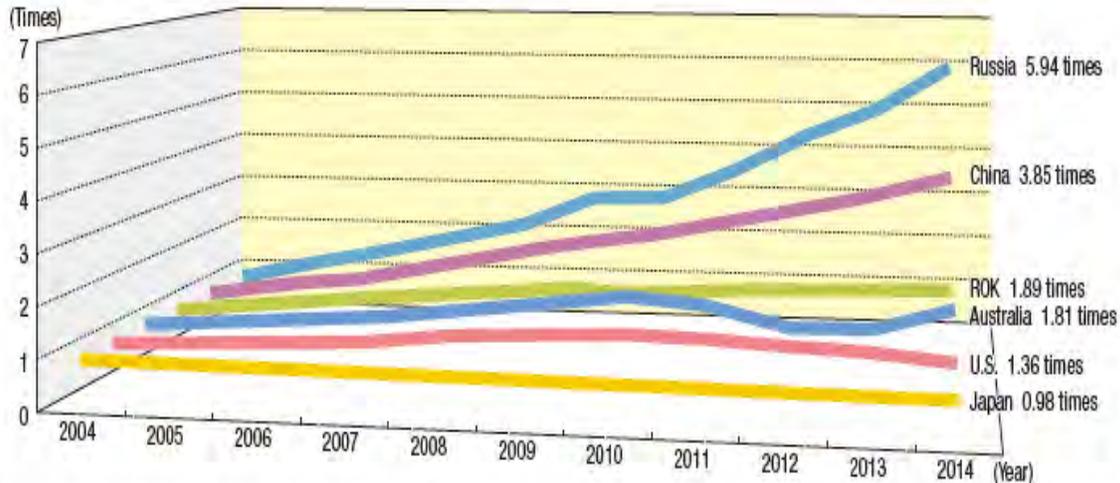


Notes: The total defense budgets for FY2002 and FY2004 were not disclosed, while the growth rates and the amount of increase for these two fiscal years were disclosed. The total defense budgets for the two fiscal years based on the growth rates and the amount of increase in combination with the initial defense budgets of the previous years were calculated. However, the numbers as a result of the calculation was found to be inconsistent with the numbers China disclosed the following year. In this graph, 168.4 billion yuan and 210 billion yuan for FY2002 and FY2004, respectively, were used based on the calculation conducted on the assumption that the disclosed growth rates and the amount of increase are based on the actual defense expenditures for FY2001 and FY2003.

Source: Japanese Ministry of Defense, *Defense of Japan 2014*, August 2014.

Figure 4.9: Changes in Defense Budgets in Surrounding Countries over the Past 10 Years

Fig. II-5-4-7 Changes in Defense Budgets in Surrounding Countries Over the Past Ten Years



Notes: 1. Created based on the defense budgets published by each country.

2. These are numerical values obtained by simple calculation of the ratio between the defense budgets each year, with the FY2004 value as 1 (times) (rounded off two decimal places).

3. The definition and breakdown of the defense budgets of each country are not necessarily clear. As we must take into account various factors such as foreign exchange fluctuations and price levels of each country, it is very difficult to draw a comparison of defense budgets among countries.

Source: Japanese Ministry of Defense, *Defense of Japan 2014*, August 2014.

Limited Transparency and Problems in Estimating Chinese Military Expenditures

These very different estimates illustrate the lack of expert consensus regarding the real level of Chinese defense spending. Most experts do, however, believe that Chinese government statistics do not include some outlays that are standard reporting for most other countries. Many observers believe the following aspects of China's military spending are not accurately disclosed by Chinese officials:¹⁰³

- 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.

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:¹⁰⁴

- 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.

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.

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.¹⁰⁵

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.¹⁰⁶

The PAPF 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).¹⁰⁷

As Adam P. Liff and Andrew S. Erickson note, these issues make estimating China's defense spending exceptionally difficult:¹⁰⁸

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.¹⁰⁹

Liff and Erickson note that some of these issues can have a serious impact on the quality of outside estimates:¹¹⁰

...[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:¹¹¹

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 programmes 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 programmes 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.

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:¹¹²

- (1) emphasize that there is no universal standard for military transparency;
- (2) compare the current level of transparency favourably 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.

In March 2015, shortly after the announcement of the Chinese military budget increasing by 10.1%, the Chinese media published the following response to statements by the West regarding the rapidly increasing defense spending:¹¹³

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.

As a result, China’s capabilities can more accurately measured by tracking the changes in its military forces, modernization, and readiness. 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.¹¹⁴

CHAPTER 5: CHINESE STRATEGY AND PLA MILITARY DOCTRINE

Strategy, like military expenditures, is best judged by what is actually done 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 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 official statements. At the same time, simply measuring the shifts in the unclassified data on Chinese forces lacks context and perspective. They can only be understood 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

It is necessary to have some picture of what China says as background for any portrayal of its force strength and modernization. What China says is likely to not be a full reflection of what its leaders actually think and intend. Certainly no unclassified Western strategy document or force plan has ever passed this test or even come close to meeting it. 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.

It is 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.

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: ¹¹⁵

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 21st 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.¹¹⁶

The *Science of Military Strategy*, a PLA textbook on strategy, presents the four pillars of active defense.¹¹⁷

- 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:¹¹⁸

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.¹¹⁹

To implement the military strategic guideline of active defense in the new situation, China's armed forces will adjust the basic point for [the Preparation for Military Struggle] 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.

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 1993.¹²⁰ 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."¹²¹ The DOD further interprets the doctrine to refer to "high-intensity, information-centric regional military operations of short duration."¹²² 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:¹²³

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 also seen as a global phenomenon and/or broad historical trend in society:¹²⁴

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:¹²⁵

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 assess that the dramatic changes in international relations following the Cold War have decisively altered both the political drivers for war and the political constraints on war.¹²⁶

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:¹²⁷

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.¹²⁸ 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.”¹²⁹

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.”¹³⁰ 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.¹³¹

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.¹³² However, the use of civilian materiel and personnel for support and logistics functions is still accepted in PLA doctrine and is still seen as necessary for victory in Local Wars:¹³³

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.¹³⁴ 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:¹³⁵

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.

A 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:¹³⁶

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 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:¹³⁷

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 is 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.”¹³⁸ 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.¹³⁹

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.¹⁴⁰ As the above quote shows, the PLA intends to push down joint operations to “very small-scale operations.” However, as one analyst writes:¹⁴¹

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.

However, according to the 2014 DoD report, in order to achieve this new concept:¹⁴²

...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 2015 DoD report summarizes the Chinese priority to modernize these systems as follows:

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 its broader goals of informationization, which seeks 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 in each of its military services and military regions.

The adoption of the ICP enables multi-service communications necessary for joint operations. Moreover, the new C4I technologies enable instantaneous information-sharing, and robust and redundant communications

networks — intelligence, battlefield information, logistical information, and weather reports, which give commanders improved situational awareness. In particular, the transmission of ISR data in near-real-time to commanders in the field can facilitate the commander's decision-making process, shortening command timelines, and making operations more efficient.

The PLA also seeks to improve its C4I capabilities by reforming its joint command institutions at the national and regional levels. The 3rd Plenum of the Central Committee of the 18th CPC Congress explicitly called for “soundly setting up the joint operations command organ of the CMC and the theater joint operations command institutions.” If adopted, these reforms would be the most significant changes to the PLA's command organization since 1949.

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.¹⁴³ 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:¹⁴⁴

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:¹⁴⁵

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:¹⁴⁶

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:¹⁴⁷

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.¹⁴⁸

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.¹⁴⁹ 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 2005.¹⁵⁰

The 2015 DoD report on China summarized the recent trends in China's building of an informationized military as:¹⁵¹

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."

Chinese Cyberwarfare

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 is becoming a major aspect of Chinese modernization and has triggered a growing US, ROK, and Japanese response.

Cyberwarfare has 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."¹⁵²

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*.¹⁵³ The PLA guidelines were briefly explained in the Chinese media as follows:¹⁵⁴

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."¹⁵⁵ The white paper continued with the following:¹⁵⁶

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 been paying 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.¹⁵⁷

In addition to enhancing battle space situational awareness, cyberwarfare is also 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.”¹⁵⁸

Such operations target “the emotions, motives, objective reasoning, and behavior of a specific, targeted audience”¹⁵⁹ and essentially attempt to degrade American will to sustain a conflict.¹⁶⁰ This would appear to be one way to take advantage of what the Chinese perceived to be an extreme aversion to casualties by Americans.¹⁶¹

In an assessment of China’s capabilities, the IISS noted:¹⁶²

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 informationised conditions as characterised 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 – Informatisation, 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:¹⁶³

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."

US Views on Chinese Cyber Activities

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.¹⁶⁴

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.¹⁶⁵

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.¹⁶⁶

Mandiant documented systematic data theft from at least 141 organizations over seven years, tracing the attacks back to a Chinese military unit within the 2nd Bureau of the PLA's General Staff Department's 3rd 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 2nd Department and the Ministry of State Security. Unit 61398, employing hundreds or even thousands of employees, is one of the most prolific.¹⁶⁷

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."¹⁶⁸

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.¹⁶⁹ 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.”¹⁷⁰

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.”¹⁷¹

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.’”¹⁷² 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.¹⁷³ 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 have led to a growing US reaction and in the summer of 2015 hit a highpoint. The Obama administration revealed in July 2015 that 21.5 million Americans’ personal information 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.¹⁷⁴

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:¹⁷⁵

Cyber Activities Directed Against the Department of Defense. In 2012, 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 the Chinese government and military. These intrusions were focused on exfiltrating information.

China is using its computer network exploitation (CNE) capability 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 US leadership thinking on key China issues, and military planners building a picture of U.S. network 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 computer network attacks. China’s 2010 Defense White Paper notes China’s own concern over foreign cyberwarfare efforts and highlighted the importance of cyber-security in China’s national defense.

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 added:¹⁷⁶

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:¹⁷⁷

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.

These developments in Chinese cyber activities have 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.¹⁷⁸ 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:¹⁷⁹

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:¹⁸⁰

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 addressed the Senate Select Committee on Intelligence regarding Chinese cyber operations and cybersecurity.¹⁸¹

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:¹⁸²

- 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.¹⁸³

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 later, as the DoD 2015 report notes:¹⁸⁴

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 2015 DoD report on China outlines the recent actions the PLA has taken to achieve this goal:¹⁸⁵

While continuing to exercise mobilization, long distance maneuvers, logistics, and joint command and control (C2) (highlighted in 2013 exercises such as MISSION ACTION), several large-scale PLA exercises in summer and fall of 2014 also demonstrated a new emphasis on comprehensive, military-wide training. In STRIDE (KUAYUE) 2014, combined arms brigades from all seven military regions deployed to two military region's training centers. Each unit was evaluated on mobilization and combat operations against an opposing force. Similarly, JOINT ACTION (LIANHE XINGDONG) 2014 included seven evolutions conducted across the various military regions with participation by PLA Army, Navy, Air Force, Second Artillery Force, People's Armed Police, militia and reserve forces, all with a common focus on joint C2 utilizing an integrated command platform during joint operations and live fire evolutions.

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.¹⁸⁶ 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:¹⁸⁷

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:¹⁸⁸

- 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.¹⁸⁹

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:¹⁹⁰

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 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.¹⁹¹ The US Office of Naval Intelligence (ONI) summarized this in their 2015 report on the PLA Navy as follows:¹⁹²

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 not only

of defending China from long-range attacks, but also of long-range strikes and power projection operations.¹⁹³

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.¹⁹⁴ 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.¹⁹⁵

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.¹⁹⁶

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.¹⁹⁷ 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.¹⁹⁸

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 2010,¹⁹⁹

...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.²⁰⁰

It should be noted that a 10th 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.”²⁰¹

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.²⁰² **Figure 5.1** has shown 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 2040.²⁰³ As one US military analyst noted in 2011:²⁰⁴

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.²⁰⁵

The 2014 Japanese defense white paper addressed these Chinese sovereignty disputes in some depth—albeit from a clearly Japanese perspective:²⁰⁶

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.²⁰⁷

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."²⁰⁸ 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.²⁰⁹ 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.²¹⁰

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.²¹¹ This approach is characterized as "salami slicing," which involves gradually strengthening de facto claims of sovereignty.²¹² 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.²¹³

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.²¹⁴ 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.²¹⁵ 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.²¹⁶

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 2012,²¹⁷

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:²¹⁸

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 became 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 rammings and water cannon firing. One Vietnamese fishing boat was sunk and several Vietnamese were injured.²¹⁹

These controversial actions also 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.²²⁰

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.²²¹ 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.^{222, 223}

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.”²²⁴

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.

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:²²⁵

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:²²⁶

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 2015 report stated that:²²⁷

China continues to regard stable relations with the United States and China's neighbors as key to its development. China sees the U.S. as the dominant regional and global actor with the greatest potential to both support and, potentially, disrupt China's rise. Top Chinese leaders, including President Xi Jinping, continued to advocate for a "new type of major power relations" with the United States throughout 2014.

China's "new type" of relations concept urges a cooperative U.S.-China partnership based on equality, mutual respect, and mutual benefit. The framework also reflects China's aspirations to be regarded as a great power, emphasizing conflict avoidance to sustain its "peaceful rise." As a subset of the broader relationship, the PLA in 2014 also promoted a "new type" of bilateral military relations.

China remains concerned that if regional States come to view China primarily as a threat, they may act to balance against China, potentially with the United States. China balances the imperative to persuade countries that its rise is peaceful with the imperative to strengthen its control over existing sovereignty and territorial claims. Despite its desire to project the image of a developing country engaged in a peaceful development strategy, China's efforts to defend and advance its concept of national sovereignty and territorial integrity — underpinned by growing economic and military capabilities — have manifested in more forceful rhetoric and confrontational behavior.

Prominent examples of this include China's attempts to block resupply missions to the Philippine outpost at Second Thomas Shoal, its deployment of a deep water hydrocarbon rig to waters disputed with Vietnam, its use of punitive trade policies as instruments of coercion, and its actions to pressure Japan in the East China Sea. China's lack of transparency surrounding its growing military capabilities and strategic decision-making has also increased concerns in the region about China's intentions. Absent greater transparency, these concerns will likely intensify as the PLA modernization progresses.

The 2015 report added: ²²⁸

Factors Shaping China's Leadership Perceptions. In the fall of 2014, China's leadership convened the Fourth Plenum of the Eighteenth Central Committee, marking two years since Xi Jinping was named General Secretary of the CPC. The agenda focused on implementation of reform — with a major focus on rule of law — and efforts to address corruption and bolster Party legitimacy. Despite holding a generally positive view of China's strategic environment, official documents indicate that China does see its security environment as becoming more “complex” and “complicated” as a result of several evolving factors:

Economics. Steady economic growth, low unemployment, and contained inflation remain the bedrock of social stability. China's leaders have been slowly scaling back Gross Domestic Product (GDP) growth targets in acknowledgement that China's longstanding growth strategy of relying on exports and investment is unsustainable. China faces a range of potential economic risks, including a slowdown in the property market sector, a sharp increase in credit, high off-balance sheet borrowing by local governments, domestic resource constraints, and rising wages.

Nationalism. CPC leaders and military officials continue to be affected by, and in some cases, exploit nationalism to bolster the legitimacy of the Party, deflect domestic criticism, and justify their own inflexibility in dialogues with foreign interlocutors. However, nationalist forces could ultimately influence the leadership's decision-making on key policy issues or attempt to pressure the CPC if these forces perceive Party leaders as insufficiently satisfying nationalist goals.

Regional Challenges to China's Interests. Ongoing tensions, with Japan in the East China Sea and with South China Sea claimants, challenge China's desire to maintain a stable periphery. Combined with greater U.S. presence in the region, these factors raise Chinese concerns that regional countries will strengthen their military capabilities or increase security cooperation with the United States to balance China.

Environment. China's economic development has come at a high environmental cost. China's leaders are increasingly concerned that environmental degradation could undermine regime legitimacy by threatening economic development, public health, social stability, and China's international image.

Demographics. China faces the dual threat of a rapidly aging population and a declining birth rate, one that now falls below replacement level. Longer life expectancies may force China to allocate more resources to social and health services, while the declining birth rate will continue to reduce China's supply of labor, a key driver of the country's three decades of economic growth. This dual phenomenon could lead to economic stagnation that could threaten CPC legitimacy.

PLA Military Foreign Engagement and Diplomacy.

The extent of PLA engagement with foreign militaries seems to have leveled out in 2014. These engagements continue providing the military a platform to demonstrate its broadening capabilities as well as improving tactics, techniques and procedures. Bilateral and multilateral exercises, in addition to providing a political benefit, augment other PLA modernization efforts by providing opportunities to improve capabilities in areas such as counterterrorism, mobility operations, and logistics.

Senior-level visits and exchanges provide China with opportunities to increase military officers' international exposure, communicate China's positions to foreign audiences, better understand alternative world views, and advance foreign relations through interpersonal contacts and military assistance programs. Expanded PLA travel abroad enables China's military officers to observe and study foreign military command structures, unit formations, and operational training.

As China's regional and international interests grow more complex, the PLA's international engagement will expand, especially in the areas of peacekeeping operations, counter-piracy, 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 Defense Studies Institute in China while some also send officers to the PLA Army and Navy command schools in Nanjing. In addition to furthering PLA modernization, the focus of these engagements will likely remain on building China's political ties, assuaging fears about China's rise, and building China's international influence, particularly in Asia and Latin America.

This US perspective reflects comments in the 2010 South Korean defense white paper and other regional military studies.²²⁹ It 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.

At the same time, a careful reading of the US view shows that the US does not see China as a threat in terms of 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:²³⁰

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.

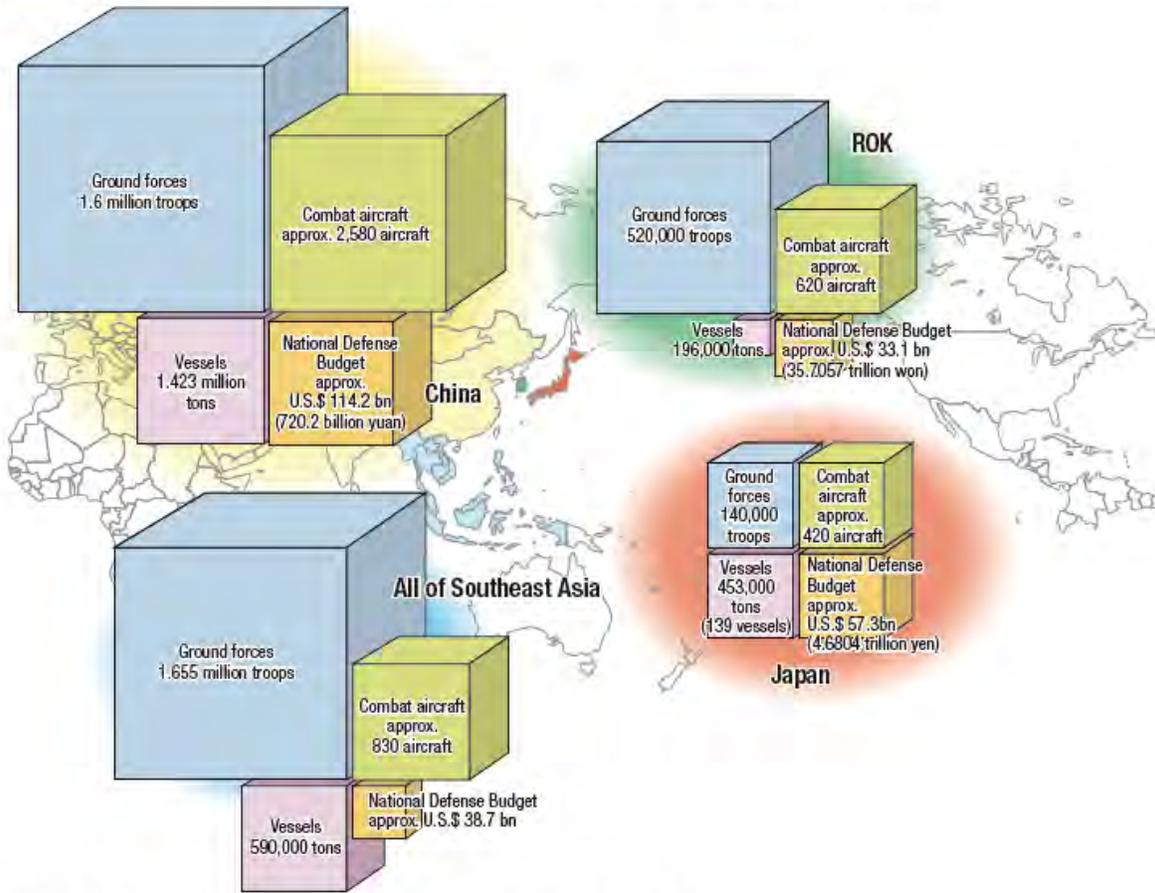
The U.S.-China relationship has elements of both cooperation and competition. A new model of military-to-military relations seeks to manage competition through sustained and substantive dialogue and a commitment to risk reduction, and at the same time deepen practical, concrete cooperation in areas of 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.²³¹ These comparisons are shown in **Figure 5.3** and **Figure 5.4**. A 2014 South Korean estimate is shown in 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

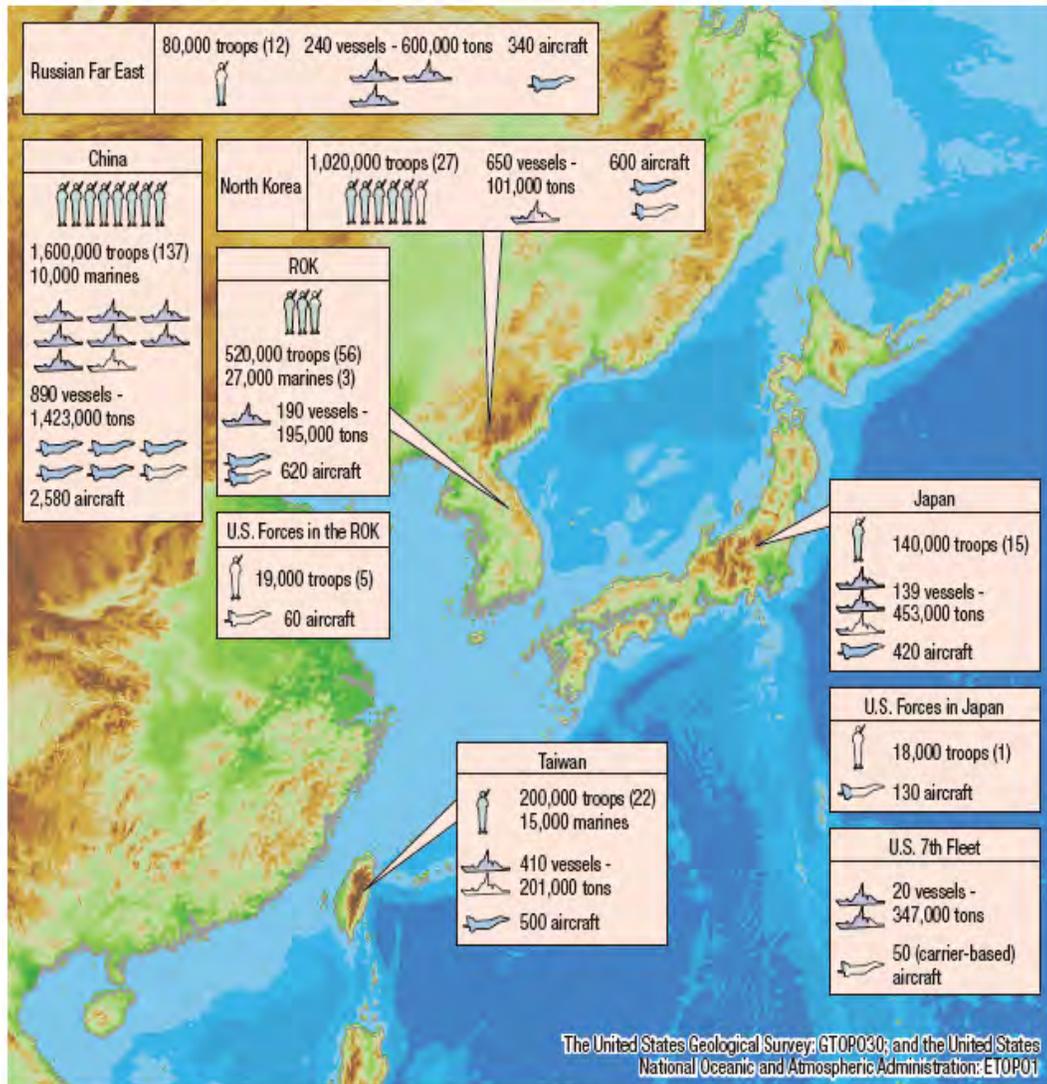


- Notes: 1. Source: The Military Balance 2014 and others. The size of each block indicates relative size using Japan as the base size.
 2. For Japan, the force strength shows the actual strength of each Self-Defense Force as of the end of FY2011; the number of combat aircraft is the sum of the number of combat aircraft of the ASDF (excluding transport aircraft) and that of the MSDF (fixed-wing aircraft only).
 The Japanese national defense budget is the initial budget excluding the cost of the SACO and the reduction of the local burden among the U.S. forces realignment costs.
 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)



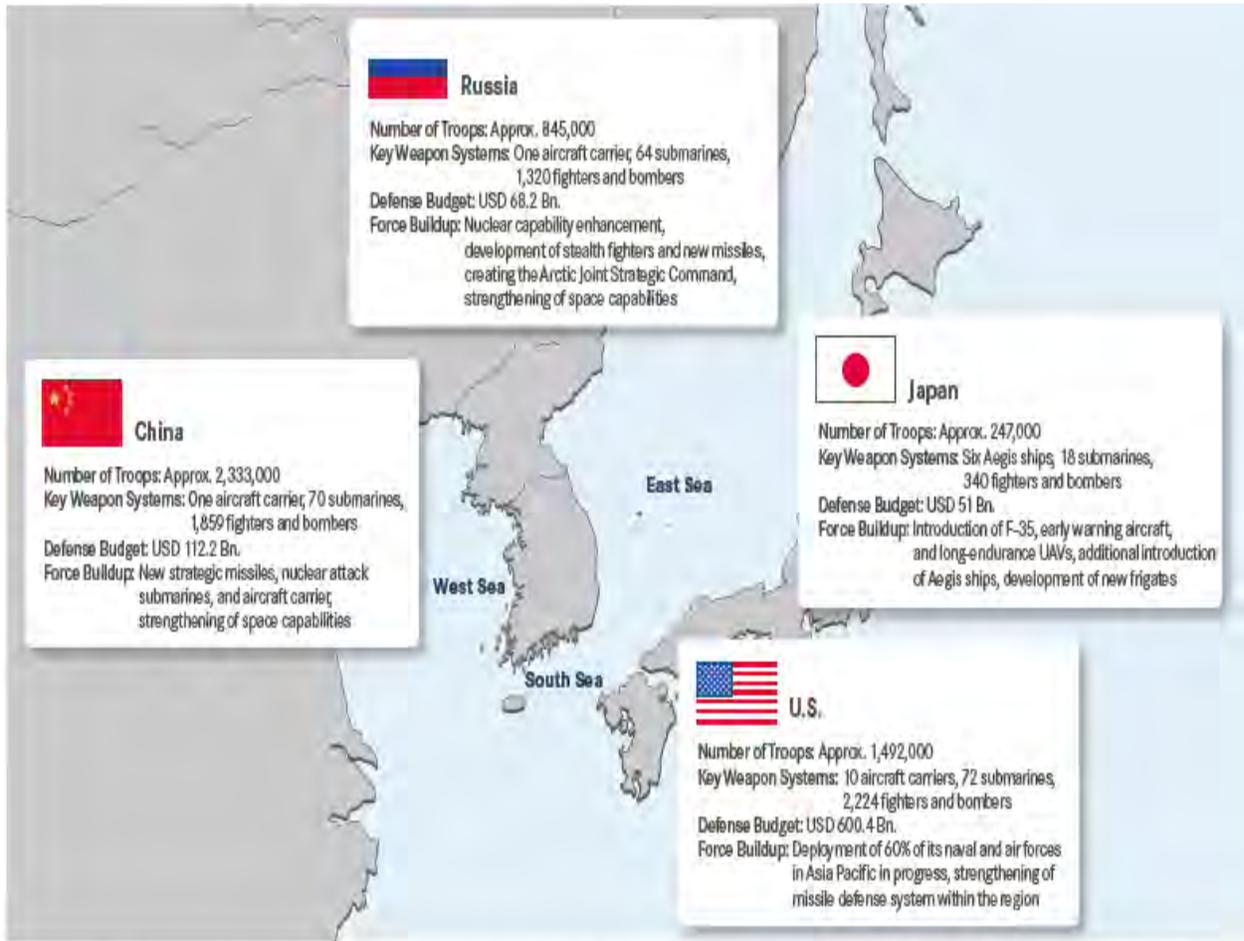
- Notes:
1. Source: "The Military Balance 2014" published by the U.S. Department of Defense, and others.
 2. Figures for Japan, as of the end of 2013, indicate the strength of each SDF; the number of combat aircraft is the sum of ASDF aircraft (excluding transport aircraft) and MSDF aircraft (fixed-wing 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.

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

CHAPTER 6: CHINESE MILITARY ORGANIZATION

An analysis of China's force structure, military organization, and the size and role of the personnel in each key element provide additional insights into China's military development. 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 three services – the PLA Army (PLAA), the PLA Navy (PLAN), PLA Air Force (PLAAF) – and an independent branch – the PLA Second Artillery Force (SAF). Additionally, China uses paramilitary forces – in particular, the Coast Guard – to patrol the waters within the nine-dash line, as discussed previously.

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.

PLA 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. Its top levels are shown in **Figure 6.1**.

While China's strategic doctrine describes how China's armed forces will fight in the 21st 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 will clarify its ability to fight and to understand the changes in each individual service's force structure.

China officially described its overall command structure and military decision-making process in its 2006 defense white paper that still holds true:²³²

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.

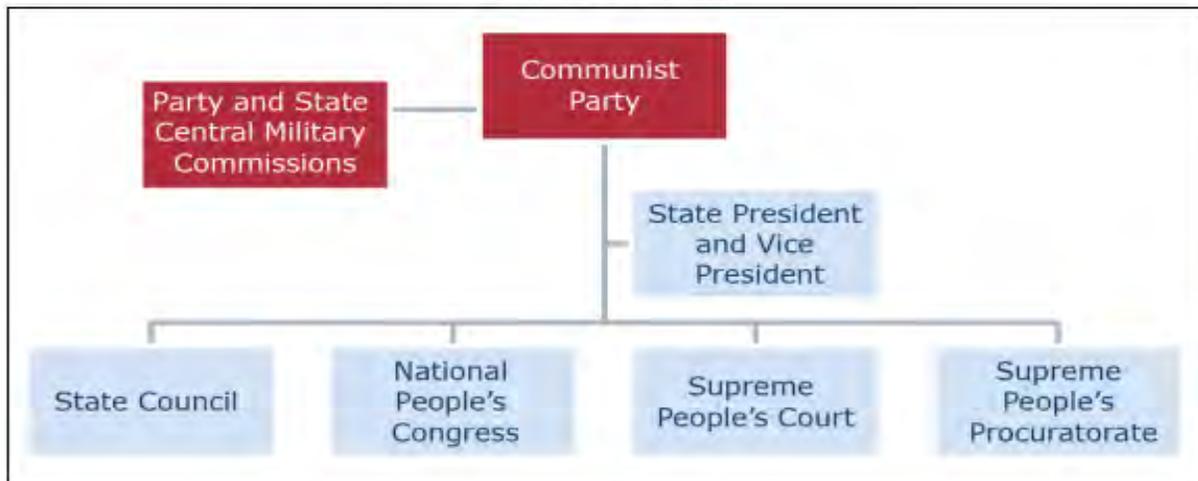
The State Council directs and administers national defense building in the following areas: making national defense development programs and plans, formulating principles, policies and administrative regulations for defense building, administering defense expenditure and assets, directing and administering 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 6.1: China's Political Structure

The Communist Party sits atop China's political power structure, controls all political institutions, and commands the military



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>.

A Congressional Research Service (CRS) report entitled *China's Political Institutions and Leaders in Charts* describes China's political-military leadership structure in more detail, and the current members of the Central Military Commission seen in **Figure 6.2** which were appointed by the Central Committee of the CCP in 2012 for a five year term:²³³

The Communist Party's own constitution provides more detail about Party leadership of the political system, the economy, and society at large, stating that "the Party commands the overall situation and coordinates the efforts of all quarters, and the Party must play the role as the core of leadership among all other organizations at corresponding levels."

The Party constitution explicitly states that the Communist Party "persists in its leadership over the People's Liberation Army and other armed forces of the people. The Party exercises that leadership through a **Party Central Military Commission**. It, rather than the State Military Commission, commands China's armed

forces; the State Military Commission, which has identical membership to the Party Central Military Commission, is believed to exist in name only. In the Party constitution, Party leadership of the legislature, the State Council, the courts, and the prosecutor’s office is not explicitly stated, but is implied. In practice, the Party nominates the leaders of all four bodies and operates Party committees within each of them. The courts and prosecutor’s offices, the police, and some ministries report directly to Party Central Committee commissions and departments.

Figure 6.2: The Party Central Military Commission (CMC)



Source: Communist Party of China News Portal, <http://cpc.people.com/cn>, and Xinhua News Agency biographies.

Source: Susan V. Lawrence, *China’s Political Institutions and Leaders in Charts*, Congressional Research Service, November 12, 2013.

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. 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 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 – one for the party, one for the state – exist next to each other, 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.²³⁴ 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. 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 CCP.

Organization of the PLA

The CMC maintains overall 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 are the bureaucratic units that combine military planning and command in lieu of a ministry of defense. Each performs several distinct functions:²³⁵

- **General Staff Department (GSD):** Responsible for all staff and personnel decisions regarding the entire PLA. Its primary mission is to execute and oversee defense policy vis-à-vis the armed forces and serve as the general command for the PLA. The GSD also holds the General Staff organization for the PLA ground forces. The GSD's second department is responsible for foreign military intelligence. During wartime, the GSD leads the entire PLA under its unified command.
- **General Political Department (GPD):** Oversees the implementation of the political doctrine into the armed forces and ensures political loyalty, high morale, and tight discipline among members of the PLA.
- **General Logistics Department (GLD):** Organizes supply and transport services within the armed forces and provides services like housing and medical treatment to the armed forces.
- **General Armament Department (GAD):** Manages all weapons and equipment testing, procurement, and maintenance. This includes almost exclusive oversight of the production and stockpiles of nuclear weapons.

The same Congressional Research Service report quoted above outlined the CMC's structure and authority within the Party as follows:²³⁶

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.

The 2006 Chinese defense white paper provided the following official description of the organization and command structure of China's forces that still remains true:²³⁷

The PLA's General Staff Headquarters, General Political Department, General Logistics Department and General Armaments Department are departments of the CMC respectively responsible for military, political, logistical and equipment work.

The General Staff Headquarters organizes and directs the development of China's armed forces, and organizes and commands their military operations. Under it are departments in charge of operations, intelligence, communications, military training and arms, adjutant and force structure, mobilization, electronic countermeasures, Army aviation, foreign affairs, etc. Its main functions and powers are to put forward proposals on major issues of military building and operations, organize and exercise strategic command, formulate programs, rules and regulations for military work, and organize and direct war preparations, as well as military training and mobilization.

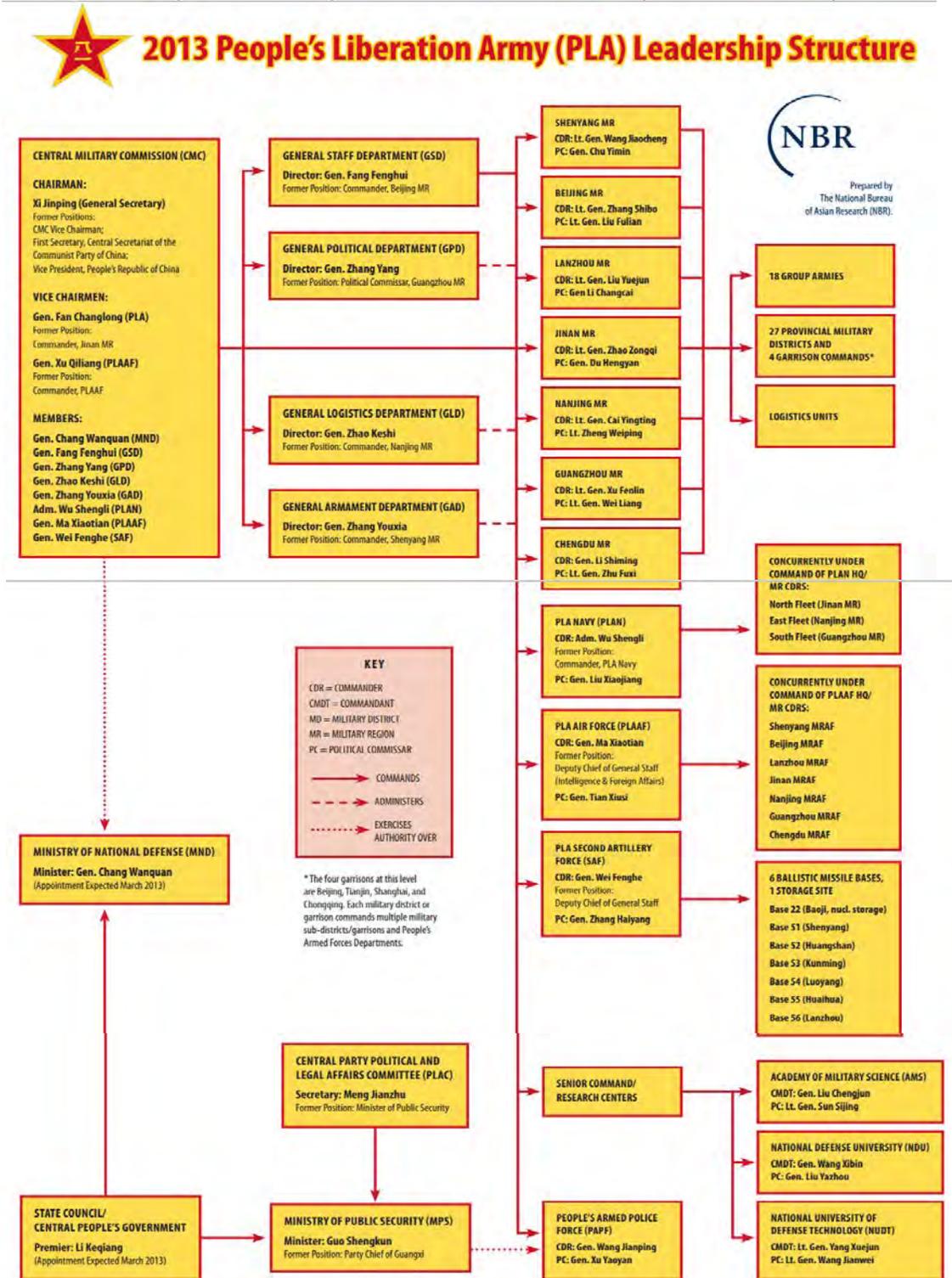
The General Political Department administers the armed forces' Party work, and organizes their political work. Under it are departments in charge of Party affairs, personnel, publicity, security, discipline inspection, civil-military affairs, etc. Its main responsibilities are to ensure the armed forces' compliance with and implementation of the lines, principles and policies of the Party and the Constitution and laws of the state, draw up general and specific policies for political work, formulate rules and regulations for political work, and make arrangements for, supervise and provide guidance to the political work of the armed forces.

The General Logistics Department administers the logistical work of the armed forces. Under it are departments in charge of financial matters, quartermaster materials and petroleum, oils and lubricants, health administration, military transportation, capital construction and barracks, auditing, etc. Its main responsibilities are to formulate programs, rules and regulations for logistical construction, deploy logistical forces, organize logistical mobilization and provide logistical support, carry out the application, allocation, budgeting and final accounting of military expenditure, and conduct material procurement.

The General Armaments Department administers the provision of equipment for the armed forces. Under it are departments in charge of overall planning, equipment for all services and arms, procurement for Army's military equipment R&D, general-purpose equipment support, electronic information infrastructure, etc. Its main responsibilities are to formulate strategies, programs and plans, policies, and rules and regulations for equipment development, organize equipment R&D, experimentation, procurement, combat service, maintenance and support, and administer the PLA's funds for equipment buildup.

Figure 6.3 provides a visual summary of this information that is still current.

Figure 6.3: High Command Structure of the PLA (as of 2013)



Source: National Bureau of Asian Research, 2013 People's Liberation Army Structure, http://www.nbr.org/downloads/pdfs/PSA/PLA_LeadershipStructure_Feb2013.pdf.

Operational Command Levels

The operational command levels directly under the CMC and the GDs differ among the branches. China's 2006 and 2013 defense white papers describe the command structure of its service branches and its military regions – depicted in **Figure 6.4** – in more detail than its more recent strategy papers that were more broad overviews of military strategy and reform.²³⁸

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), anti-aircraft 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.

Figure 6.4: Chinese Military Regions

Source: DoD, *Military Power of the People's Republic of China 2006*.

PLA Army (PLAA)

For the PLA ground forces, the command level below the CMC–GD structure is divided into seven military regions (MRs) that cover all of China's territory. These are further split into subordinate military districts, the number of which varies among the seven MRs. The MRs also oversee provincial military commands in their areas of responsibility. These provincial commands are responsible for reserve force mobilization, recruitment, and political services.

The 2013 white paper noted:²³⁹

The PLA Army (PLAA) is composed of mobile operational units, border and coastal defense units, guard and garrison units, and is primarily responsible for military operations on land. In line with the strategic requirements of mobile operations and multi-dimensional offense and defense, the PLAA has been reoriented from theater defense to trans-theater mobility. It is accelerating the development of army aviation troops, light mechanized units and special operations forces, and enhancing building of digitalized units, gradually making

its units small, modular and multi-functional in organization so as to enhance their capabilities for air-ground integrated operations, long-distance maneuvers, rapid assaults and special operations.

The PLAA mobile operational units include 18 combined corps, plus additional independent combined operational divisions (brigades), and have a total strength of 850,000. The combined corps, composed of divisions and brigades, are respectively under the seven military area commands (MACs): Shenyang (16th, 39th and 40th Combined Corps), Beijing (27th, 38th and 65th Combined Corps), Lanzhou (21st and 47th Combined Corps), Jinan (20th, 26th and 54th Combined Corps), Nanjing (1st, 12th and 31st Combined Corps), Guangzhou (41st and 42nd Combined Corps) and Chengdu (13th and 14th Combined Corps).

The operational level directly subordinate to the MRs comprises 18 group armies (GAs) for the PLA 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 6.5** shows the locations of each GA and their primary missions, according to the DoD's 2015 annual report on 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 structure²⁴⁰ and already deploys GAs made exclusively of brigades.²⁴¹ 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 US military. Moreover, a GA with an all-brigade force structure would be more comparable to a US division.²⁴² 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.

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 MRs and GAs.

Figure 6.5: Locations of PLAA Group Armies



CHINA: Group Armies (GA) Primary Missions		
Shenyang MR	Nanjing MR	Lanzhou MR
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	
Beijing MR	Guangzhou MR	
65 GA – Defensive	15 Airborne – RRU, Offensive MF	
38 GA – RRU, Offensive MF	41 GA – Offensive CT, Amphibious	
27 GA – Defensive	42 GA – Amphibious	
Jinan MR	Chengdu MR	
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 or PLAN, a naval staff headquarters in Beijing forms the command level below the CMC–GD. This headquarters is responsible for maintaining combat readiness, force planning, and coordination with the GDs. 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 6.6**.

These fleets are then divided into flotillas, groups, and squadrons.²⁴³ All fleets maintain operational command over the forces in the areas of their responsibility. Each fleet is organized to oversee

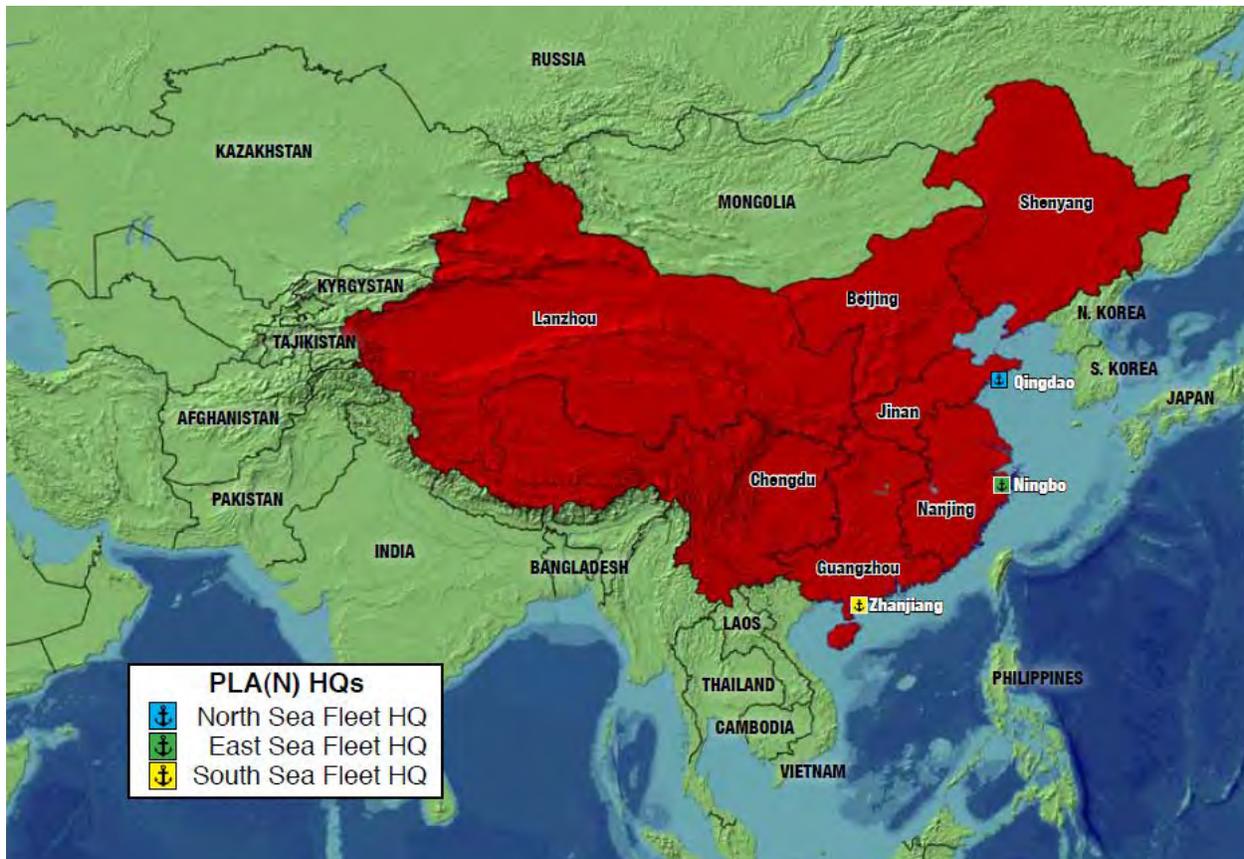
coastal, deep-water, and naval aviation operations. Forces afloat are divided into divisions, regiments, and squadrons. In wartime, command over naval forces may be transferred to the MRs.²⁴⁴ The 2013 Chinese white paper noted that:²⁴⁵

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.

Figure 6.6: PLAN Fleet Headquarters



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2015*.

PLA Air Force (PLAAF)

The PLA Air Force or PLAAF maintains a headquarters at a command level below the CMC. Operational command over the PLAAF, however, is dispersed among MR air force commands.²⁴⁶ The MR headquarters retains control over combined operations, while the MR Air Force commander is responsible for flight operations within the MR.²⁴⁷ **Figure 6.7** 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.²⁴⁸

China's 2013 white paper described the PLAAF as follows:²⁴⁹

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.

Figure 6.7: Locations of PLAAF & PLAN Major Aviation Units



Source: DoD, *Military and Security Developments Involving the People’s Republic of China 2015*.

PLA Second Artillery Force (SAF)

Although formally a branch of the PLA, not a separate service, the SAF – also known as the Second Artillery Corps or SAC – maintains its own headquarters. 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 has three command levels capable of independent action at the campaign level:²⁵⁰

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,²⁵¹

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:²⁵²

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.

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: 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 different functions, although the greatest burden in an armed conflict against a foreign power would naturally lie with the PLA.

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.²⁵³

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.”²⁵⁴ 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.²⁵⁵

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.²⁵⁶ It serves as an internal security force and was described by the 2010 Chinese white paper as the “shock force in handling public emergencies.”²⁵⁷ 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.²⁵⁸

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,²⁵⁹ including critical military infrastructure.²⁶⁰

China’s 2010 white paper stated that the PAPF also shares some territorial air defense duties with the PLAAF, PLAN, and PLA ground forces.²⁶¹ The 2013 white paper notes,²⁶²

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.

PLA Organizational Reforms

The current PLA command structure is top heavy, which hinders joint operations in a local wars context. The joint operations that the PLA envisions it will conduct will require faster decision-making loops and shortened time gaps between sensors and shooters, both of which can be gained by giving lower level officers more authority to command.²⁶³ The future battlefield is projected to be more dynamic and fast paced, requiring lower echelon leaders to take the initiative and make battlefield decisions without having to wait for orders from higher up in the command chain.²⁶⁴

The 3rd Plenum of the 18th 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.

Reforming Military Regions and Force Groupings for Joint Operations

One of the more controversial reforms is the proposal to change the Military Region system, which is seen as outdated and unfit for wars in the information age. The current 7 regions will be reduced to 5 regions, each of which will have their own joint commands.

Jane's IHS notes that regardless of how many regions there are, geographical divisions of force will likely be irrelevant when a war breaks out. Should armed conflict erupt near China's borders, as the PLA expects conflicts will break out, the PLA will form War Zone commands that could cut across MR borders.²⁶⁵

The undesirable geographical division of China's forces also highlights the need for another set of reforms the PLA wishes to undertake regarding modular joint force groupings. The PLA explored three options for organizing joint force groupings.

The first option was to have "the services each form operation groups (*jituan*), including a SAF operational group and logistics units forming an operation rear group." This first option was noted for a lack of joint integration and "poor independent operational capability."

The second option was to integrate joint forces along functional lines (e.g. amphibious assault, special operations, air operations...). However, this method would "break service support relationships and make command and coordination more difficult."

The third and preferred method was to form "modular groupings combining multiple functions – firepower, information, aviation and support for example – based on mission requirements. Although command and support for such a solution would be complex, the PLA decided that this would be the best way to organize a joint operational force."²⁶⁶

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 were well trained and educated in joint operations and the use of new technology if they were to operate using tactics and doctrines that have not yet been battle tested.²⁶⁷

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."²⁶⁸ 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.²⁶⁹

The 5 New Leading Small Groups Spearhead Reform

Although these reforms still face many difficulties and challenges that must be overcome, there is evidence to suggest that real reform is underway. Shortly after the 3rd Plenum, 5 new Leading Small Groups were formed to help push forward military reforms. These groups are: The Leading Group for Survey of Military Infrastructure Projects and Real Estate Resources, the Leading Group for the

All-Party-Army's Mass Line Education and Practice Activity, the CMC Leading Group for Inspection Work, the Leading Group for Deepening National Defense and Military Reform.

Although such ad hoc groups are not new in Chinese history and some have feigned effectiveness they did not achieve, the fact that these groups appeared shortly after the strong backing for reforms during the 3rd Plenum is not a coincidence. There seems to be a proper understanding that such reforms will take time and involve a series of small, carefully taken steps.

The past "bureaucratic log-jam" that has hindered reform appears to be breaking.²⁷⁰ The Leading Group for Deepening National Defense and Military Reform is the most important group of the five. It is chaired by Pres. Xi Jinping and managed by two deputy heads, who are CMC Vice Chairmen Fan Changlong and Xu Qiliang.

Xi's successful consolidation of immense political power within the CCP points to the importance of this the Leading Small Group. The recent anti-graft and corruption investigations into PLA officers, most notably Xu Caihou, suggest that Xi has the political power to push through military reforms and overcome bureaucratic challenges.²⁷¹

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. High level Chinese officials such as Zhou Yongkang and Gen. Xu Caihou have not been spared from the anti-corruption campaign as investigations have severely tarnished their reputations. Prosecutions for these two high-ranking officials are expected to follow.

Some observers expect that even former President Jiang Zemin may be a target of this anti-corruption campaign.²⁷² 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.²⁷³

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 Pres. 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.²⁷⁴ 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.²⁷⁵

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.²⁷⁶

If Pres. 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. In regards to the 5 Leading Small Groups, the Leading Group for Deepening National Defense and Military Reform and the Leading Group for Survey of Military Infrastructure Projects and Real Estate Resources will likely be the two groups that will have the

most impact on corruption. The former group is led by Pres. Xi himself and may be involved in the most sweeping changes in the PLA, such as reducing the number of military regions.

These sweeping changes will affect many in the PLA, potentially threatening entrenched interests. The latter group is headed by the General Logistic Department, which has a history of corruption particularly linked with real estate and development.²⁷⁷ 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

These organizational reforms are crucial if China is to resolve a problem that it calls the “Two Incompatibles.” The 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.”²⁷⁸

CHAPTER 7: FORCE CHANGES AND TRENDS IN TOTAL PERSONNEL

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, and 2003. These cuts totaled 1,000,000, 500,000, and 200,000, respectively.

Shifts in Total Personnel

In 2015, 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.²⁷⁹ 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:²⁸⁰

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.

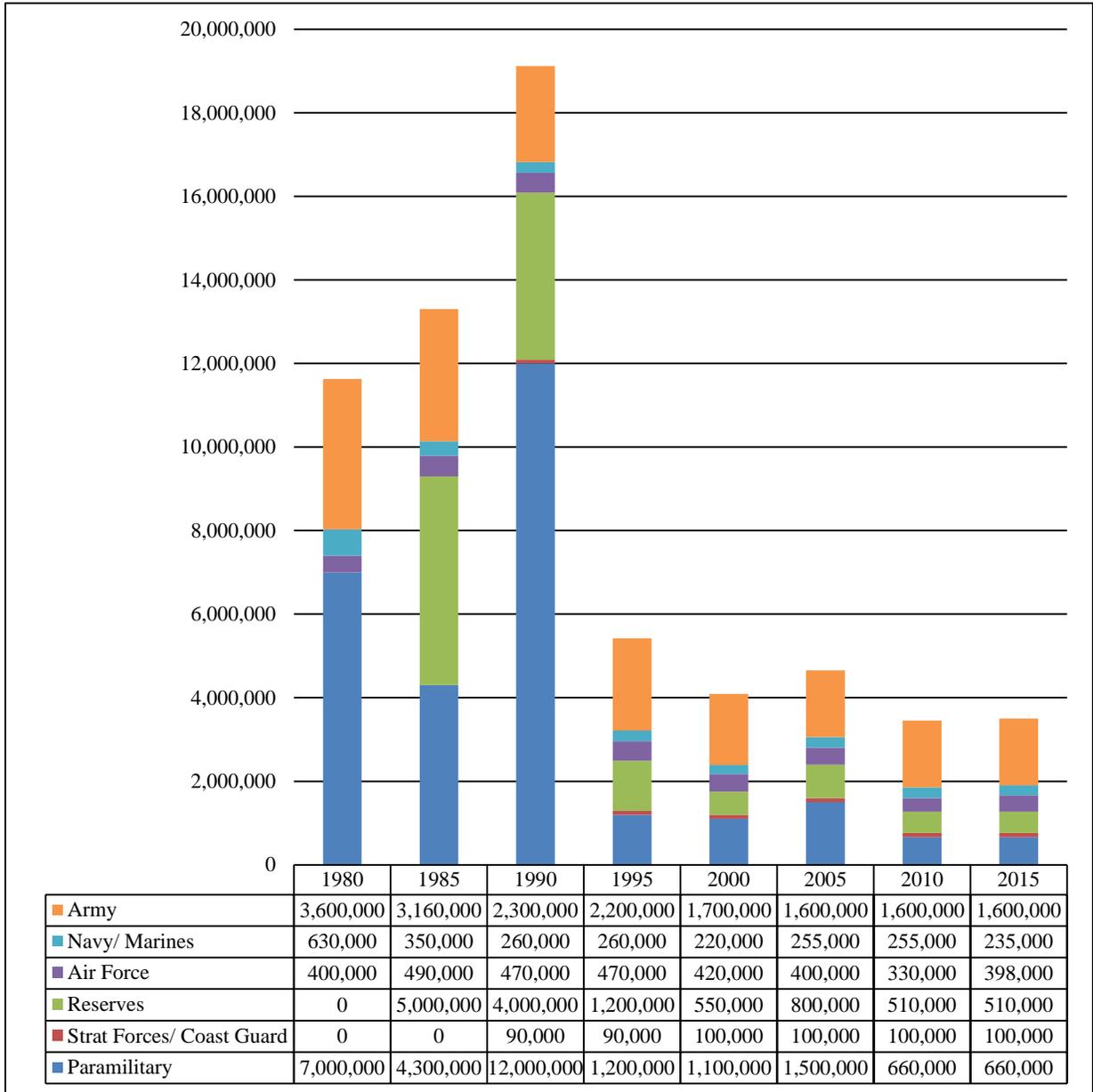
Streamlining the headquarters and directly affiliated units as well as educational institutions: More than 3,000 departments of and over 400 units directly affiliated to the headquarters at and above the regimental level have been cut. A considerable number of agricultural and sideline production units, 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.

Figure 7.1: Trends in PLA Personnel



Source: IISS *Military Balance*, 1985-2015. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

*Figures for SAF in 1985 not available: for purposes of comparison the SAF has been listed at 1990 levels.

Personnel Share by Service and Force Element

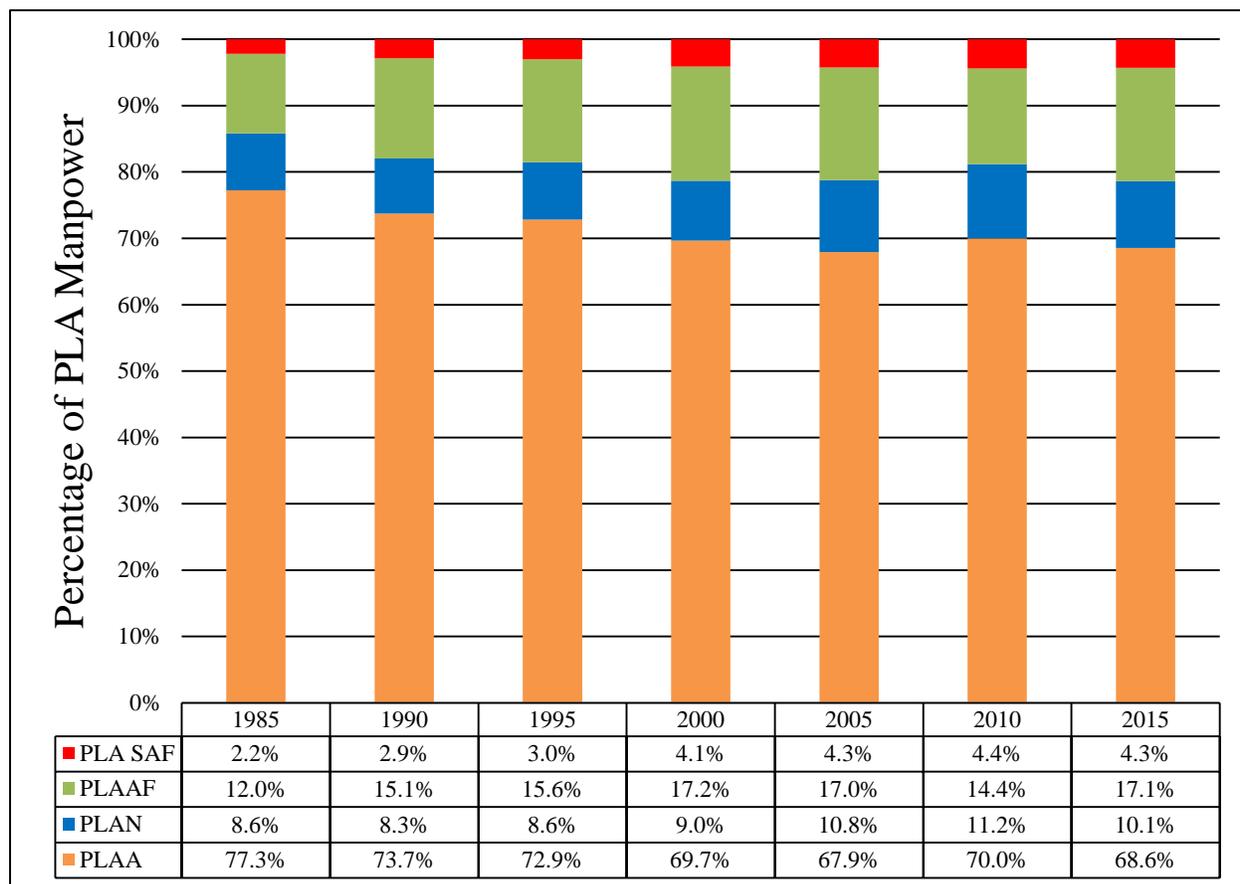
Figure 7.2 shows a different way of portraying the historical changes in the PLA's force structure and personnel numbers. These trends indicate that the personnel reductions have disproportionately affected the PLAA, while the other services and the SAF have gained ground in relative terms.

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 require relatively more naval, air, and missile assets than do total wars or even Deng Xiaoping's "Local Warfare under Modern Conditions" military doctrine.

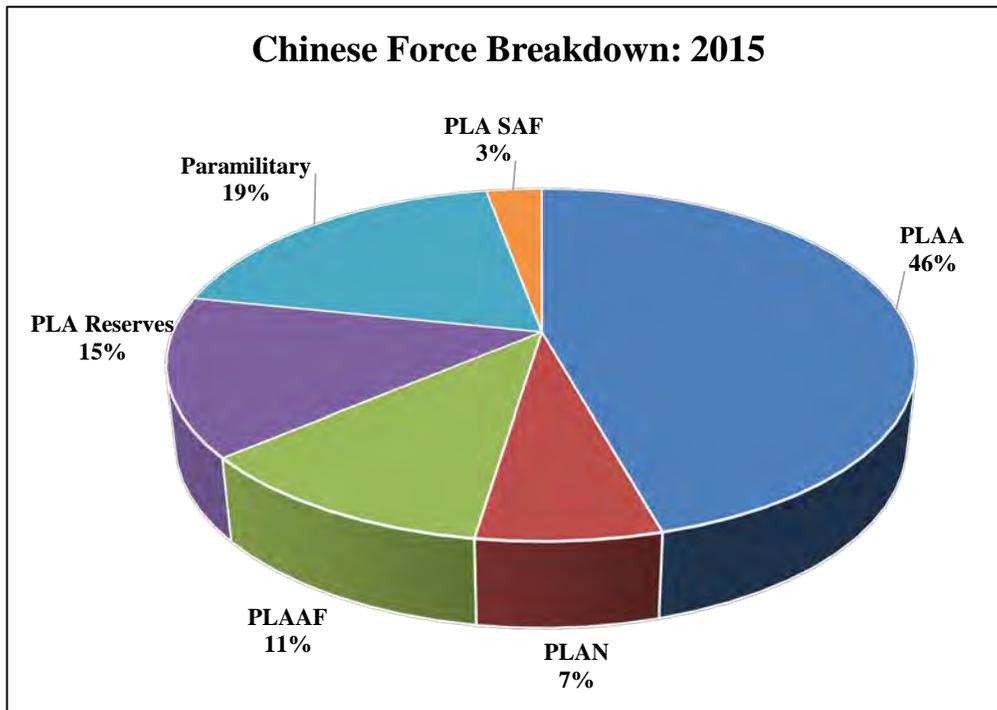
In addition, the concept of "integrated joint operations" requires substantial forces other than ground forces; consequently, the dominance of the PLAA is eroding vis-à-vis the other services and the SAF. Combined with the inclusion of the heads of the PLAN, PLAAF, and SAF in the CMC,²⁸¹ it is possible 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 (approximately 70%). The force reductions in the PLAA, have, however, increased the PLAN and the PLAAF's share of total PLA Personnel; they currently command 11% and 15% of the PLA, respectively. The SAF'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: 1985-2015



Source: IISS *Military Balance*, 1985-2015. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 7.3: Active and Reserve Personnel by Service in the PLA: 2015

Source: IISS *Military Balance*, 2015. Adapted by Anthony H. Cordesman and Steve Colley 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.

Rebalancing the Personnel System

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 had 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.²⁸² 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.²⁸³

Recruiting High-Level Human Capital into the PLA

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 130,000.²⁸⁴ As part of this effort to recruit college-educated personnel, Chinese media regularly advertise the need for college-educated recruits.²⁸⁵

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.²⁸⁶ 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).²⁸⁷

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.²⁸⁸ 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.²⁸⁹

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.²⁹⁰

Creating Opportunities for Increased Qualification

The PLA has augmented its ability to provide education and training to military personnel. There currently exist military academies for officer and NCO training, with the NCO education accomplished at three specialized academies or at officer academies with specialized courses for NCOs.²⁹¹

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.²⁹²

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.²⁹³

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.²⁹⁴

Greater Compensation for PLA Personnel

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.²⁹⁵

In addition, the PLA is offering tuition allowances to college students who postpone their studies for service in the PLA.²⁹⁶

The section in the 2014 DoD China report covering “military doctrine and training” stated that:²⁹⁷

...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.

PLA Reserve Forces

As the previous Figures have shown, China’s reserve forces consist of roughly 510,000 servicemen and servicewomen. Most reserve force units today are staffed by civilians, many of whom are demobilized from the ground force:²⁹⁸

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 SAF reserves is largely unavailable, but their numbers are reported to have increased.²⁹⁹ 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.³⁰⁰

As the 2010 white paper stated,³⁰¹

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, primary militias comprise about 8 million men,³⁰² 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.

The 2006 white paper identified the following trends:³⁰³

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,³⁰⁴

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:³⁰⁵

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. SAF 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.³⁰⁶

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, 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, 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.

Ministry of State Security (MSS)

No clear data is 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.³⁰⁷

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."³⁰⁸

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.³⁰⁹ 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.³¹⁰

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,³¹¹ including critical military infrastructure.³¹²

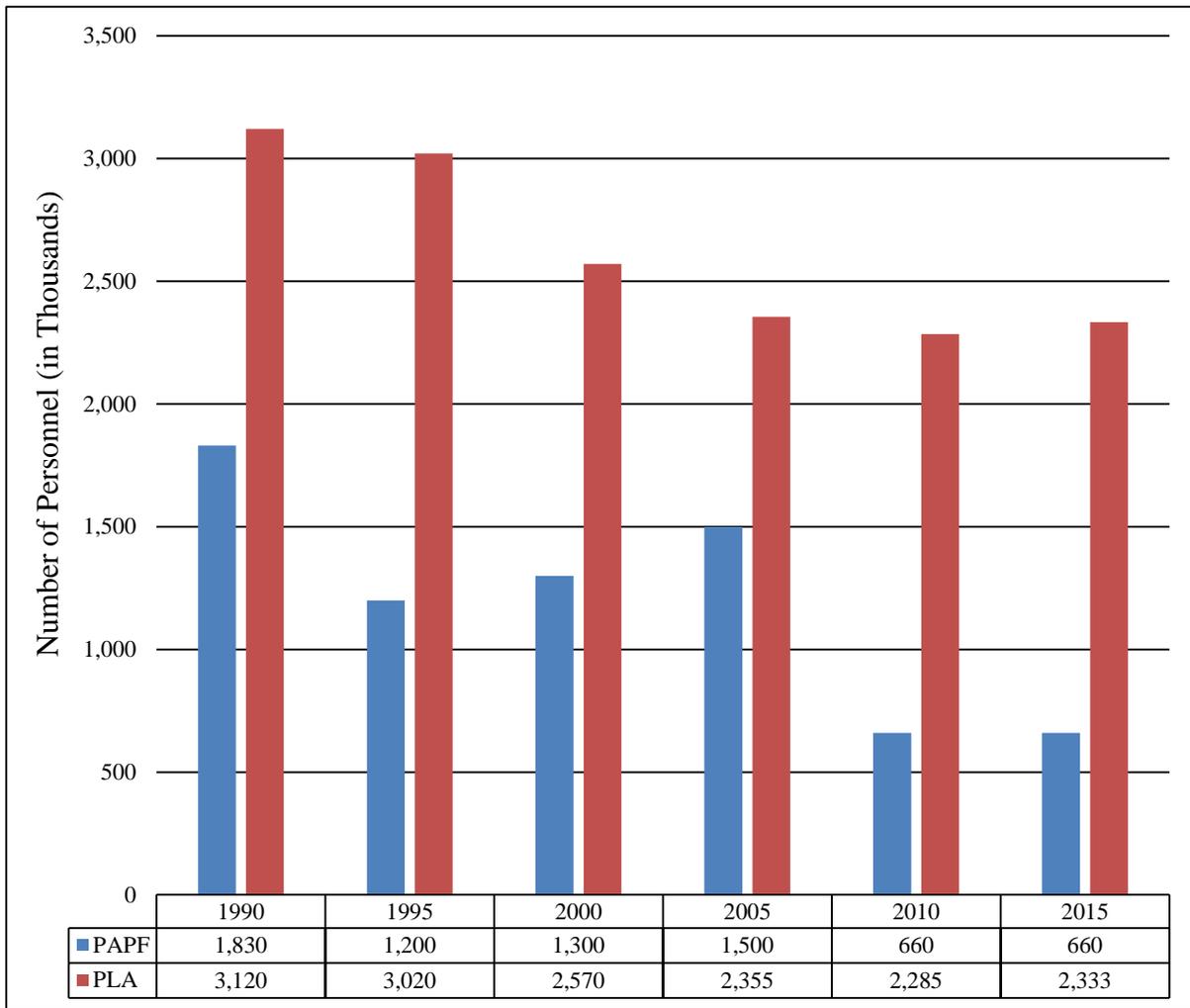
Various elements of the PAPF have played a growing role in China's confrontations with its neighbors over their conflicting maritime and EEZ claims in the Pacific ranging from Northeast Asia to the South China Sea. In some cases, it is not clear whether the main reason for such efforts has been driven 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:³¹³

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.

Figure 7.4: Historical Trends in Absolute PLA and PAPF Personnel



Source: IISS *Military Balance*, 1990-2015. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

CHAPTER 8: BROAD PATTERNS IN PLA MODERNIZATION AND THE ROLE OF ARMS AND TECHNOLOGY IMPORTS AND EXPORTS

According to China's 2006 Defense White Paper, it has been pursuing a three-step strategy to modernize its armed forces. It sought to create a "solid foundation" by 2010 and reach another phase of "major progress" by 2020. It continues to seek a capability of "winning informationized wars by the mid-21st century."³¹⁴

The PLA has been steadily less transparent in reporting on its equipment modernization efforts in recent years, and its official media sources have downplayed the importance of many of the trends analyzed by outside experts. However, virtually every aspect of the Chinese armed forces has undergone significant modernization in the past two decades.

As might be expected, however, an analysis of the trends in Chinese modernization shows that faster progress is occurring in some areas while other areas prove to be more resistant to change. Also important, but frequently overlooked, is that the results of equipment modernization are strongly influenced by the PLA's ability to modernize its tactics, strategy, training, and communications networks.

The US Intelligence Community's Assessment

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 the objectives of China's military modernization as follows in testimony before Congress in 2015.

Lieutenant General Vincent R. Stewart, Director of the DIA stated:³¹⁵

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 antiship 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:³¹⁶

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 views are different. Like the other the developments in China's military forces, the PLA's modernization efforts need to be put in the context of China's overall strategy. Moreover, while Chinese official statements in documents like China's their defense white papers have gone from relatively detailed explanations of China's modernization programs and strategic goals to broad statements that provide limited clarity, it is still important to examine China's official public statements in order to understand the logic and drivers behind its military modernization program.

Accordingly, this assessment does not analyze PLA modernization and force development in comparison to the US or other Western militaries, but according to the demands and required capabilities of PLA military doctrine. Given the centrality of the Local Wars theory, it focuses on assessing PLA modernization based on the trends in the PLA's ability to fight and win Local Wars.

This metric is difficult to utilize in practice. While changes in force structure and the modernization of certain equipment categories may ostensibly augment or harm the PLA's ability to prevail in Local Wars, the intangible, human variables such as combat, technical, and command proficiency also have marked effects on military effectiveness. Quantitative comparisons between third- and fourth-generation fighters, for instance, can blur the fact that well-trained pilots in third-generation aircraft might display higher combat effectiveness than their counterparts in newer planes. The same holds true for virtually all weapons systems.

It is also important to understand that the modernization of the Chinese military entails 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. Any meaningful assessment of China's modernization also cannot be viewed purely in quantitative terms but must focus on qualitative changes and establish benchmarks for judging China's actual performance relative to its stated goals.

Moreover, military modernization proceeds asymmetrically -- especially in a large organization 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. American PLA analysts have observed such outcomes.³¹⁷ At the

same time, other countries continue developing new weapons systems and thereby raise the standards against which China's status quo capabilities can be judged.

When one uses the most modern technologies and management methods employed by world armies as a comparison, as is often the case, the modernization of the PLA presents a mixed picture that renders quick predictions baseless.

It is also difficult to assess this aspect of China's actual military 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.

Accordingly, the following analysis focuses on surveying key elements of Chinese modernization that have a broad impact on affect China's overall progress. Quantitative and service-specific analyses of PLA military modernization and force development are provided in the following chapters.

PLA Training Practices: A Critical Aspect of Modernization

Training is a key indication of 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.³¹⁸

It is impossible to determine the exact effects of the OMTE, but one analyst asserts that the new guidelines have considerably improved training quality.³¹⁹ 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.³²⁰

Corroborating this view, multiple Chinese government media sources from the early 2000s speak of the need to add "realism" to training.³²¹ 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."³²²

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:³²³

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, a 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).³²⁴

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:³²⁵

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.³²⁶

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.

Joint Operations

Joint operations are another key indication of 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 21st century, the PLA was reportedly conducting joint training exercises with forces that were operating far from their garrison locations.³²⁷

The poor outcome of China's previous joint exercises also 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.³²⁸

By the end of the decade, many official media reports on the SAF were keen to report on military exercises taking place under "complex electromagnetic conditions," or conditions in which an adversary is waging electronic warfare against a PLA unit.³²⁹ 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.³³⁰

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."³³¹

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.³³² 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 3rd Plenum of the Central Committee of the 18th 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 2015 report stated:

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 its broader goals of informationization, which seeks 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 in each of its military services and military regions.

The adoption of the ICP enables multi-service communications necessary for joint operations. Moreover, the new C4I technologies enable instantaneous information-sharing, and robust and redundant communications networks — intelligence, battlefield information, logistical information, and weather reports, which give commanders improved situational awareness. In particular, the transmission of ISR data in near-real-time to commanders in the field can facilitate the commander’s decision-making process, shortening command timelines, and making operations more efficient.

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.³³³

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.³³⁴

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.³³⁵

Arms Trade and Technology Transfer: The Role of Imports

China is steadily modernizing its military industrial base; it is also modernizing its approach to arms transfers. Chinese arms imports have been reduced significantly since 2005, due in part by its increasing defense industry capability.

Nevertheless, China it 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.

The data available on Chinese arms exports and imports are uncertain, but SIPRI is almost certainly correct in ranking China as the second largest arms importer from 2008-2012,³³⁶ with a significant decrease in imports in the past seven years. **Figure 8.1** shows China's total arms imports in the past 20 years and demonstrates the recent decline in imports while Russia remains their most consistent supplier. **Figure 8.2** shows the scale of military exports from Russia to China, while **Figure 8.2** shows the value of Russian exports to China relative to all of the PRC's military imports. The 2015 DoD report on China describes Russia's importance to China as a weapons supplier as:³³⁷

China seeks some high-tech components and certain major end items, particularly from Russia, that it has difficulty producing domestically. China is pursuing advanced Russian defense equipment such as the SA-X-21b (S-400) SAM system, Su-35 fighter aircraft, and a new joint-design and production program for diesel-electric submarines based on the Russian PETERSBURG/LADA-class.

Between 2011 and 2012, Russia agreed to sell China IL-76 transport aircraft and Mi-171 helicopters. Russia's concerns about intellectual property protections affect the types and quantities of advanced arms or associated production technologies it is willing to transfer to China, but resistance is waning as Russia looks to China to relieve the effects of Western sanctions imposed in response to Russia's recent actions in Ukraine. China also has signed significant purchase contracts with Ukraine in recent years, including contracts for assault hovercraft and aircraft engines.

The DoD 2015 white paper also states that China still seeks to supplement technology shortfalls through dual-use goods and reverse engineering:³³⁸

Key areas where China continues to supplement indigenous military modernization efforts through targeted foreign technologies include 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 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.³³⁹ 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.

In broad terms, it does appear that 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.

The decreasing value of Russian arms imports reflects this trend. **Figure 8.3** shows 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 the CRS report noted:³⁴⁰

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.

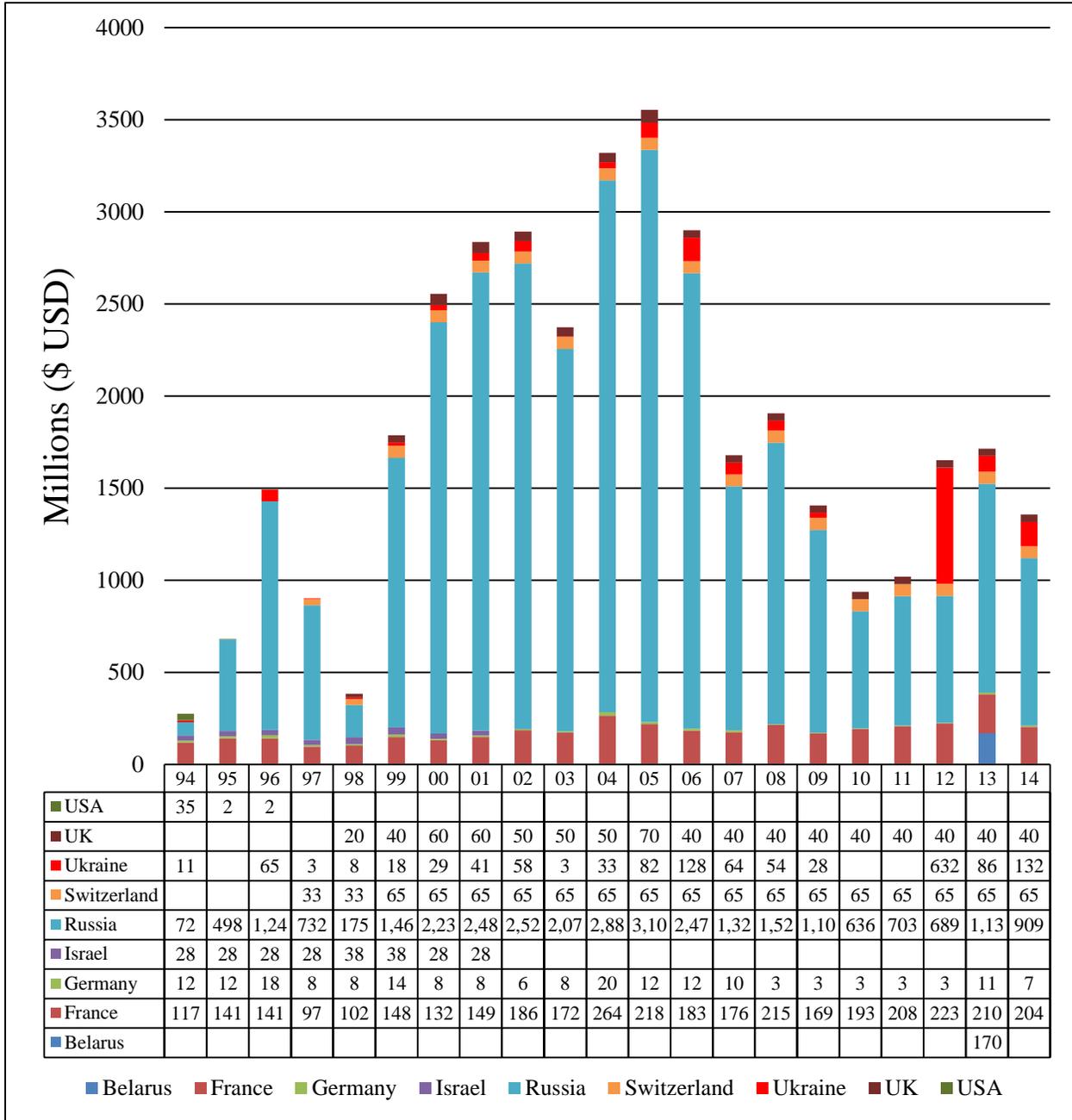
Chinese arms acquisitions seem aimed at enhancing its military projection capabilities in Asia, and its ability to influence events throughout the region. One U.S. policy concern is to ensure that it provides appropriate military equipment to U.S. allies and friendly states in Asia to help offset any 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.

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.

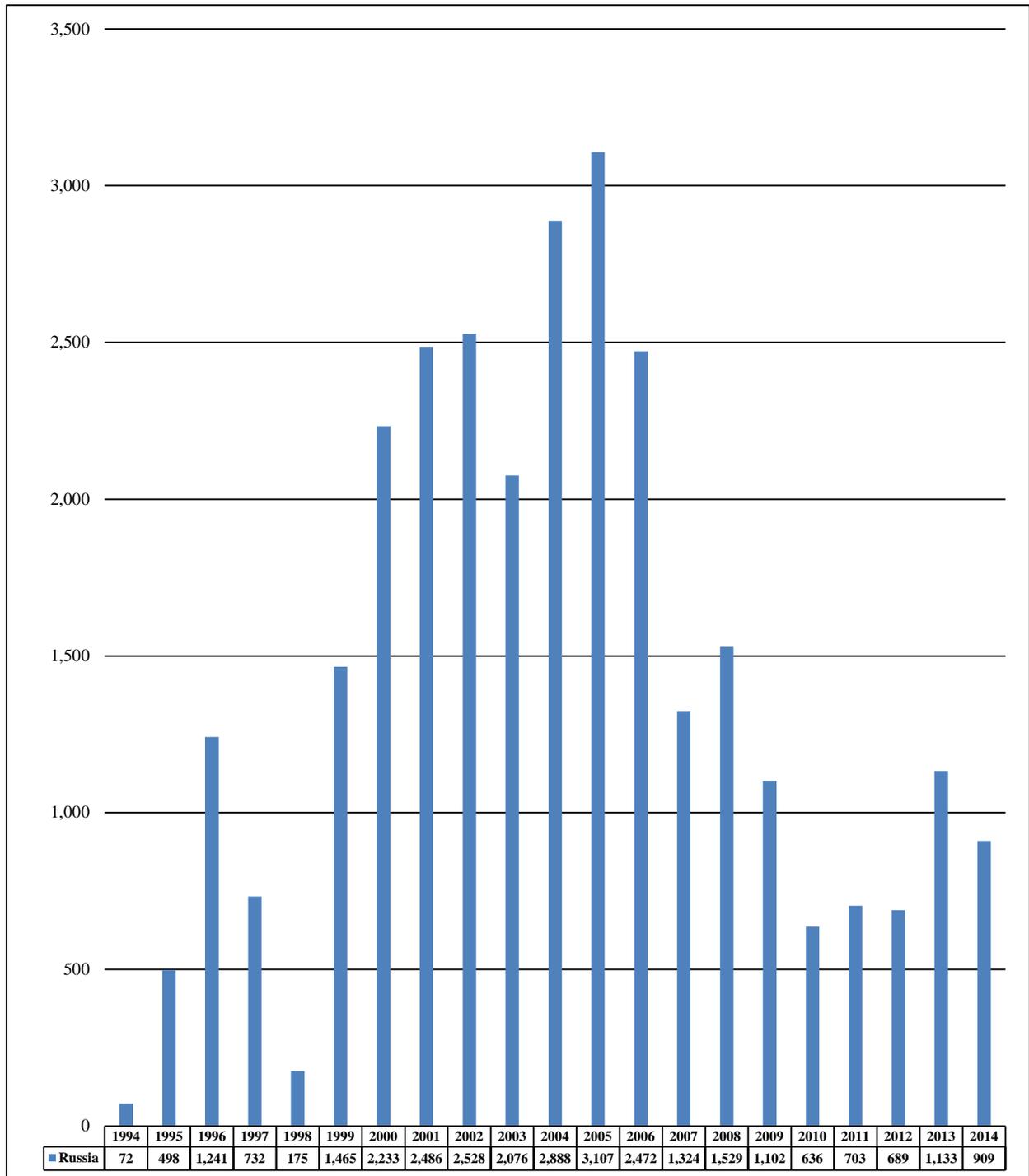
Some indigenous weapons systems rely on foreign technologies. Helicopter, radar, and engine technologies, for example, are being imported, or produced under license from Russia and Europe.³⁴¹

Figure 8.1: Total Arms Imports to China, 1994 – 2014
(US\$ millions, 1990 prices)



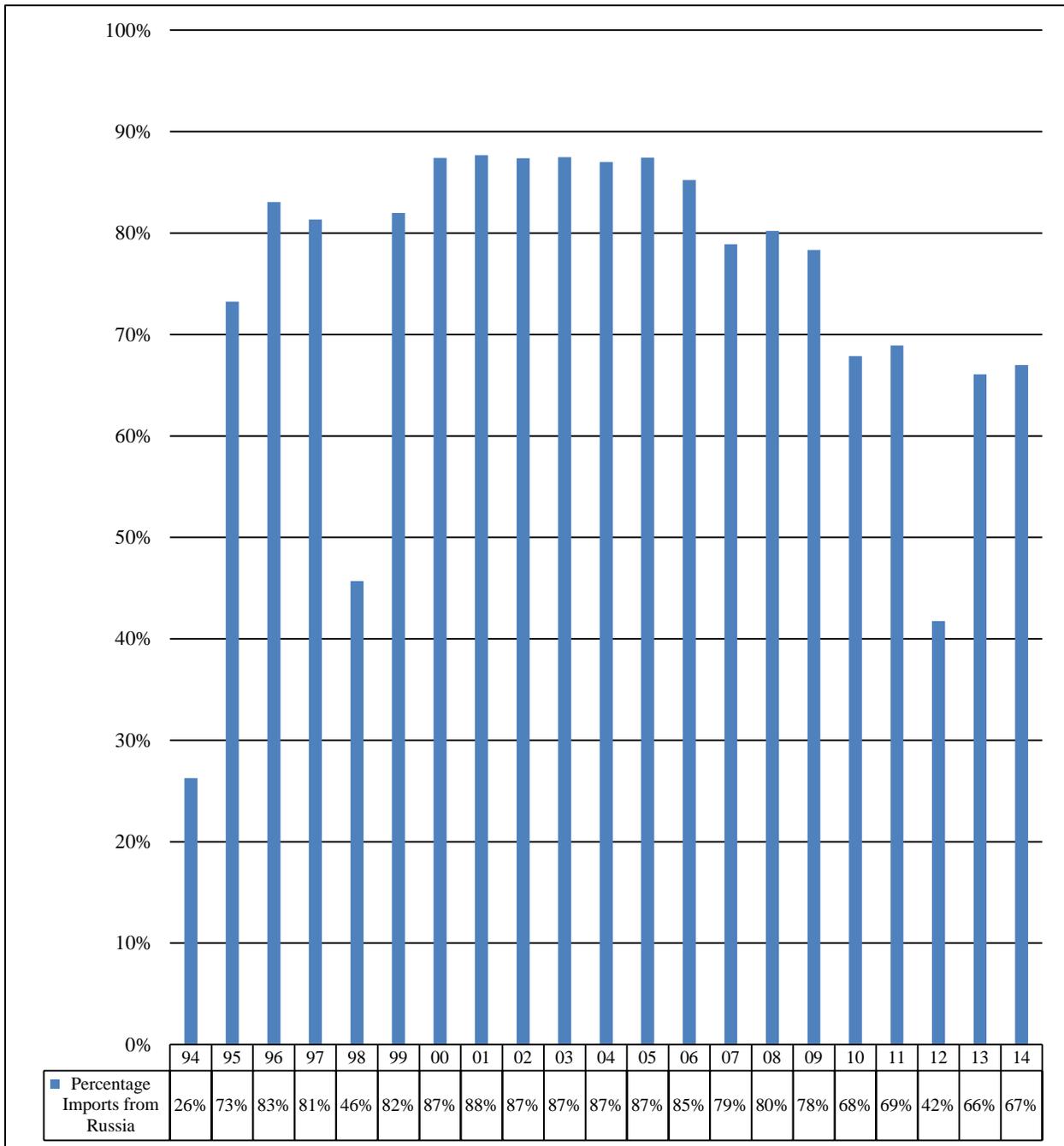
Source: SIPRI, “Arms Transfers Database, Importer/Exporter TIV Tables,” accessed July 21, 2015, http://armstrade.sipri.org/armstrade/html/export_values.php.

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 July 21, 2015, 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 July 21, 2015, <http://armstrade.sipri.org/armstrade/page/values.php>.

Arms Trade and Technology Transfer: The Role of Exports

Chinese arms imports have been increasingly offset by its arms exports. SIPRI made this clear in 2013, when it announced that China had become the 5th largest arms exporter by volume in the world.³⁴² Two years 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.³⁴³

Putting China's Arms Exports in Context

The DoD estimated that from 2009 to 2013:³⁴⁴

China signed about \$14 billion in arms export agreements for conventional weapons systems worldwide, ranging from general purpose materiel to major weapons systems. In 2014 and the coming years, China's arms exports will likely increase modestly as China's domestic defense industry improves. Chinese 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.

Pakistan remains China's primary customer for conventional weapons. China engages in both arms sales and defense industrial cooperation with Islamabad, including F-22P frigates with helicopters, K-8 jet trainers, F-7 fighter aircraft, early warning and control aircraft, main battle tank production, air-to-air missiles, and anti-ship cruise missiles. In June 2014, Pakistan started co-producing the first two of fifty 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 2009-2013 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 be relatively flexible with regard to payment arrangements. China's top customers in this region are South Sudan, Sudan, and Ethiopia.

A 2012 CRS report provided the following brief history of Chinese arms exports:³⁴⁵

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 2008 to 2011, the value of China's arms transfer agreements with developing nations has averaged over \$2 billion annually. During the period of this report, the value of China's arms transfer agreements with developing nations was highest in 2005 and 2007 at \$2.7 billion and \$2.5 billion, respectively (in current dollars). China's arms agreements total in 2011 was \$2.1 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 to especially large agreements for major weapons systems....

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.

China continues to be 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 U.N. 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 the month-long period, set aside for negotiations, this effort failed to achieve the necessary consensus on a treaty draft, and the future success of this effort is in doubt. 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.

In 2014, former director of the Defense Intelligence Agency, Lieutenant General Michael T. Flynn, summarized China's arms exports as follows:³⁴⁶

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 following tables are taken from the above CRS report on conventional arms transfers to developing nations. "Developing nations" is defined as excluding the United States, Russia, Europe, Canada, Japan, Australia, and New Zealand. Note that these data do not specify the quality, sophistication, or even the names of the systems transferred. However, "these data show relative trends in the delivery of important classes of military equipment and indicate who the leading suppliers are from region to region over time.

These tables examine conventional arms deliveries and conventional arms transfer agreements (represents orders for future delivery). All tables present data from 2004 to 2011. **Figures 8.4 and 8.5** 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.

Figure 8.4: Worldwide Arms Transfer Agreements, 2004-2011 and Suppliers' Share with Developing World (in millions of current 2011 US dollars)

Supplier	Worldwide Agreements Value 2004-2007	Percentage of Total with Developing World
United States	63,593	50.70%
Russia	43,000	96.30%
France	19,100	44.00%
United Kingdom	20,700	98.60%
China	8,200	100.00%
Germany	10,700	46.70%
Italy	4,500	53.30%
All Other European	24,900	43.40%
All Others	11,400	75.40%
TOTAL	206,093	66.70%

Supplier	Worldwide Agreements Value 2008-2011	Percentage of Total with Developing World
United States	145,702	77.50%
Russia	33,500	92.80%
France	19,600	88.30%
United Kingdom	3,600	77.80%
China	8,300	97.60%
Germany	9,300	55.90%
Italy	8,800	65.90%
All Other European	19,300	73.60%
All Others	13,700	71.50%
TOTAL	261,802	79.20%

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.5: Worldwide Arms Deliveries, 2004-2011 and Suppliers' Share with Developing World (in millions of current 2011 US dollars)

	2004	2005	2006	2007	2008	2009	2010	2011	TOTAL 2004-2011
United States	8,193	6,361	9,440	12,528	29,461	15,086	14,273	56,303	151,644
Russia	10,267	9,264	17,124	10,442	6,728	13,449	7,705	4,100	79,078
France	1,329	6,253	560	1,523	3,785	9,518	1,825	2,700	27,491
United Kingdom	4,952	3,242	4,477	10,333	210	1,138	1,217	300	25,869
China	1,208	3,126	2,238	2,719	2,208	2,379	1,622	2,100	17,601
Germany	242	811	2,686	1,849	4,941	517	0	0	11,046
Italy	362	579	672	1,088	1,682	1,345	1,825	1,100	8,652
All Other European	2,899	4,169	3,022	2,284	4,626	4,862	2,737	2,400	26,999
All Others	3,140	1,158	3,470	2,067	1,997	4,035	1,521	2,500	19,887
TOTAL	32,592	34,962	43,688	44,831	55,638	52,330	32,724	71,503	368,268
Dollar inflation Index:(2011=1) ^a	0.8279	0.8636	0.8935	0.9194	0.9512	0.9666	0.9864	1	

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.6 demonstrates that Chinese arms transfer agreements with Asia are larger than those to any other region, when measured in dollars. But when measuring the percentage of total agreements value by region, China has a lead in Africa, as **Figure 8.7** shows.

Figure 8.6: Percentage of Each Supplier's Agreements Value by Region, 2004-2011

	Asia		Near East		Latin America		Africa		TOTAL	
	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011
United States	32.64%	16.04%	61.94%	81.40%	4.94%	2.29%	0.48%	0.26%	100%	100%
Russia	50.12%	51.75%	39.09%	19.05%	9.83%	24.76%	0.96%	4.44%	100%	100%
France	60.71%	23.70%	32.14%	23.12%	5.95%	49.71%	1.19%	3.47%	100%	100%
United Kingdom	11.82%	48.15%	86.21%	40.74%	1.97%	11.11%	0.00%	0.00%	100%	100%
China	46.91%	51.28%	32.10%	19.23%	4.94%	10.26%	16.05%	19.23%	100%	100%
Germany	51.02%	35.19%	40.82%	59.26%	8.16%	3.70%	0.00%	1.85%	100%	100%
Italy	50.00%	36.21%	37.50%	46.55%	4.17%	15.52%	8.33%	1.72%	100%	100%
All Other European	39.62%	39.73%	26.42%	38.36%	28.30%	15.07%	5.66%	6.85%	100%	100%
All Others	72.53%	70.53%	13.19%	5.26%	9.89%	14.74%	4.40%	9.47%	100%	100%
Major West European ^a	[31.11%	30.13%	64.17%	35.26%	3.89%	32.05%	0.83%	2.56%]	100%	100%
TOTAL	41.55%	29.06%	47.89%	56.16%	8.27%	11.94%	2.29%	2.84%	100%	100%

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.7: Percentage of Total Agreements Value by Supplier to Regions, 2004-2011

	Asia		Near East		Latin America		Africa	
	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011
United States	18.39%	30.05%	30.26%	78.90%	13.97%	10.45%	4.94%	5.02%
Russia	36.53%	27.02%	24.71%	5.15%	35.99%	31.46%	12.67%	23.74%
France	8.91%	6.80%	4.09%	3.43%	4.39%	34.69%	3.17%	10.18%
United Kingdom	4.19%	2.15%	26.53%	0.94%	3.51%	1.21%	0.00%	0.00%
China	6.64%	6.63%	3.94%	1.29%	3.51%	3.23%	41.19%	25.44%
Germany	4.37%	3.15%	3.03%	2.75%	3.51%	0.81%	0.00%	1.70%
Italy	2.10%	3.48%	1.36%	2.32%	0.88%	3.63%	6.34%	1.70%
All Other European	7.34%	9.61%	4.24%	4.80%	26.34%	8.87%	19.01%	16.96%
All Others	11.53%	11.11%	1.82%	0.43%	7.90%	5.65%	12.67%	15.26%
Major West European ^a	[19.57%	15.58%	35.02%	9.44%	12.29%	40.34%	9.51%	13.57%]
TOTAL	100.00%							

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

In terms of deliveries, **Figure 8.8** shows that China is supplying arms primarily to developing countries, though the value of those transferred arms is relatively low. Moreover, between 2004 and 2011, China only provided a small percentage of all the conventional arms delivered to the developing world, according to **Figure 8.9**. The value of delivered arms per year has fluctuated greatly between 2004 and 2011, as shown by **Figure 8.10**.

Figure 8.8: Worldwide Arms Deliveries, 2004-2011 and Suppliers' Share with Developing World (in millions of current 2011 US dollars)

Supplier	Worldwide Deliveries Value 2004-2007	Percentage of Total to Developing World
United States	47,974	64.00%
Russia	21,000	96.20%
France	12,600	68.30%
United Kingdom	14,000	72.10%
China	5,100	94.10%
Germany	9,300	28.00%
Italy	2,300	30.40%
All Other European	12,800	38.30%
All Others	11,300	42.50%
TOTAL	136,374	64.10%

Supplier	Worldwide Deliveries Value 2008-2011	Percentage of Total to Developing World
United States	54,270	62.00%
Russia	27,800	92.10%
France	6,500	46.10%
United Kingdom	10,600	50.00%
China	8,100	98.80%
Germany	10,800	30.60%
Italy	4,500	55.60%
All Other European	23,600	41.90%
All Others	16,900	34.30%
TOTAL	163,070	59.50%

Source: Richard F. Grimmer and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.9: Arms Deliveries to Developing Nations, by Supplier, 2004-2011 (in millions of current US dollars)

	2004	2005	2006	2007	2008	2009	2010	2011	2004-2011
United States	7,385	8,161	7,928	7,198	7,304	7,345	8,458	10,522	64,301
Russia	5,400	3,700	6,000	5,100	6,400	5,400	6,300	7,500	45,800
France	5,200	2,000	500	900	700	600	1,000	700	11,600
United Kingdom	2,400	3,000	3,600	1,100	1,200	1,100	1,500	1,500	15,400
China	900	900	1,400	1,600	2,100	1,700	2,900	1,300	12,800
Germany	800	300	900	600	1,300	1,100	500	400	5,900
Italy	100	100	300	200	200	500	700	1,100	3,200
All Other European	1,100	1,300	1,200	1,300	2,000	1,900	2,700	3,300	14,800
All Others	1,800	1,600	600	800	800	1,600	1,700	1,700	10,600
TOTAL	25,085	21,061	22,428	18,798	22,004	21,245	25,758	28,022	184,401

Source: Richard F. Grimmert and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.10: Arms Deliveries to Developing Nations, by Supplier, 2004-2011

	2004	2005	2006	2007	2008	2009	2010	2011
United States	29.44%	38.75%	35.35%	38.29%	33.19%	34.57%	32.84%	37.55%
Russia	21.53%	17.57%	26.75%	27.13%	29.09%	25.42%	24.46%	26.76%
France	20.73%	9.50%	2.23%	4.79%	3.18%	2.82%	3.88%	2.50%
United Kingdom	9.57%	14.24%	16.05%	5.85%	5.45%	5.18%	5.82%	5.35%
China	3.59%	4.27%	6.24%	8.51%	9.54%	8.00%	11.26%	4.64%
Germany	3.19%	1.42%	4.01%	3.19%	5.91%	5.18%	1.94%	1.43%
Italy	0.40%	0.47%	1.34%	1.06%	0.91%	2.35%	2.72%	3.93%
All Other European	4.39%	6.17%	5.35%	6.92%	9.09%	8.94%	10.48%	11.78%
All Others	7.18%	7.60%	2.68%	4.26%	3.64%	7.53%	6.60%	6.07%
Major West European ^a	[33.88%	25.64%	23.63%	14.90%	15.45%	15.53%	14.36%	13.20%]
TOTAL	100.00%							

Source: Richard F. Grimmert and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.11 demonstrates the importance of the Asian arms market to China, with arms deliveries to Asia making up about half of all Chinese deliveries in 2004-2007 and 2008-2011. China did not have the lead in terms of the value of delivered arms to Africa between 2004 and 2011. Nevertheless, China delivered a substantial amount of conventional arms to Africa during these years.

Figure: 8.11: Percentage of Supplier Deliveries Value by Region, 2004-2011

	Asia		Near East		Latin America		Africa		TOTAL	
	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011	2004-2007	2008-2011
United States	32.20%	28.18%	63.70%	67.33%	3.80%	4.18%	0.30%	0.31%	100.00%	100.00%
Russia	70.79%	51.56%	16.83%	32.81%	9.41%	12.11%	2.97%	3.52%	100.00%	100.00%
France	23.26%	41.38%	69.77%	37.93%	5.81%	13.79%	1.16%	6.90%	100.00%	100.00%
United Kingdom	10.78%	32.69%	77.45%	63.46%	2.94%	3.85%	8.82%	0.00%	100.00%	100.00%
China	52.08%	49.38%	27.08%	32.10%	2.08%	7.41%	18.75%	11.11%	100.00%	100.00%
Germany	51.52%	73.53%	12.12%	11.76%	3.03%	5.88%	33.33%	8.82%	100.00%	100.00%
Italy	33.33%	38.46%	16.67%	34.62%	16.67%	15.38%	33.33%	11.54%	100.00%	100.00%
All Other European	37.25%	37.50%	29.41%	19.79%	23.53%	25.00%	9.80%	17.71%	100.00%	100.00%
All Others	57.14%	61.40%	18.37%	8.77%	18.37%	22.81%	6.12%	7.02%	100.00%	100.00%
Major West European [†]	[22.03%	45.39%	63.44%	40.43%	4.41%	8.51%	10.13%	5.67%	100.00%	100.00%]
TOTAL	41.16%	41.54%	46.44%	43.15%	7.09%	10.34%	5.31%	4.97%	100.00%	100.00%

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figures 8.12 to 8.14 shows 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 8.12: Numbers of Weapons Delivered by Suppliers to Developing Nations

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
2004-2007						
Tanks and Self-Propelled Guns	672	300	160	160	420	10
Artillery	240	20	450	10	380	1,020
APCs and Armored Cars	726	480	460	260	2,600	800
Major Surface Combatants	0	3	0	17	6	3
Minor Surface Combatants	0	5	56	57	41	116
Guided Missile Boats	0	0	0	7	9	3
Submarines	0	8	0	5	4	0
Supersonic Combat Aircraft	104	180	20	70	40	40
Subsonic Combat Aircraft	2	0	10	20	0	10
Other Aircraft	50	40	130	20	90	130
Helicopters	73	200	0	80	20	40
Surface-to-Air Missiles	910	6,340	530	650	710	150
Surface-to-Surface Missiles	0	0	0	0	0	30
Anti-Ship Missiles	262	360	120	150	120	50
2008-2011						
Tanks and Self-Propelled Guns	348	570	510	360	550	40
Artillery	150	90	770	30	410	700
APCs and Armored Cars	234	490	590	470	1,200	440
Major Surface Combatants	5	4	3	3	4	4
Minor Surface Combatants	0	6	108	57	40	100
Guided Missile Boats	0	2	0	0	0	4
Submarines	0	2	0	4	1	0
Supersonic Combat Aircraft	53	180	30	50	130	50
Subsonic Combat Aircraft	0	0	20	50	20	40
Other Aircraft	52	20	130	60	130	60
Helicopters	57	270	10	110	70	30
Surface-to-Air Missiles	944	7,750	780	290	470	290
Surface-to-Surface Missiles	0	50	0	0	0	0
Anti-Ship Missiles	176	220	60	60	0	40

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.13: 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
2004-2007						
Tanks and Self-Propelled Guns	115	40	160	0	10	0
Artillery	108	20	210	10	120	30
APCs and Armored Cars	54	220	50	120	470	60
Major Surface Combatants	0	3	0	4	1	2
Minor Surface Combatants	6	3	22	9	8	16
Guided Missile Boats	0	0	0	0	0	0
Submarines	0	8	0	1	2	0
Supersonic Combat Aircraft	0	110	10	40	10	40
Subsonic Combat Aircraft	2	0	10	0	0	0
Other Aircraft	12	30	20	10	20	30
Helicopters	22	90	0	20	10	0
Surface-to-Air Missiles	474	1,180	530	240	190	150
Surface-to-Surface Missiles	0	0	0	0	0	0
Anti-Ship Missiles	175	360	40	50	40	0
2008-2011						
Tanks and Self-Propelled Guns	0	360	260	100	40	0
Artillery	0	40	130	10	60	20
APCs and Armored Cars	25	250	100	0	590	100
Major Surface Combatants	5	4	3	2	3	2
Minor Surface Combatants	0	6	2	10	1	32
Guided Missile Boats	0	2	0	0	0	2
Submarines	0	0	0	3	1	0
Supersonic Combat Aircraft	18	140	10	10	10	0
Subsonic Combat Aircraft	0	0	10	50	0	20
Other Aircraft	14	0	60	40	40	10
Helicopters	2	110	10	20	20	0
Surface-to-Air Missiles	297	1,080	760	290	0	290
Surface-to-Surface Missiles	0	0	0	0	0	0
Anti-Ship Missiles	176	110	60	10	0	0

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.14: Numbers of Weapons Delivered by Suppliers to Near East

Weapons Category	U.S.	Russia	China	Major West European ^a	All Other European	All Others
2004-2007						
Tanks and Self-Propelled Guns	557	260	0	20	130	0
Artillery	31	0	0	0	40	40
APCs and Armored Cars	672	260	0	90	1,950	560
Major Surface Combatants	0	0	0	3	0	0
Minor Surface Combatants	6	0	0	35	10	89
Guided Missile Boats	0	0	0	6	9	0
Submarines	0	0	0	0	0	0
Supersonic Combat Aircraft	94	30	0	20	10	0
Subsonic Combat Aircraft	0	0	0	0	0	0
Other Aircraft	20	0	60	10	30	40
Helicopters	35	30	0	10	0	20
Surface-to-Air Missiles	436	5,160	0	400	520	0
Surface-to-Surface Missiles	0	0	0	0	0	30
Anti-Ship Missiles	77	0	80	90	70	50
2008-2011						
Tanks and Self-Propelled Guns	348	50	60	0	70	10
Artillery	149	0	230	0	160	50
APCs and Armored Cars	170	130	160	130	300	250
Major Surface Combatants	0	0	0	0	1	0
Minor Surface Combatants	0	0	0	31	19	14
Guided Missile Boats	0	0	0	0	0	0
Submarines	0	2	0	0	0	0
Supersonic Combat Aircraft	35	30	0	20	80	0
Subsonic Combat Aircraft	0	0	0	0	0	0
Other Aircraft	7	20	20	10	30	0
Helicopters	36	30	0	50	0	10
Surface-to-Air Missiles	647	3,480	0	0	150	0
Surface-to-Surface Missiles	0	50	0	0	0	0
Anti-Ship Missiles	0	110	0	50	0	40

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Figure 8.15: Numbers of Weapons Delivered by Suppliers to Africa

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
2004-2007						
Tanks and Self-Propelled Guns	0	0	0	0	280	10
Artillery	0	0	230	0	210	950
APCs and Armored Cars	0	0	380	50	170	140
Major Surface Combatants	0	0	0	3	0	1
Minor Surface Combatants	0	0	34	9	21	9
Guided Missile Boats	0	0	0	1	0	3
Submarines	0	0	0	2	0	0
Supersonic Combat Aircraft	0	20	10	0	0	0
Subsonic Combat Aircraft	0	0	0	20	0	0
Other Aircraft	0	0	50	0	20	10
Helicopters	0	40	0	40	10	10
Surface-to-Air Missiles	0	0	0	10	0	0
Surface-to-Surface Missiles	0	0	0	0	0	0
Anti-Ship Missiles	0	0	0	10	0	0
2008-2011						
Tanks and Self-Propelled Guns	0	50	190	0	440	30
Artillery	0	0	410	0	130	630
APCs and Armored Cars	0	60	310	180	90	70
Major Surface Combatants	0	0	0	0	0	0
Minor Surface Combatants	0	0	104	4	15	42
Guided Missile Boats	0	0	0	0	0	2
Submarines	0	0	0	1	0	0
Supersonic Combat Aircraft	0	0	20	10	20	20
Subsonic Combat Aircraft	0	0	10	0	20	0
Other Aircraft	0	0	20	10	20	10
Helicopters	0	70	0	30	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

Source: Richard F. Grimmett and Paul K. Kerr, *Conventional Arms Transfers to Developing Nations, 2004-2011*, Congressional Research Service, August 24, 2012.

Arms Trade and Technology Transfer: The Role of Espionage

China's modernization involves more than arms imports. The close relationship between the Chinese government and its domestic military industrial sector has meant that China has made extensive use of industrial espionage. It 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 sets the stage for such reporting as follows:³⁴⁷

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:³⁴⁸

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:³⁴⁹

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:³⁵⁰

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.

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.

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. **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.

One key goal behind these changes has been improving the PLAA's ability to fight "Local War under Conditions of Informatization" by improving its ability to move quickly, deliver devastating blows without relying on sheer mass, and defending 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.

According to Lieutenant General Vincent R. Stewart:³⁵¹

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.

Figure 9.1: PLAA Force Strength in 2015

	Total
Personnel (Active)	1.25 million
Group Armies	18
Infantry Divisions	15
Infantry Brigades	16
Mechanized Infantry Divisions	6
Mechanized Infantry Brigades	17
Armor Divisions	1
Armor Brigades	16
Artillery Divisions	2
Artillery Brigades	17
Airborne Divisions	3
Amphibious Divisions	2
Amphibious Brigades	3
Tanks	7,000
Artillery Pieces	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 2015*, April 2015, 78.

Figure 9.2: Deployment of PLAA Group Armies



CHINA: Group Armies (GA) Primary Missions		
Shenyang MR	Nanjing MR	Lanzhou MR
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	
Beijing MR	Guangzhou MR	
65 GA – Defensive	15 Airborne – RRU, Offensive MF	
38 GA – RRU, Offensive MF	41 GA – Offensive CT, Amphibious	
27 GA – Defensive	42 GA – Amphibious	
Jinan MR	Chengdu MR	
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, *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 force structure, and in 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

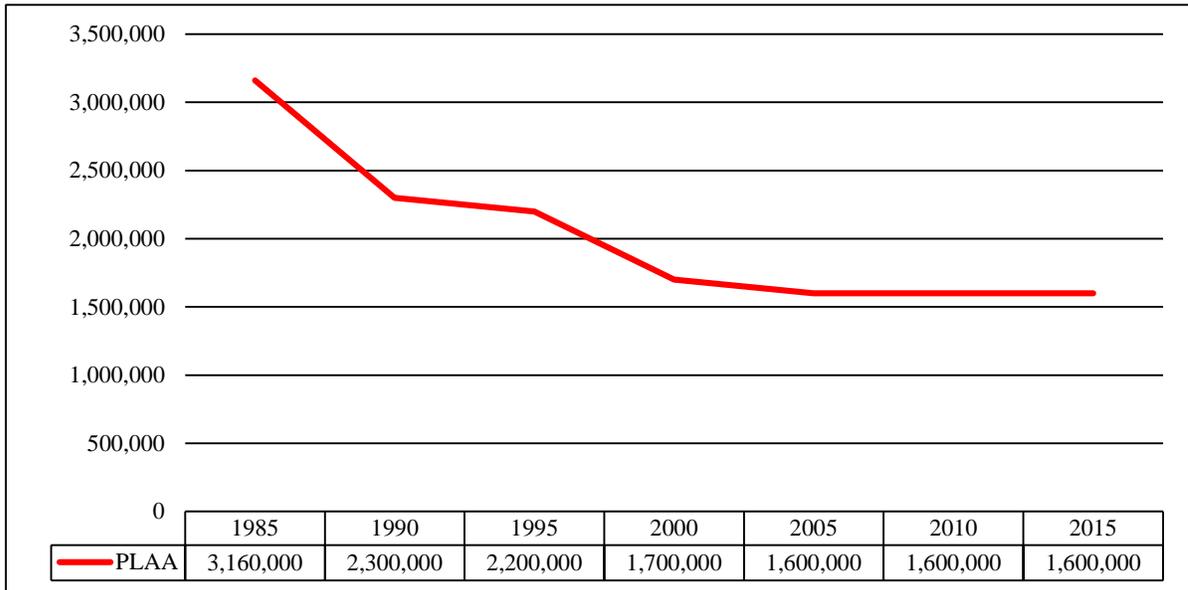
ARMY COMBAT UNITS							
	1985	1990	1995	2000	2005	2010	2015
Army Group	35	24	24	21	18	18	18
Armored Division	13	10	10	10	9	8	1
Infantry Division	118	80	78	44	15	0	18
Mechanized Infantry Division	?	?	2	7	5	8	8
Motorized Infantry Division	?	?	0	0	24	15	10
Amphibious Assault Division	?	?	0	0	2	2	2
Artillery Division	17	some	5	5	7	2	3
Air-Defense Artillery Division	16	16	0	0	0	0	17
Armored Brigade	?	?	2	12	12	8	16
Mechanized Infantry Brigade	?	?	0	?	1	7	21
Motorized Infantry Brigade	?	?	0	?	22	21	23
Infantry Brigade	?	?	0	13	0	0	4
Artillery Brigade	some	?	0	20	14	16	7
Air-Defense Artillery Brigade	?	?	5	4	12	?	?
Anti-Tank Brigade	?	?	0	0	1	0	0
Air-Defense Brigade	some	some	0	0	9	21	8
Mechanized Infantry Regiment	?	?	?	?	?	?	2
Anti-Tank Regiment	?	?	0	0	4	0	0
Helicopter Regiment	?	2 groups	some	7	0	0	0
Engineer Regiment	50	50	15	0	0	15	15
Signals Regiment	21	?	0	0	0	50	10
ARMY RESERVES							
	1985	1990	1995	2000	2005	2010	2015
Infantry Division	?	30+	?	50 inf, arty, AD, 100 inf, arty reg	30	?	18
Air-Defense Division	?	?	?	some	13	?	17
Logistics Support Brigade	?	?	?	?	7	?	9
Artillery Division	?	?	?	some	3	?	3

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Jane's. Adapted by Anthony H. Cordesman and Steve Colley 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. This personnel trend, 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
Personnel (all PLA + paramilitary forces + reserves)*	9,000,000+	4,230,000	4,130,000	3,570,000	4,655,000	3,455,000	3,503,000
Active	4,000,000	3,120,000	3,020,000	2,470,000	2,355,000	2,285,000	2,333,000
Conscript	?	1,350,000	1,275,000	1,000,000	990,000	?	?
Army	3,160,000	2,300,000	2,200,000	1,700,000	1,600,000	1,600,000	1,600,000
Navy	350,000	260,000	260,000	220,000	255,000	255,000	235,000
Air Force	490,000	470,000	470,000	420,000	400,000	330,000	398,000
Strategic Missile Forces	?	90,000	90,000	100,000+	100,000	100,000	100,000
Paramilitary	?	incl. in reserve	1,200,000	1,100,000	1,500,000	660,000	660,000
Reserve	5,000,000	1,200,000 (Paramil.)	?	500-600,000	800,000	510,000	510,000

Source: IISS *Military Balance*, 1985-2015. Adapted by Anthony H. Cordesman and Steve Colley 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 the technology.

Figure 9.5 provides data on the shifts in PLAA equipment holdings from 1985-2015.³⁵² 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, 1985-2015 – Part One

ARMY EQUIPMENT							
	1985	1990	1995	2000	2005	2010	2015
MAIN BATTLE TANKS	8,650 (+Ht tank)	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-59/56D/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	300
Type-80	0	some	some	0	0	0	0
Type-85	0	0	some	0	0	0	0
Type-88A/88B	0	0	0	900	1000	500	500
Type-96/96A/88C	0	0	0	0	1,200	1,500	2,050
Type-96G	0	0	0	0	0	0	0
Type-98A/99	0	0	0	10+	80	250	540
Type-99A	0	0	0	0	0	0	100
LIGHT TANKS/RECCE	?	2,000	2,000	2,000	1,000	1,000	950
ZTD-05	?	?	?	?	?	?	350
Type-62	some	1,200	800	800	400	400	350
Type-63/63A	some	800	1,200	1,200	600	400	50
Type-09 (ZTL-09)	?	?	?	?	?	200	200
ARMORED INFANTRY FIGHTING VEHL	?	some	some	4,800 (+APC)	1000	1140	3,850
Type-03	0	0	0	0	0	40	0
Type-04/04A	0	0	0	0	0	300	750
Type-05	?	0	0	some	1,000	200	300
Type-09	0	0	0	0	0	0	400
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
ARMORED PERSONNEL CARRIER	2,800	2,800	2,800	5,500	3,500+	3,300+	5,020
Type531C/D/E	some	some	some	0	0	0	0
YW-534	0	some	some	0	0	0	0
Type-85 (Type 89 or WZ 534)	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-89	0	0	0	some	300	300	1,750
Type-77II	0	0	0	some	200	200	0
Type-92A	0	0	0	some	600+	600+	700
Type-93	?	?	?	?	?	?	50
WZ-523/553	0	0	0	some	100	100	0
BMD-3	0	0	0	100	0	0	0

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 9.5: PLA Major Weapons and Equipment, 1985-2015 – Part Two

ARMY EQUIPMENT							
	1985	1990	1995	2000	2005	2010	2015
ARTILLERY	12,800	14,500+	14,500+	15,800+	17,700+	17,700+	13,178+
TOWED	<i>some</i>	<i>14,500</i>	<i>14,500</i>	<i>12,000</i>	<i>14,000</i>	<i>14,000</i>	<i>6,140</i>
85mm Type-56	some	0	0	0	0	0	0
100mm	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
122mm	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
130mm Type-59/59-1 (M-46)	some	some	1,000	some	some	some	234
152mm	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
155mm Type-88 WAC-21	0	0	30	300+	150	150	0
SELF-PROPELLED	<i>some</i>	<i>some</i>	<i>some</i>	<i>1,200</i>	<i>1,200</i>	<i>1,280+</i>	<i>2,280</i>
122mm	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	0	0	0	0	0	some	450
Type-09	0	0	0	0	0	0	450
152mm Type-83	0	some	some	some	500	500	390
155mm Type-05	0	0	0	0	0	80	290

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 9.5: PLA Major Weapons and Equipment, 1985-2015 – Part Three

ARMY EQUIPMENT							
	1985	1990	1995	2000	2005	2010	2015
MULTIPLE ROCKET LAUNCHER	4,500	3,800	3,800	2,500	2,400	2,400+	1,872+
107mm	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
122mm	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
130mm	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
132mm BM-13-16	some	some	some	0	0	0	0
140mm BM-14-16	some	some	some	0	0	0	0
180mm	some	0	0	0	0	0	0
273mm Type-83	0	some	some	some	some	0	0
284mm Type-74 minelayer	0	some	some	0	0	0	0
300mm Type-03	0	0	0	0	0	some	175
320mm Type-96 (WS-1)	some	some	some	some	some	0	0
400mm WS-2/WS-2D	0	some	some	0	0	some	0
425mm Type-762 mine clearance	0	some	some	0	0	0	0
GUN/MORTAR	<i>some</i>						
81mm Type-W87	0	0	0	some	some	some	0
82mm	some						
Type-53 (M-37)	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
YW-304 (self-propelled)	0	some	0	0	0	0	0
100mm Type-71	0	0	0	some	some	some	some
120mm	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-05/05A (PLL-05/PLZ-05A)	0	0	0	0	0	50	300
160mm Type-56 (M-160)	some	some	some	some	some	some	0

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley 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 9.5** 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 9.6** 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 9.6** shows, the relative reduction in major PLA weapons systems shown in **Figure 9.5** 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.

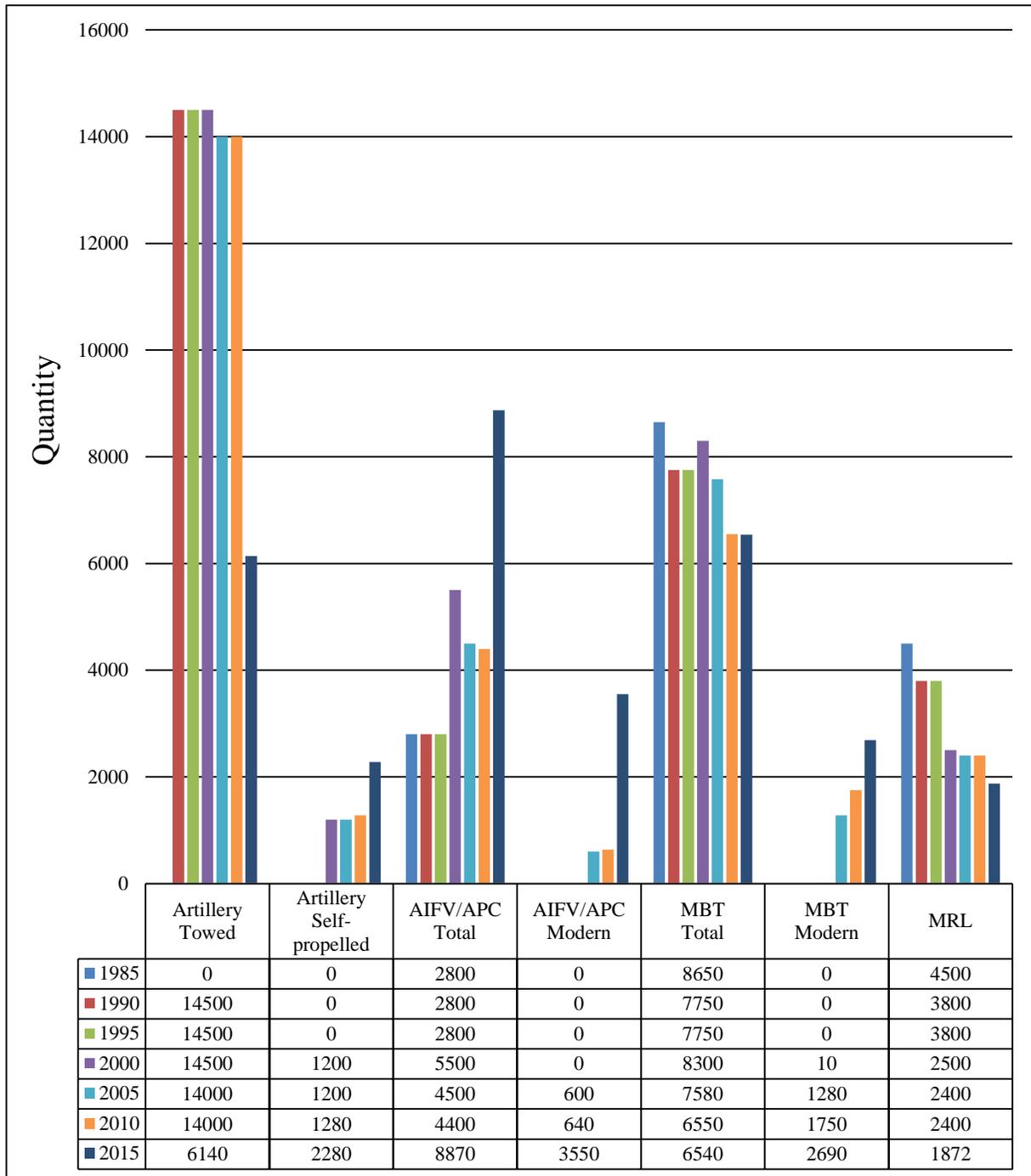
This practice has implications for the PLAA's tactics and strategy. The Local Wars concept requires the PLAA to rapidly overwhelm a regional adversary before political dynamics end the conflict. Moreover, in that short time, the PLAA must obtain the military advantages necessary to ensure success in 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 2015* indicated that the PLAA was deploying its modern weaponry in this manner, through joint exercises, preparing the PLAA for a Taiwan invasion scenario.³⁵³

Figure 9.6: Summary Trends in PLA Major Weapon System Inventory, 1985-2015



Source: IISS *Military Balance*, 1985-2015. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 9.7: Historical PLAA Equipment Inventory of Major Weapon Systems, 1985-2015



Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley 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 larger effect of the PLAA's modernization 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.³⁵⁴

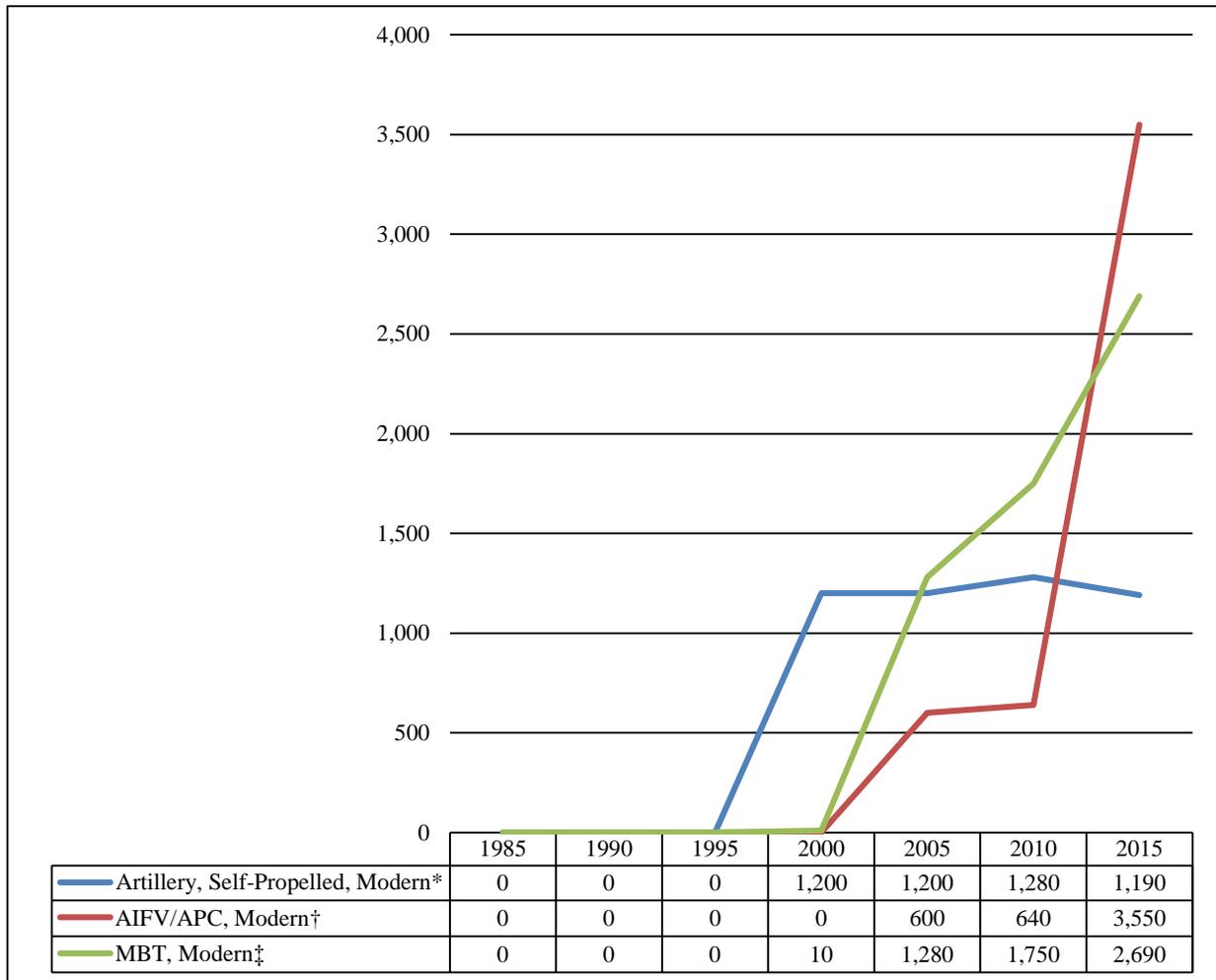
- **Figure 9.8** displays the PLAA's procurement of modern main weapon systems. The procurement began with artillery in 1995 and included MBTs and AIFV/APCs in 2000. Over the last two decades, the modernization of the PLAA has continued at a sustained pace.
- **Figure 9.9** provides indicators of the 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, 1985-2015



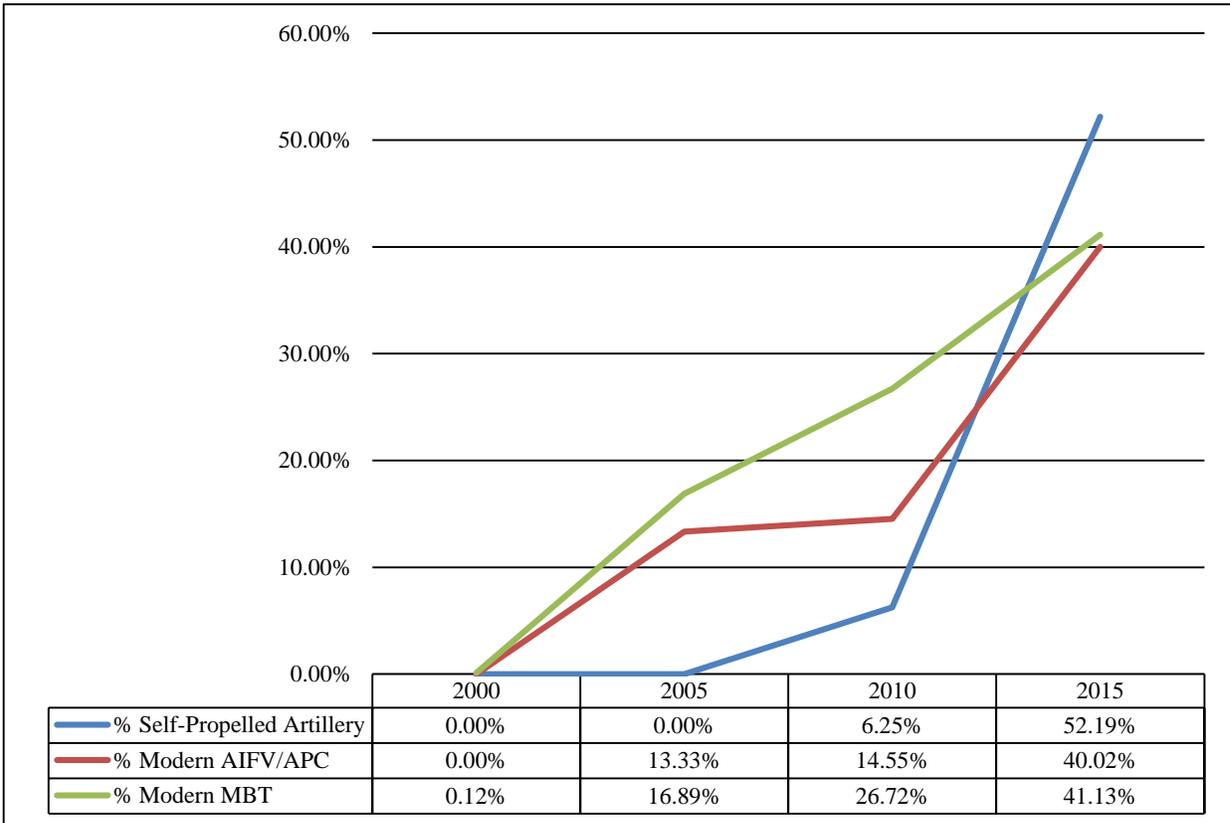
*The following systems are considered modern: Type 07 (PLZ-07), Type 07B (PLZ-07B), Type 09 (PLC-09), Type 09 (PLL-09), Type 05 (PLZ-05)

†The following systems are considered modern: Type 04 (ZBD-04), Type 04A (ZBD-04A), Type 05 AAV (ZBD-05), Type 09 (ZBL-09_)

‡The following systems are considered modern: Type 96, Type 96A, Type 98, Type 99, Type 99A

Source: IISS, *Military Balance* 1985-2015.

Figure 9.9: Pace of PLAA Modernization – Percent of Modern Weapon Systems, 2000-2015



Source: IISS, *Military Balance* 2000-2015.

The US Official View of PLAA Modernization

The DoD’s 2014 report on China provided the following assessment of the impact of such modernization:³⁵⁵

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,³⁵⁶

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:³⁵⁷

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.

And, described its impact on the PLA and military operations other than war (MOOTW):³⁵⁸

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.

The Japanese Official View of PLAA Modernization

The 2014 Japanese white paper provided the following summary description of the ongoing changes in the PLA:³⁵⁹

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 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. In addition, China is believed to be strengthening its airborne troops (belonging to the Air Force) and special operations forces and helicopter units. It is continuing its efforts to make its military units multi-functional, to build a command system for improvement of its joint operational capabilities and efficient operations, and also to work on reforms to improve its logistical support capabilities.

In 2009, China carried out "Stride 2009" exercises which were deemed the largest ever mobile exercises conducted by multiple military regions, and it has been carrying out similar "Mission Action" mobile exercises since 2010. These exercises are believed to have been designed to verify and improve capabilities necessary for deployment of army units to distant areas, such as the army's long-range maneuvering capabilities and logistical support capabilities, including mobilization of militia and public transportation.

Shifts in Training, Readiness, and the Capability to "Fight Local Wars"

The PLAA 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 enabling these tangible aspects of military modernization with the necessary 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."³⁶⁰

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,³⁶¹ and multiple PLAA exercises during the decade required forces to mobilize across long distances that involved multiple MRs. Of one recent, large-scale PLAA exercise, Mission Action 2010, the DoD wrote,³⁶²

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 2014 DoD report stated:³⁶³

MISSION ACTION 2013 was a multi-week exercise led by the Nanjing and Guangzhou Military Regions (MRs) and the PLA Air Force. The exercise emphasized multiple PLA objectives including long-distance mobility and logistics, joint air-ground, and joint air-naval operations under realistic, high-tech conditions, and a series of amphibious landing operations.

The DoD's assessment illustrates a PLAA in the process of 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 already important concerns to 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?

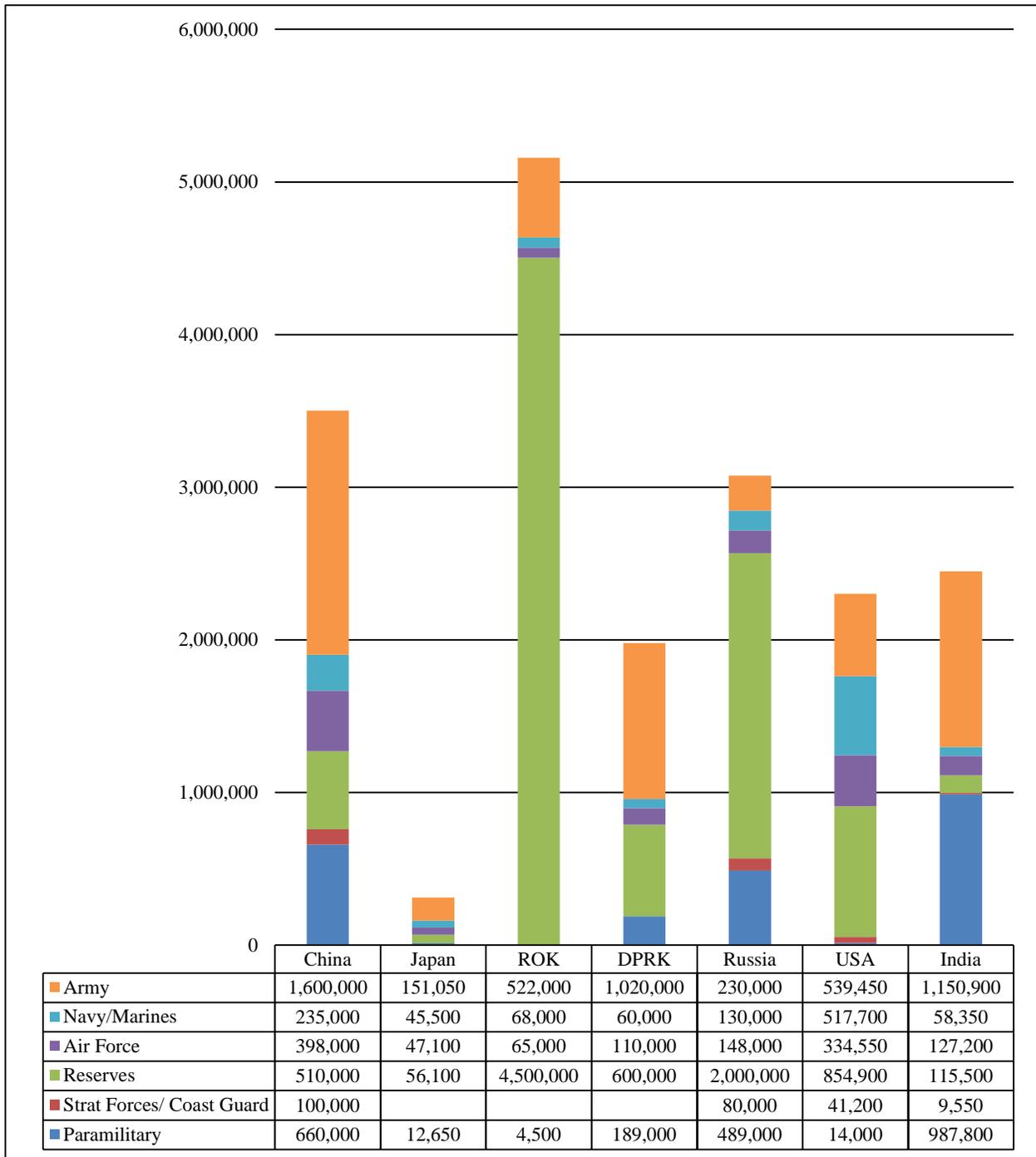
The US might send key specialized force elements like trainers or surface-to-air missile and ballistic missile defense units, but once again, the expansion of the PLAA seems likely to drive US security partnerships towards contingency plans focused on projecting US sea, air, and missile power. Moreover, 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

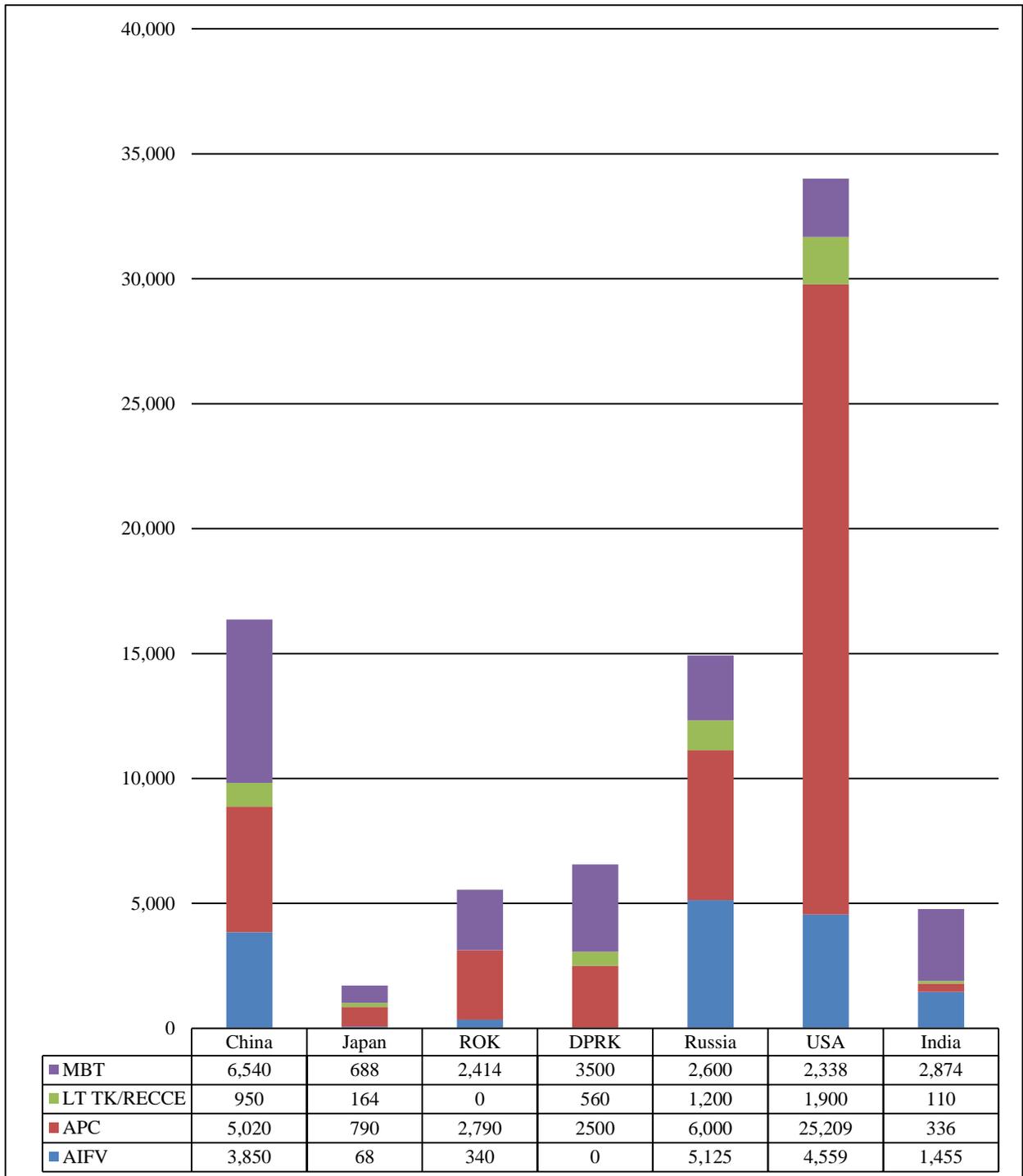
Though the PLA has shrunk over the last two decades as part of its efforts to create a more capable force, and it remains the region’s largest active standing Army in terms of deployed major weapons. **Figure 9.10** shows the size of China’s force in comparison to regional militaries and the total size 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



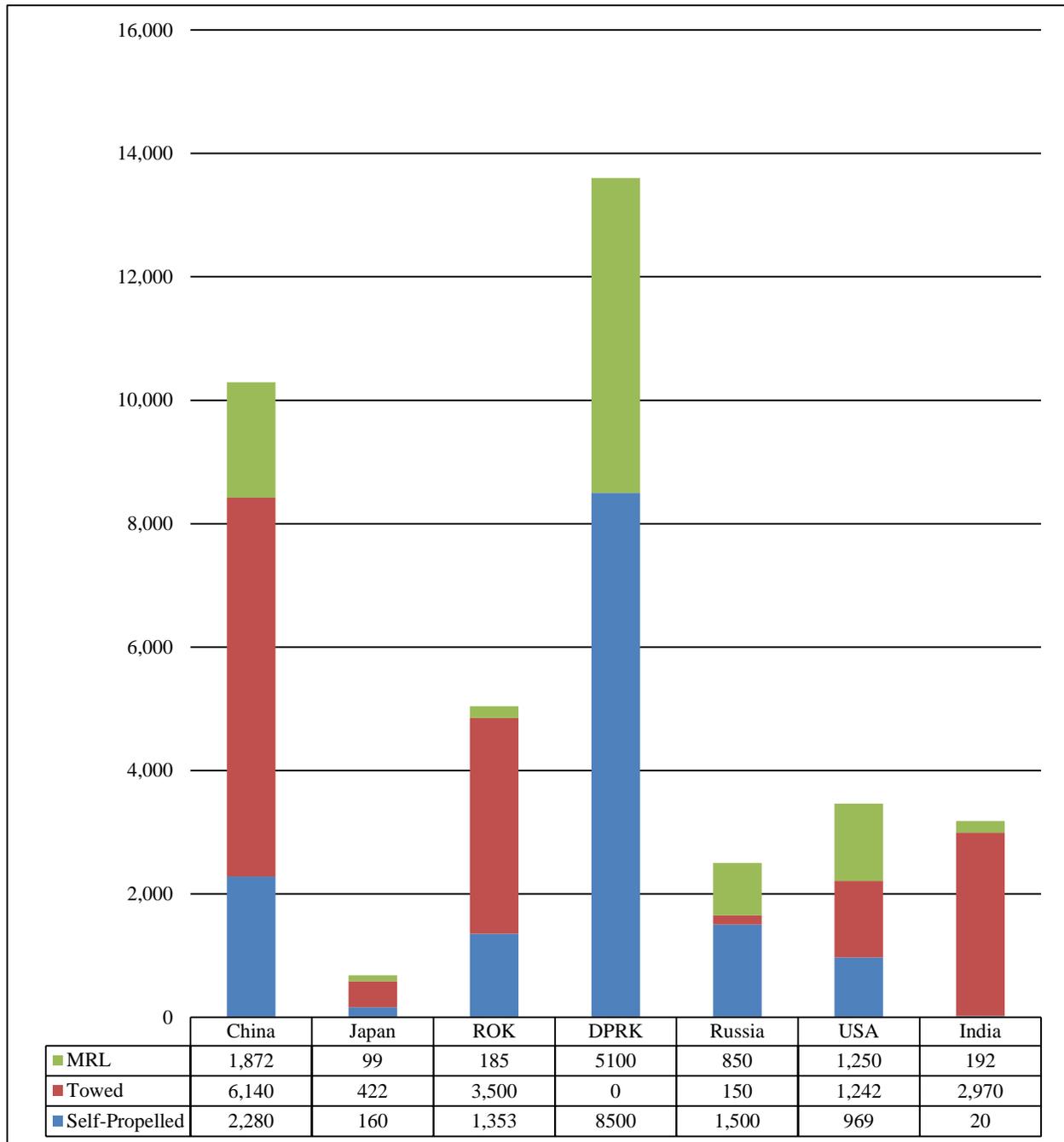
Source: IISS *Military Balance*, 2015. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 9.11: PLAA Ground Forces Equipment in Comparison to Regional Countries and the US



Source: IISS *Military Balance*, 2015. Adapted by Anthony H. Cordesman and Steve Colley 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*, 2015. Adapted by Anthony H. Cordesman and Steve Colley 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.

PLAN Strategy and Developments

The PLAN’s modernization vision was developed during the 1980s, prior to the 1993 promulgation of the Local Wars doctrine pioneered by Admiral Liu Huaqing. The PLAN devised “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.³⁶⁴ 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.³⁶⁵

In order to achieve these objectives, the PLAN 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. These capabilities in turn necessitated 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 fit into the CMC’s overarching concept. One of the focal points of the Local Wars doctrine will be the South China Sea, where critical sea lanes of communications are located. Aptly called China’s “Malacca dilemma,” China faces a problem in that it is dependent on trade and energy imports that go through the Malacca, Sunda, and Lombok Straits, which all 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.

- **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.
- **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: Size of the PLAN in 2015

	Total
Aircraft Carriers	1
Destroyers	21
Frigates	52
Corvettes	15
Tank Landing Ships/ Amphibious Transport Dock	29
Medium Landing Ships	28
Diesel Attack Submarines	53
Nuclear Attack Submarines	5
Coastal Patrol (Missile)	86

Note: The PLA Navy has the largest force of principal combatants, submarines, and amphibious warfare ships in Asia.

Source: DoD, *Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 79.

Figure 10.2: China's First and Second Island Chains



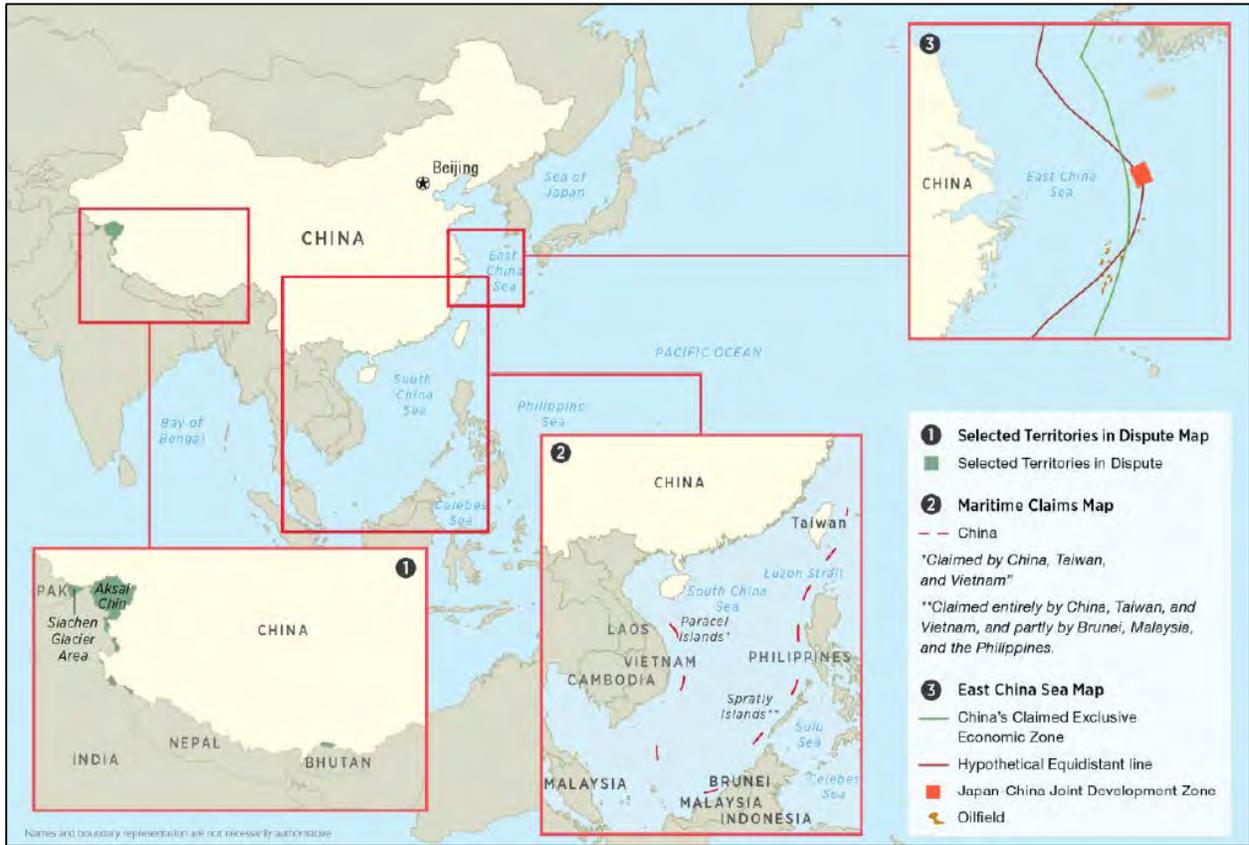
Source: Department of Defense, *Military Power of the People's Republic of China 2008*, 25, http://www.lib.utexas.edu/maps/middle_east_and_asia/china_military_power_2008.pdf.

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.

Figure 10.4: Competing Sovereignty Claims (2015)



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 85.

The US has produced several publications on the PLAN which describes the current structure, trends, and strategy in the DoD report on *Military and Security Developments Involving the People's Republic of China for 2015*, the Office of Naval Intelligence (ONI) 2015 report on *The PLA Navy: New Capabilities and Missions for the 21st Century*, and a Congressional Research Service (CRS) report titled *China Naval Modernization: Implications for US Navy Capabilities*. The following are key viewpoints from these current reports:³⁶⁸

Over the past 15 years, China's ambitious naval modernization program has produced a more technologically advanced and flexible force. The PLA Navy 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. Whereas "near seas" defense remains the PLA Navy's primary focus, China's gradual shift to the "far seas" has necessitated that its Navy support operational tasks outside the first island chain with multi-mission, long-range, sustainable naval platforms with robust self-defense capabilities.

The 2015 ONI report added:³⁶⁹

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 SOVREMENNYI 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:³⁷⁰

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 DoD 2014 report explained Chinese sea-based nuclear deterrent:³⁷¹

The JIN-class SSBN will carry the new JL-2 submarine-launched ballistic missile (SLBM) with an estimated range of 7,400 km. The JIN-class and the JL-2 will give the PLA Navy its first credible sea-based nuclear deterrent. China is likely to conduct its first nuclear deterrence patrols with the JIN-class SSBN in 2014.

China also has expanded its force of nuclear-powered attack submarines (SSN). Two SHANG-class SSNs (Type 093) are already in service, and China is building four improved variants of the SHANG-class SSN, which will replace the aging HAN-class SSNs (Type 091). In the next decade, China will likely construct the Type 095 guided-missile attack submarine (SSGN), which may enable a submarine-based land-attack capability. In addition to likely incorporating better quieting technologies, the Type 095 will fulfill traditional anti-ship roles with the incorporation of torpedoes and anti-ship cruise missiles (ASCMs).

The current mainstay of the Chinese submarine force is modern diesel powered attack submarines (SS). In addition to 12 KILO-class submarines acquired from Russia in the 1990s and 2000s (eight of which are equipped with the SS-N-27 ASCM), the PLA Navy possesses 13 SONG-class SS (Type 039) and eight YUAN-class SSP (Type 039A). The YUAN-class SSP is armed similarly to the SONG-class SS, but also includes an air-independent power system. China may plan to construct up to 20 YUAN-class SSPs.

Since 2008, the PLA Navy has embarked on a robust surface combatant construction program of various classes of ships, including guided missile destroyers (DDG) and guided missile frigates (FFG). During 2012, China continued series production of several classes, including construction of a new generation of DDG. Construction of the LUYANG II-class DDG (Type 052C) continued, with one ship entering service in 2012, and an additional three ships under various stages of construction and sea trials, bringing the total number of ships of this class to six by the end of 2013. Additionally, China launched the lead ship in a follow-on class, the LUYANG III- class DDG (Type 052D), which will likely enter service in 2014. The LUYANG III incorporates the PLA Navy’s first multipurpose vertical launch system, likely capable of launching ASCM, land attack cruise missiles (LACM), surface-to-air missiles (SAM), and anti-submarine rockets. China is projected to build more than a dozen of these ships to replace its aging LUDA-class destroyers (DD). China has continued the construction of the workhorse JIANGKAI II-class FFG (Type 054A), with 12 ships currently in the fleet and six or more in various stages of construction, and yet more expected. These new DDGs and

FFGs 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.

Augmenting the PLA Navy's littoral warfare capabilities, especially in the South China Sea and East China Sea, is a new class of small combatant. At least six of the JIANGDAO-class corvettes (FFL) (Type 056) were launched in 2012. The first of these ships entered service on February 25, 2013; China may build 20 to 30 of this class. These FFLs augment the 60 HOUBEI-class wave-piercing catamaran missile patrol boats (PTG) (Type 022), each capable of carrying eight YJ-83 ASCMs, for operations in littoral waters.

The 2015 CRS report also updated the US discussion of China's amphibious forces:³⁷²

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 2012.⁸³ 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."⁸⁶ *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 tonnes and may be based on the Type 0781 hull."⁸⁷ 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 2015 report added:³⁷³

China continues to produce the JIN-class 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 7,400 km. Together these will give the PLA Navy 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 – China will probably send out the first in 2015.

Finally, the 2015 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:³⁷⁴

Senior Chinese officials have identified protecting China's sovereignty and territorial integrity as a "core interest," and officials stress China's opposition to actions they perceive as challenging this core interest. China maintains that its maritime rights extend to virtually the entire South China Sea and often illustrates its claim using a "nine-dash line" that encompasses most of the area. At the same time, China is ambiguous about the precise meaning of the nine-dash line; to date, China has not clarified the meaning of the line or articulated its legal basis.

In 2014, China started reclaiming land and building enhanced infrastructure at its outposts in the Spratly Islands. When complete, these facilities could include harbors, communications and surveillance systems, logistics support, and at least one airfield. Whereas these reclaimed areas do not provide China with any additional right to claim maritime geography within the South China Sea, China will be able to use them as persistent civil-military bases of operation to significantly enhance its presence in the disputed area.

Throughout 2014, Chinese ships maintained a presence at Scarborough Reef, continuing China's standoff with the Philippine Coast Guard that began in 2012. Chinese officials noted in 2014 that such patrols were normal and justifiable, claiming that China has indisputable sovereignty of the various islands in the South China Sea and adjacent waters. In May 2013, China sent CCG ships to the waters near Second Thomas Shoal in the Spratly Islands. Philippine military personnel are located on Second Thomas Shoal aboard a tank landing ship that was deliberately run aground there in 1999.

A Chinese scholar claimed the Chinese patrols near Second Thomas are "legal and appropriate." In March 2014, China Coast Guard (CCG) ships for the first time blocked a Philippine resupply effort at Second Thomas Shoal. An additional attempt to prevent a surface resupply was made later the same month, but failed. Both

sides continue to claim sovereignty over Scarborough Reef and maritime rights related to Second Thomas Shoal. China maintains a continuous CCG presence at both locations.

In January 2013, the Philippines requested that an arbitral tribunal constituted pursuant to Chapter XV of the United Nations Convention on the Law of the Sea (LOS Convention) determine that various Chinese actions in the South China Sea, including its “nine-dash line” claim, were inconsistent with China’s obligations under the LOS Convention. China has refused to participate in the arbitration. In March 2014, the Philippines filed a memorial with the arbitral tribunal setting forth its position on jurisdiction and the merits of the case.

China’s Foreign Ministry publicly rejected the submission and turned down the opportunity to file a counter-memorial, maintaining that the Philippines had agreed to resolve all South China Sea disputes through diplomatic discussions rather than third party dispute mechanisms. China’s non-participation does not stop the case from proceeding and the tribunal may schedule a hearing in 2015 and issue a decision some months thereafter. How China responds to a potential ruling from the arbitral tribunal will reflect China’s evolving approach to international maritime law.

Other areas of concern include the Luconia Shoals, roughly 60 miles north of Borneo, and Reed Bank in the South China Sea. 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 the spring of 2014, tensions between China and Vietnam spiked when China deployed and commenced operation of a State-owned exploratory hydrocarbon rig in waters disputed with Vietnam near the Paracel Islands.

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 Japanese Official View of PLAN Developments

The 2014 Japanese white paper provided the following summary description of the PLAN:³⁷⁵

The naval forces consist of three fleets—the North Sea, East Sea, and South Sea Fleets. The Chinese Navy has approximately 890 ships (including approximately 60 submarines), with a total displacement of approximately 1.42 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 introduced Kilo-class submarines from Russia and is actively constructing new types of domestic submarines in order to enhance its submarine force. Additionally, the Navy is increasing surface combatant ships with improved air defense and anti-ship attack capabilities, large landing ships, and supply ships. Also, it commissioned a large hospital ship in October 2008.

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.

Shifts in Force Structure, Equipment Composition, and Personnel

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. 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.³⁷⁶

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 PLAN has also modernized its weapon systems in a manner similar to the PLAA. 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 replaced several old patrol crafts 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.³⁷⁷

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.

Personnel policies cannot be neglected, and the PLAN has not done so. In addition to reducing its Personnel, it has 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 combination of these modernization and force development efforts is an increase in the capabilities of the PLAN. In particular, the PLAN has recently augmented its anti-surface warfare, naval air defense, and force projection capabilities.³⁷⁸ In contrast, one area in which the PLA 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. Thus, overall, the PLAN's force modernization trends are augmenting China's naval capabilities and improving the PLAN's ability to react to regional contingencies in line with the Local Wars doctrine.

Shifts in Force Structure, Personnel, and Force Size

Major shifts have occurred in PLAN force structure, personnel strength, and force size. **Figure 10.7** shows the current structure of the PLAN's fleets.

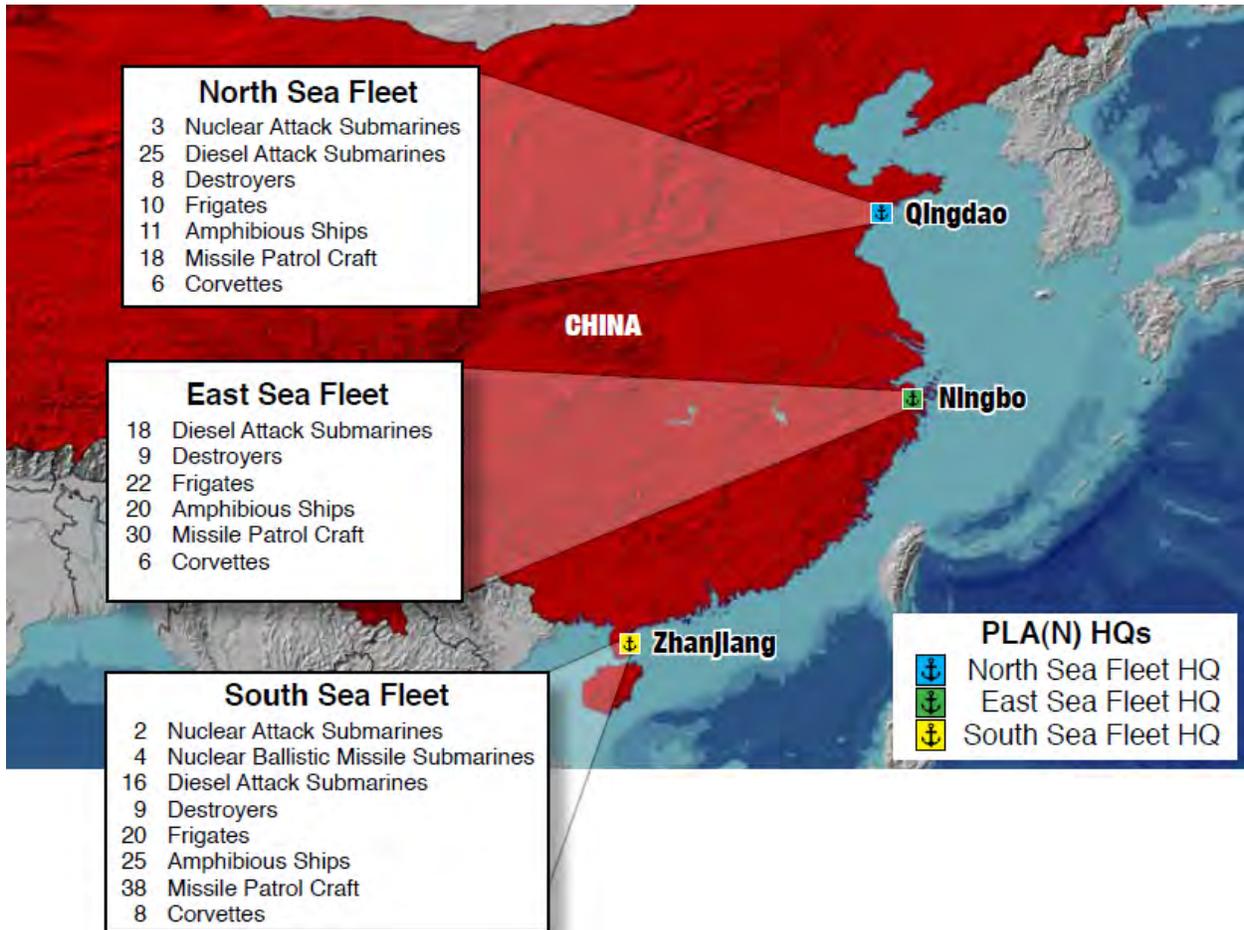
Figure 10.8 displays significant changes in the Personnel, force structure, and mix of naval assets between 1985 and 2015. The most significant change is the relative growth of major combatants in the PLAN. The period 1990-2000 saw significant reductions in coastal craft while, throughout the period, 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 changes 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 10.9 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.

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.

Figure 10.6: Size and Deployments of China's Fleets (as of 2012)



Source: ONI, *PLA Navy: New Capabilities and Missions for the 21st Century*, April 2015.

Figure 10.7: Force Structure of the PLA Navy 1985-2015-Part I

	1985	1990	1995	2000	2005	2010	2015
Personnel	350,000	295,000	300,000	260,000	295,000	255,000	235,000
Navy	350,000	260,000	260,000	220,000	255,000	215,000	200,000
Conscript	?	35,000	40,000	40,000	40,000	40,000	35,000
Reserve	?	?	?	?	?	?	?
Naval Aviation	some	25,000	25,000	26,000	26,000	26,000	26,000
Marines	some	6,000	5,000	5,000	10,000	10,000	10,000

Naval Vessels

Aircraft Carriers		1985	1990	1995	2000	2005	2010	2015
	Liaoning	0	0	0	0	0	0	1
Total		0	0	0	0	0	0	1

Submarines		1985	1990	1995	2000	2005	2010	2015
Strategic	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	1
	Jin (Type 094)	0	0	0	0	0	2	3
Tactical	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	4
	Ming (Type-035G/B)	0	0	9	15	16	16	16
	Romeo (E3SB)	79	85	34	35	36	8	0
	Song (Type-039/039G)	0	0	0	1	3	13	16
	Yuan (Type-041)	0	0	0	0	0	2	0
	Yuan (Type-039A/B)	0	0	0	0	0	0	12
W-class	21	0	0	0	0	0	0	
Total		103	93	49	65	68	65	70

		1985	1990	1995	2000	2005	2010	2015
Guided Missile Destroyers	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	2
	Luda III (Type-051G)	0	0	0	1	1	1	2
	Luda III (Type-051DT)	0	0	0	0	0	0	2
	Luyang I (Type-052B)	0	0	0	0	0	2	2
	Luyang II (Type-052C)	0	0	0	0	0	2	5
	Luyang III (Type-052D)	0	0	0	0	0	0	1
	Luzhou (Type-051C)	0	0	0	0	0	2	2
	Anshan (Soviet Gordy)	4	2	0	0	0	0	0
Total		14	19	18	20	21	28	23

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 10.7: Force Structure of the PLA Navy 1985-2015-Part II

	1985	1990	1995	2000	2005	2010	2015	
Guided Missile Frigates	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	0
	Jianghu V (Type-053H1G)	0	0	0	0	0	6	6
	Jiangwei I (Type-053H2G)	0	0	3	4	4	4	4
	Jiangwei II (Type-053H3)	0	0	0	6	8	10	10
	Jiangdong	2	2	1	0	0	0	0
	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	16
Total	22	37	37	40	42	52	47	
Patrol and Coastal Combatants	Jiangdao (Type-056)	0	0	0	0	0	0	15
	Houbei (Type-022)	0	0	0	0	0	60+	65
	Huangfeng/Hola (Type-021)	0	125	120	38	38	0	11
	Houjian (Type-037/II)	0	0	0	0	0	7	6
	Houxin (Type-037/IG)	0	0	6	20	22	16	20
	Haijui (Type-037/I)	0	10	4	2	2	2	2
	Hainan (Type-037)	28	90	96	96	88	93	48
	Haiqing (Type-037/IS)	0	0	0	20	19	25	22
	Haizui (Type-062/I)	0	0	0	11	8	15	34
	Shanghai III (Type-072/I)	305	290	300	100	79	35	
Total	333	515	526	287	256	193	223	
Mine Warfare	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	10
	Wolei	?	?	0	1	1	1	1
Total	0	0	1	8	6	19	39	

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 10.7: Force Structure of the PLA Navy 1985-2014-Part III

Amphibious Vessels		1985	1990	1995	2000	2005	2010	2015
	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	28
	Yuhai	?	0	0	12	12	13	10
	Yunshu (Type-073A)	0	0	0	0	0	10	10
	Yukan	0	3	3	7	7	7	7
	Yuting	0	0	0	8	9	10	9
	Yuting II	0	0	0	0	0	10	10
	Yunnan (Landing Craft, Utility)	0	0	0	0	0	130	120
	Yuchin (Landing Craft, Medium)	0	0	0	0	0	20	20
	Landing Craft, Air Cushion	0	0	0	0	0	0	3
	Utility Craft, Air Cushion	0	0	0	0	0	10	10
Total	0	33	33	55	46	243	241	

Logistics and Support		1985	1990	1995	2000	2005	2010	2015
	Sea-going buoy tender	0	0	0	0	0	7	7
	Cargo	23	1	14	14	14	23	24
	Miscellaneous auxiliary	0	0	0	0	0	6	4
	Icebreaker	0	3	4	4	4	4	0
	Intelligence collection vessel	0	0	0	0	0	1	1
	Space and missile tracking	0	0	0	0	0	5	5
	Oceanographic research	0	35	33	33	33	5	8
	Survey ship	0	0	0	0	0	6	5
	Hospital ship	0	0	0	2	6	1	3
	Tanker	0	3	2	2	3	5	5
	Tanker and transport	23	25	33	33	33	50	50
	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	7
	Submarine rescue	0	0	2	1	1	1	6
	Tug, ocean-going	0	23	25	25	25	51	51
	Water tanker	0	0	0	0	0	18	18
	Transport	?	17	30	30	30	0	0
	Training ship	?	1	1	1	2	2	3
Degaussing ship	0	0	0	0	0	5	5	
Total	46	110	146	157	163	205	215	

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 10.7: Force Structure of the PLA Navy 1985-2015-Part IV**Naval Aviation**

		1985	1990	1995	2000	2005	2010	2015
Bombers	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
Fighters	J-5	some	some	some	0	0	0	0
	J-6	some	some	some	250	0	0	0
	J-7/7E Fishbed (MiG-21)	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	
Fighter/Ground Attack	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	60	
Total		150	280	165	493	398	200	282

		1985	1990	1995	2000	2005	2010	2015
Anti-Submarine Aircraft	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
	Y-8J/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
	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	3	
Total		8	14	20	22	28	40	33

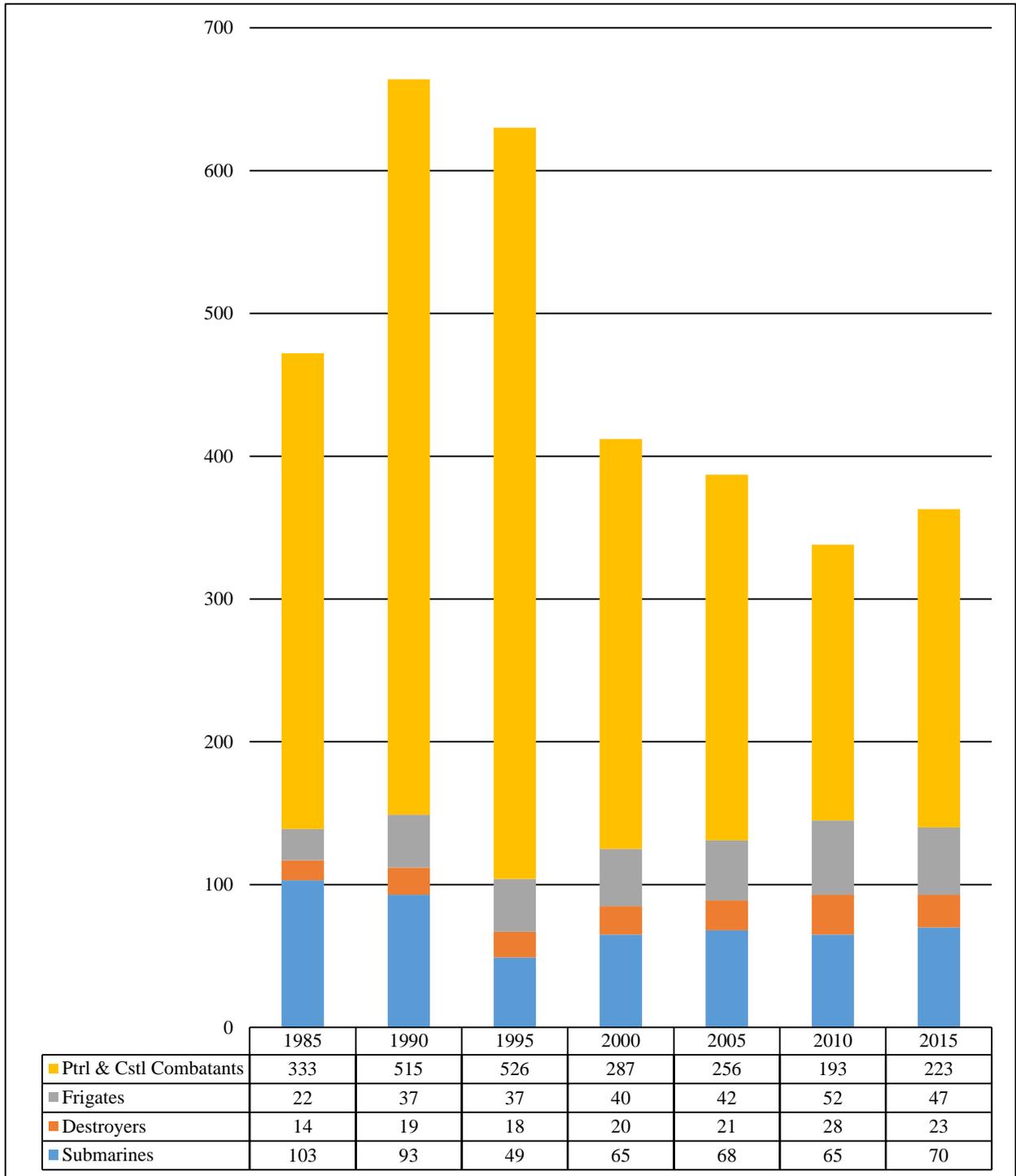
Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 10.7: Force Structure of the PLA Navy 1985-2015-Part V

		1985	1990	1995	2000	2005	2010	2015
Transport & Training	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)	?	?	0	6	6	6	4
	Y-8	?	?	some	6	0	0	0
	Yak-42	?	?	0	2	2	2	2
	JJ-5	?	?	some	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
Total		0	0	0	141	139	188	170
Helicopters	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
Total		12	68	68	47	51	86	103
Missile (Tactical)	YJ-6/C-601 (CAS-1)	?	some	some	some	some	0	0
	YJ-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-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

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 10.8: Trends in PLAN Combatant Ship Holdings



Source: IISS, *Military Balance*, 1985-2014, adapted by Tyler Duhamel at the Center for Strategic and International Studies.

PLAN Modernization

In addition to changes in force structure, 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 in its modern system holdings.

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.³⁷⁹ The PLAN has also advanced its SSN fleet with the Type-095 SSN, quieter than previous PLAN SSNs and with an ASCM capability, these six submarines will replace the aging HAN class SSN in the next several years, according to ONI.³⁸⁰

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."³⁸¹

Figure 10.10 illustrates the advances made in submarine modernization.

A CRS report by Ronald O'Rourke provides the following overview of Chinese submarine modernization:³⁸²

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.

DOD and other observers believe the Type 093 SSN design will be succeeded by a newer SSN design called the Type 095. The August 2009 ONI report includes a graph that shows the Type 095 SSN, 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 (SSBN), which not only would improve the PLA Navy'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.

China in 2011 commissioned into a service a new type of non-nuclear-powered submarine, called the Type 032 or Qing class according to Jane's Fighting Ships 2014-2015, that is about one-third larger than the Yuan-class design. Observers believe the boat may be a one-of-kind test platform; Jane's Fighting Ships 2014-2015 refers to it as an auxiliary submarine (SSA). DOD states that China is pursuing "a new joint-design and production program [with Russia] for 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:³⁸³

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. As of 2015, China has 53 diesel attack submarines contrasted to just five nuclear attack submarines. 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 published in a March 25, 2014 press report:³⁸⁴

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.³⁸⁵

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,³⁸⁶

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.

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.

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 offshore.”

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.

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, it is necessary to understand the changes in PLAN force structure and composition in order to place the PLAN's modernization into context.

The PLAN's extensive modernization efforts are mirrored by modernization of regional navies as well. Michael Raska highlights the changing threat environment posed by the increasing deployment of conventionally powered submarines in Asia-Pacific navies.³⁸⁷

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.

Figure 10.9: shows the progress made in PLAN submarine technology.

Figure 10.10: shows the ONI's assessment of the PLAN's surface-to-air missile ranges.

Figure 10.11: shows the ONI's assessment of the PLAN's surface anti-ship cruise missile ranges.

Of the PLAN's own efforts, O'Rourke describes the evolution of China's surface fleet:³⁸⁸

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:³⁸⁹

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:³⁹⁰

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 Luhu (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 shipyard⁸⁹—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.”⁹⁰ 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:³⁹¹

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 restricts 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:³⁹²

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:³⁹³

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:³⁹⁴

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:³⁹⁵

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."³⁹⁶

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 2012.³⁹⁷ 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.³⁹⁸

China's 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:³⁹⁹

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 2014 Japanese defense white paper provides another useful perspective on these developments.⁴⁰⁰

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.

Additionally, Chinese naval vessels have advanced into the Indian Ocean. Since December 2008, Chinese naval vessels have been navigating in the Indian Ocean and advanced into the coast of Somalia and in the Gulf of Aden to take part in international anti-piracy efforts. In 2010 and 2013, a Chinese Navy's hospital ship carried out "Mission Harmony," a medical service mission, to assist countries, including countries off the coast of the Indian Ocean. Furthermore, from the end of 2013 to the beginning of 2014, a Chinese naval nuclear submarine reportedly advanced into the Indian Ocean and conducted operations off the coast of Somalia and in the Gulf of Aden. In the same year, a Chinese naval vessel is said to have advanced into the Indian Ocean from the Sunda Strait and conducted trainings. As such examples demonstrate, the Chinese Navy has improved its capacity to execute operations in more distant waters, including the Indian Ocean.

...Taking into consideration such factors as the situation of the development of Chinese naval and air forces, situation of activities in sea areas and airspace, statements in defense white papers, China's geographical location and economic globalization, the maritime activities of the Chinese Navy, Air Force and other organizations are considered to have the following objectives.

The first one is to intercept operations by enemies 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 one is to develop military capabilities to deter and prevent Taiwan's independence. For example, China maintains that it will not allow any foreign intervention in solving the Taiwan issue and realizing the unification of China. In order for China to try to prevent foreign intervention into Taiwan surrounded by the sea in all directions through China's use of force, it needs to enhance its military operational capabilities at sea and airspace.

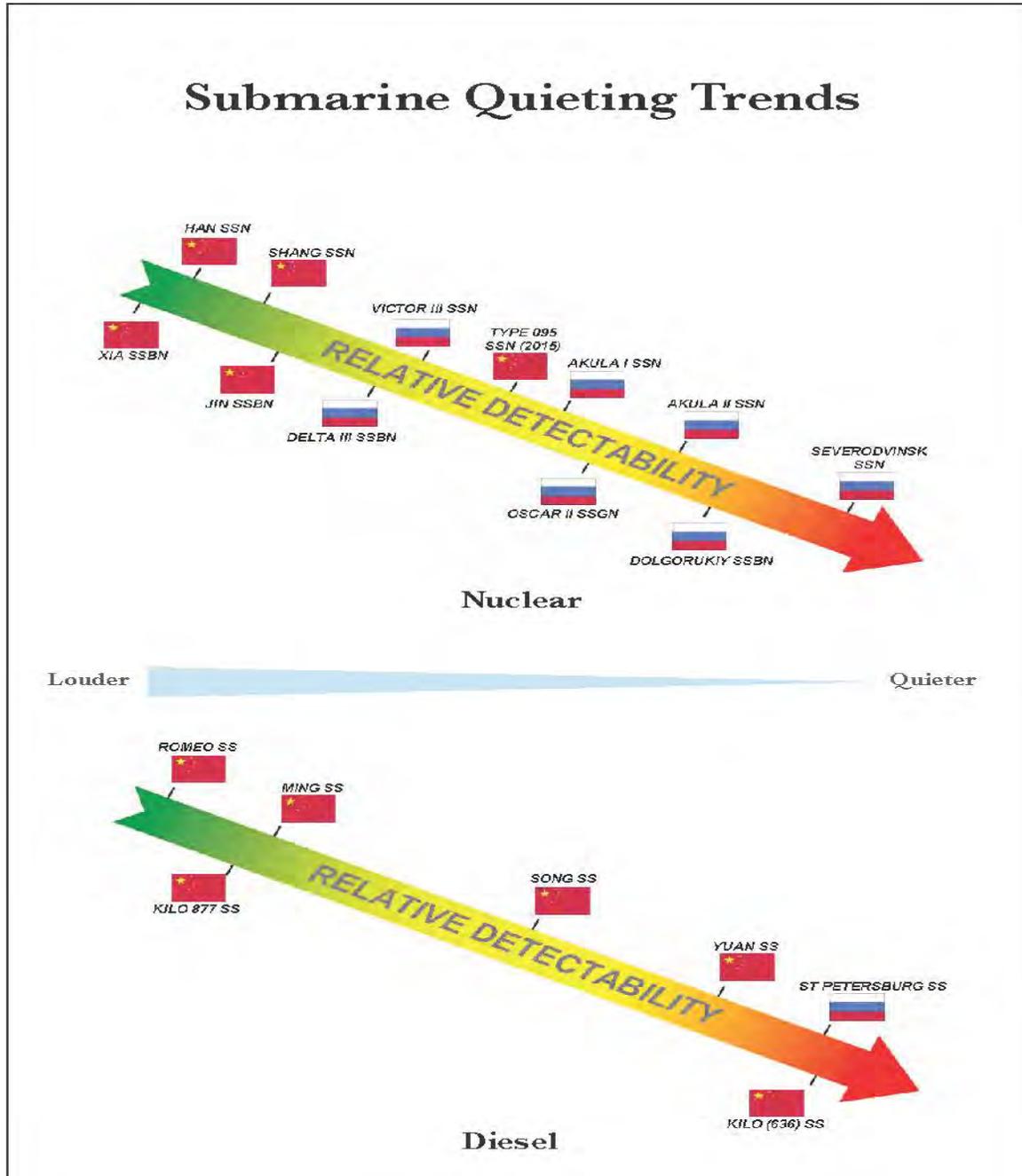
The third one is to weaken the control of other countries over the islands to which China claims territorial sovereignty, while strengthening the claim of its territorial sovereignty, through various surveillance activities and use of force in the seas and air space surrounding the islands. The fourth one 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 China Sea and South China Sea.

The fifth one 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 the Chinese Navy and Air Force will develop a capacity to defend areas going beyond the waters near China.

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

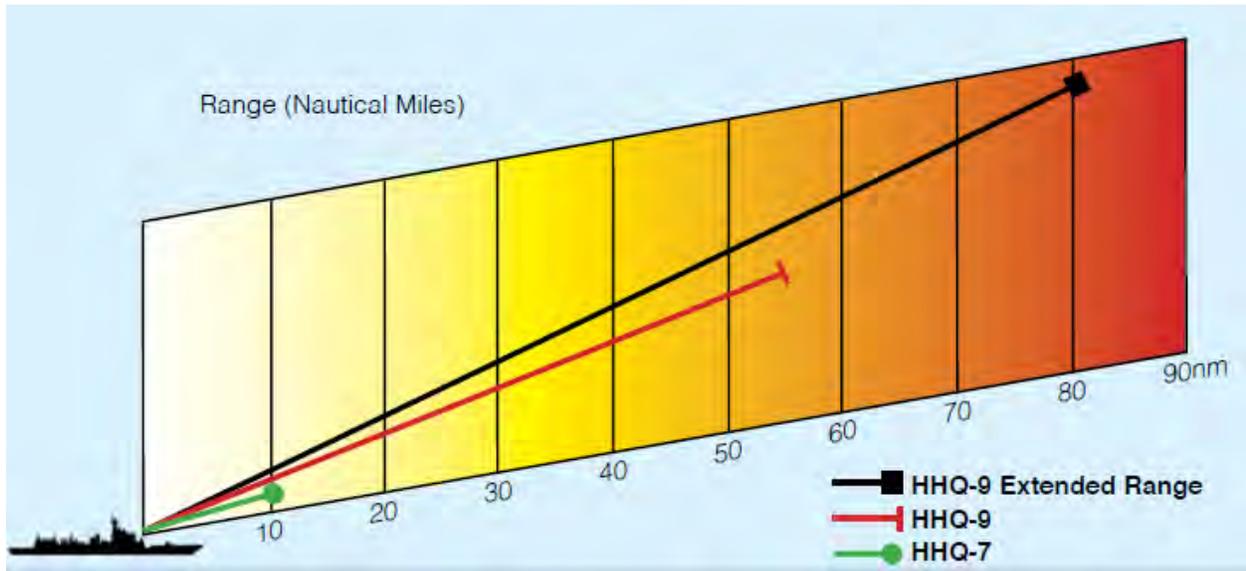
surrounding Japan, including the East China Sea and the Pacific Ocean, as well as the South China Sea and the airspaces over these seas areas. Therefore, more attention needs to be paid to activities such as operations of naval vessels as well as Navy and Air Force aircraft, various surveillance operations near Japan, developments of facilities that serve as bases for these activities, and evolution of China's interpretation regarding the legal status of coastal areas in China's exclusive economic zones.

Figure 10.9: PLAN Progress in Submarine Technology



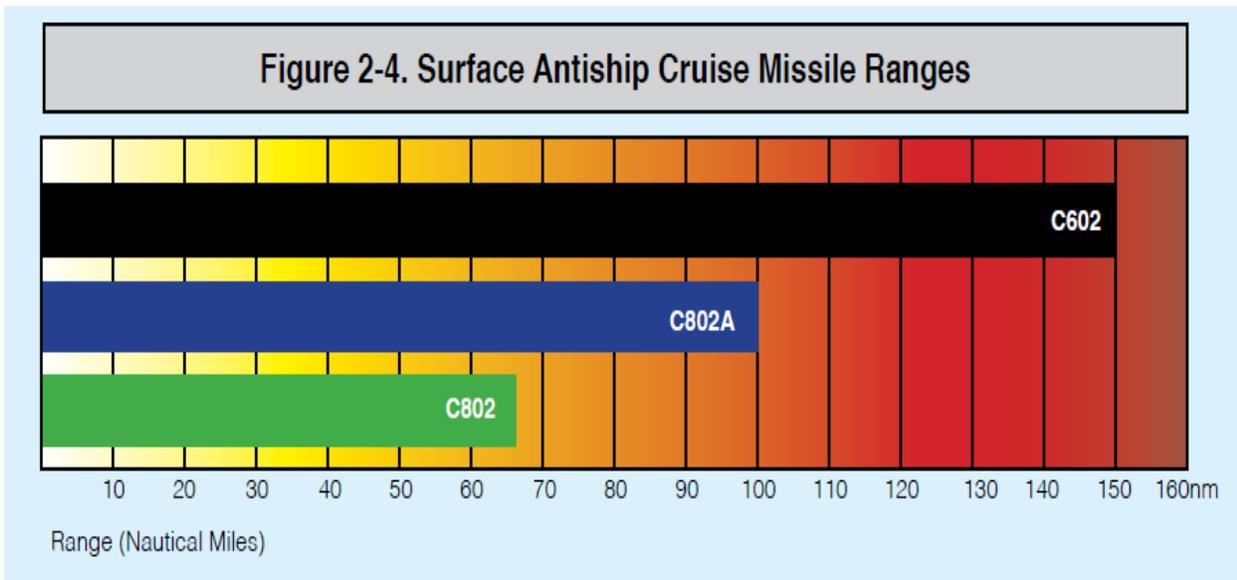
Source: Office of Naval Intelligence, *People's Liberation Army Navy: A Modern Navy with Chinese Characteristics*, 22, http://www.oni.navy.mil/Intelligence_Community/docs/china_army_navy.pdf.

Figure 10.10: PLAN Surface-to-Air Missile Ranges



Source: ONI, *PLA Navy: New Capabilities and Missions for the 21st Century*, April 2015.

Figure 10.11: PLAN Anti-ship Cruise Missile Ranges



Source: ONI, *PLA Navy: New Capabilities and Missions for the 21st Century*, April 2015.

Major Combatant Holdings

Figures 10.12 and 10.13 track the 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 10.12** indicates, the PLAN's modern major combatant inventory is larger than most of the region's navies'.⁴⁰¹

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, 2012:⁴⁰²

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.

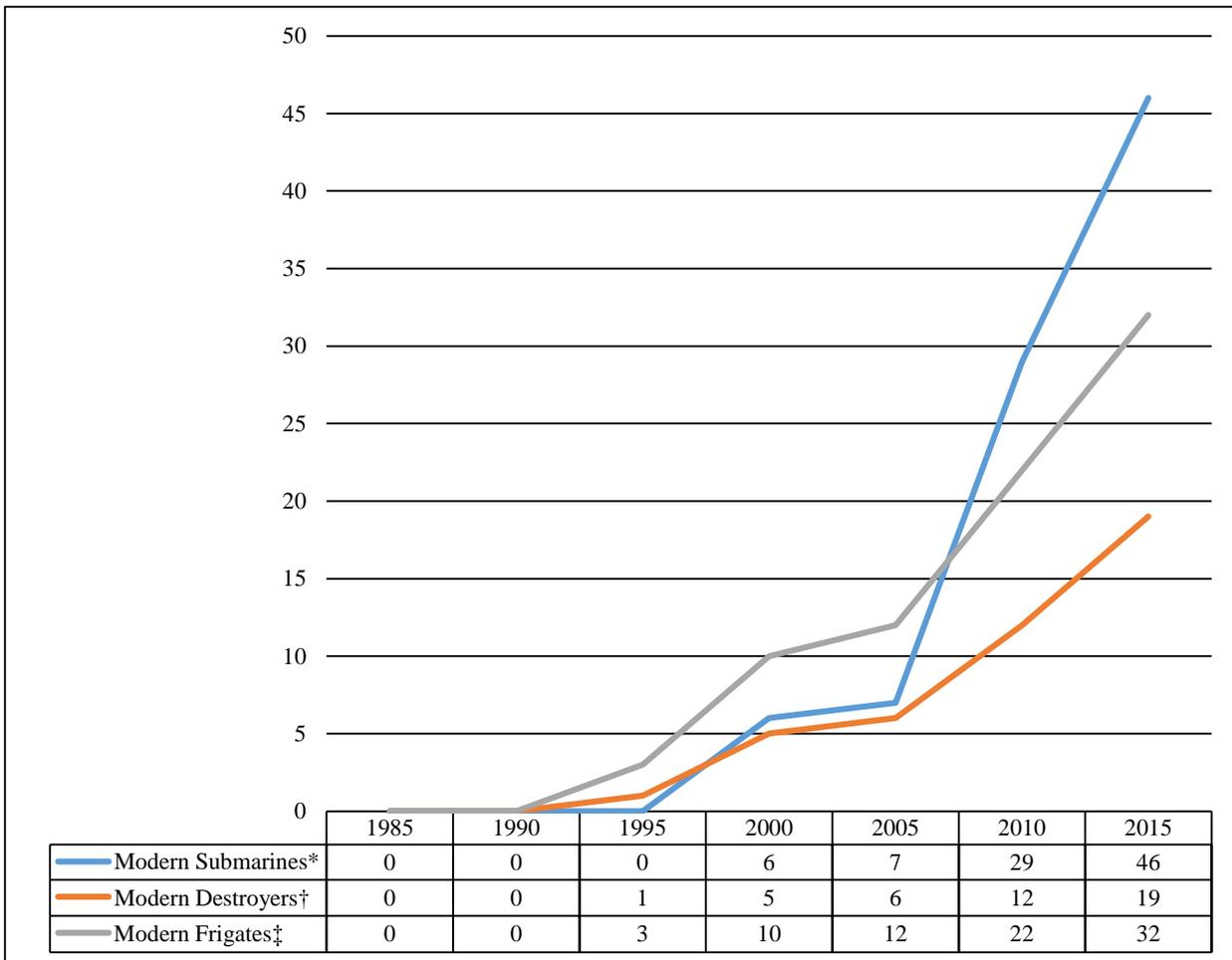
While *Liaoning* will initially serve as a training and test platform, and cannot threaten capable forces such as the U.S. Navy or the Japan Maritime Self-Defense Force, PLAN-affiliated experts advocate using its formidable symbolism and potential for future air power to deter smaller neighbors such 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 take-off and landing training on the *Liaoning* in late 2012.⁴⁰³ 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."⁴⁰⁴

Since then, the DoD reported that the *Liaoning* continued flight integration training and would not achieve a final operational capability and 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.⁴⁰⁵

Figure 10.12: PLAN Major Combatant Holdings



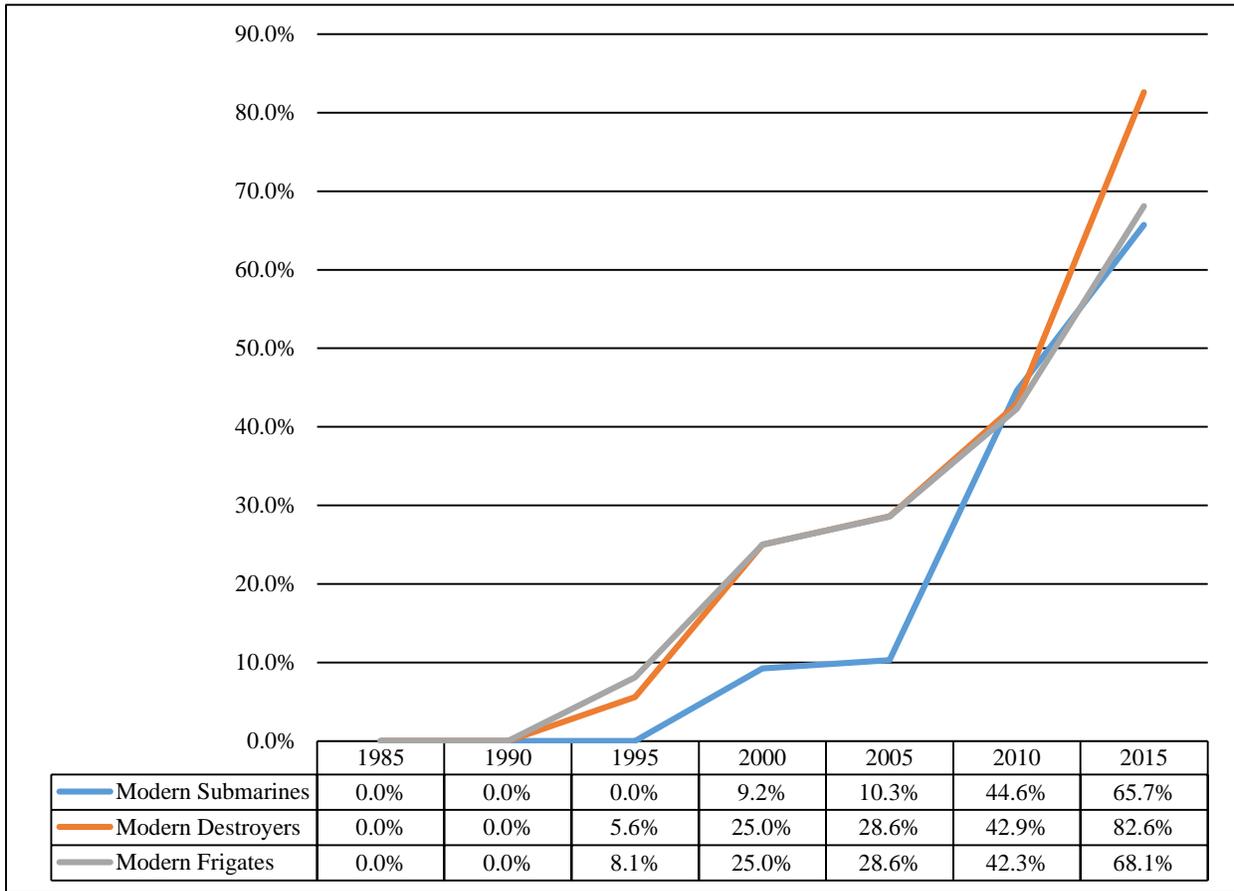
*The following systems are considered modern: *Qing* class, *Kilo* class, *Song* class (Type 039/039G), *Yuan* class (Type 039A/039B), *Shang* class (Type 093), *Jin* class (Type 094)

†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), *Luda III* class (Type 051DT), *Luda III* class (Type 051G)

‡The following systems are considered modern: *Jiangkai* class (Type 054), *Jiangkai II* class (Type 054A), *Jiangwei* class (Type 053H2G), *Jiangwei II* class (Type 053H3)

Source: IISS, *Military Balance* 1985-2015.

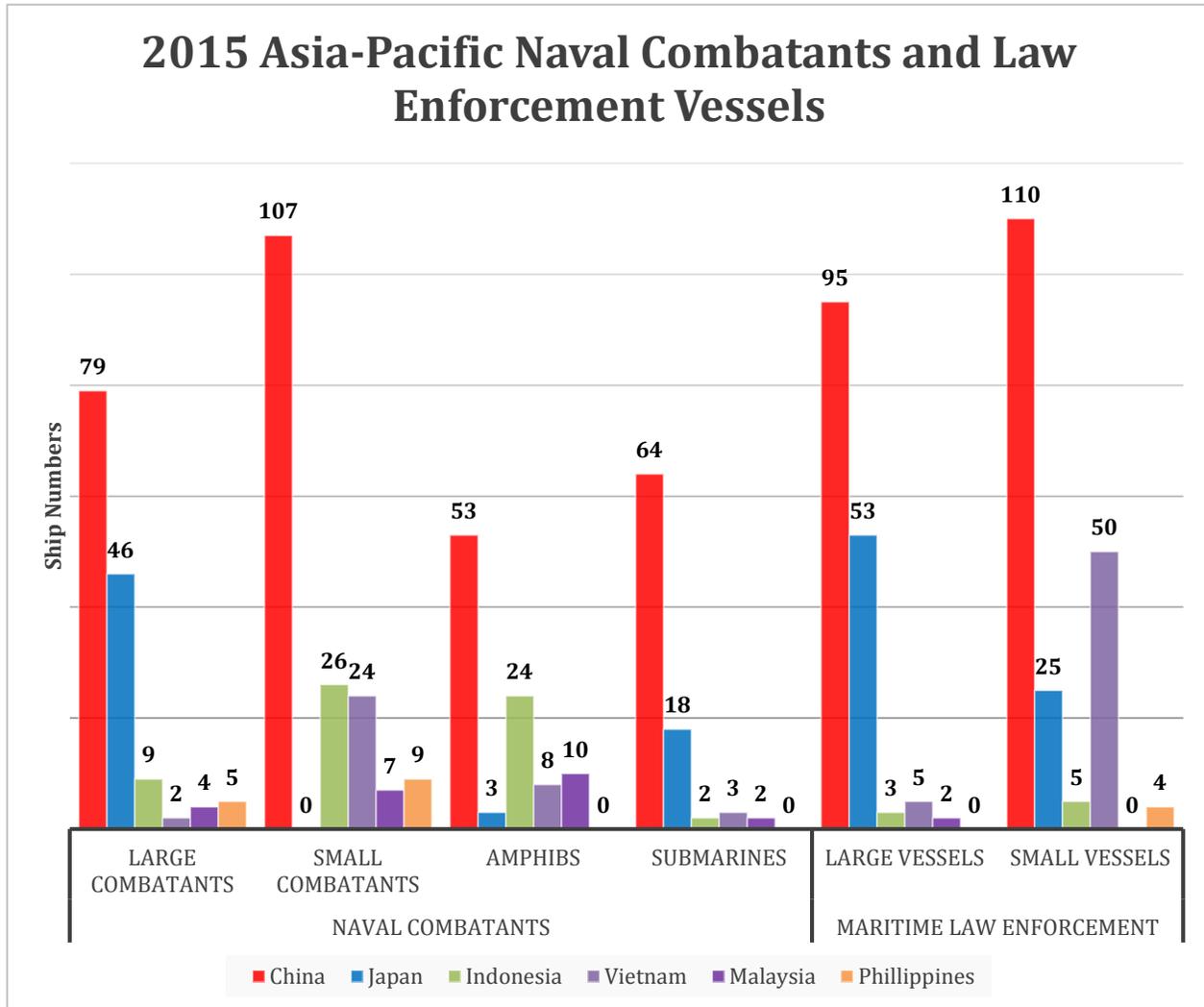
Figure 10.13: Relative PLAN Major Combatant Holdings



Source: IISS, *Military Balance* 1985-2015.

Figure 10.14 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 10.14: Asia-Pacific Naval Combatants



Source: Department of Defense, *Asia-Pacific Maritime Security Strategy* 2015. Adapted by Michael Wang at the Center for Strategic and International Studies.

Shifts in Personnel

Figure 10.15 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.

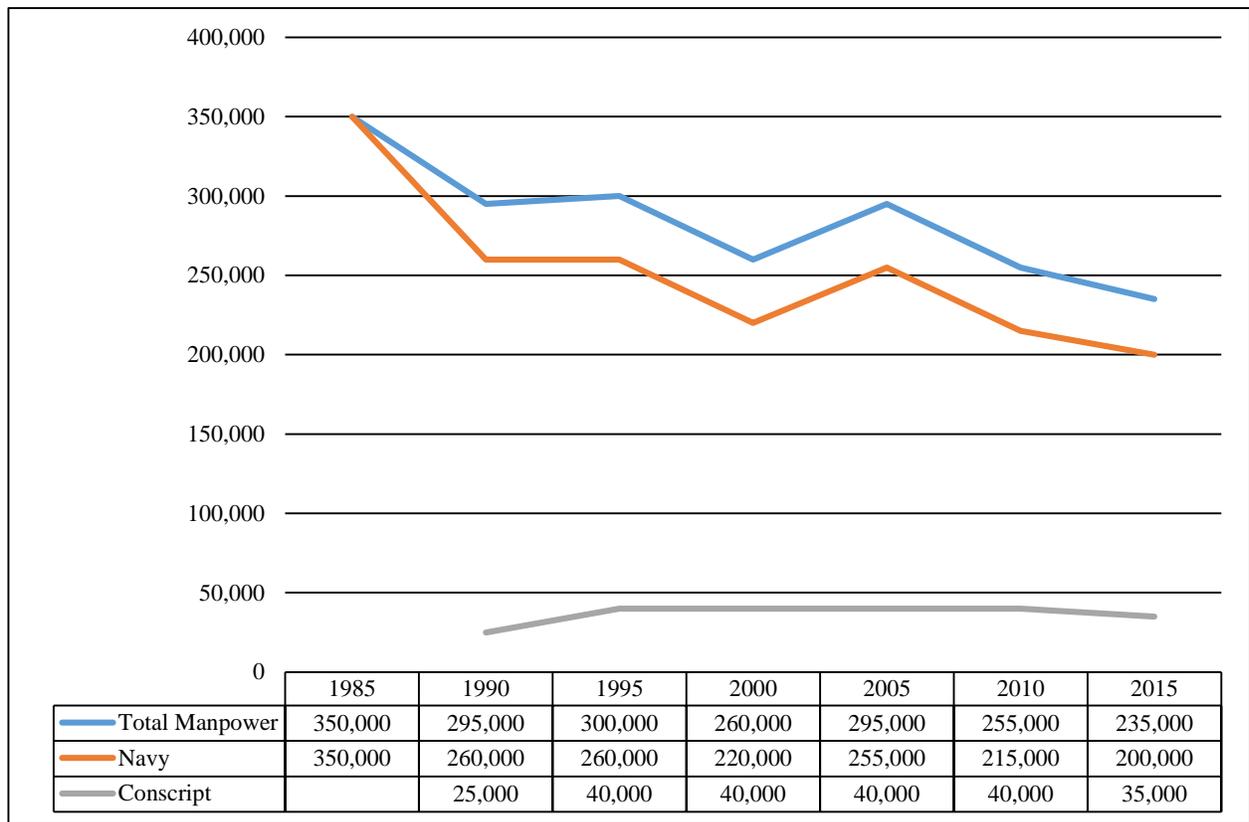
The PLAN’s efforts to develop a professional force rest on three pillars: professional NCOs, academically-qualified officers, and improved advancement and educational opportunities for currently-serving enlisted personnel. Since 1999, the PLAN has reduced the conscription obligation from four to two 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.⁴⁰⁶

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.⁴⁰⁷ Regarding opportunities for currently serving personnel, the PLAN has developed on-the-job, short-term, and on-line training programs.⁴⁰⁸

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.⁴⁰⁹

Figure 10.15: PLAN Personnel Trends



Source: IISS, *Military Balance*, 1985-2015.

The PLAN and Power Projection

The shift in PLAN force structure, the changing composition of the PLAN’s 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:⁴¹⁰

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 10.16**.

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:⁴¹¹

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.

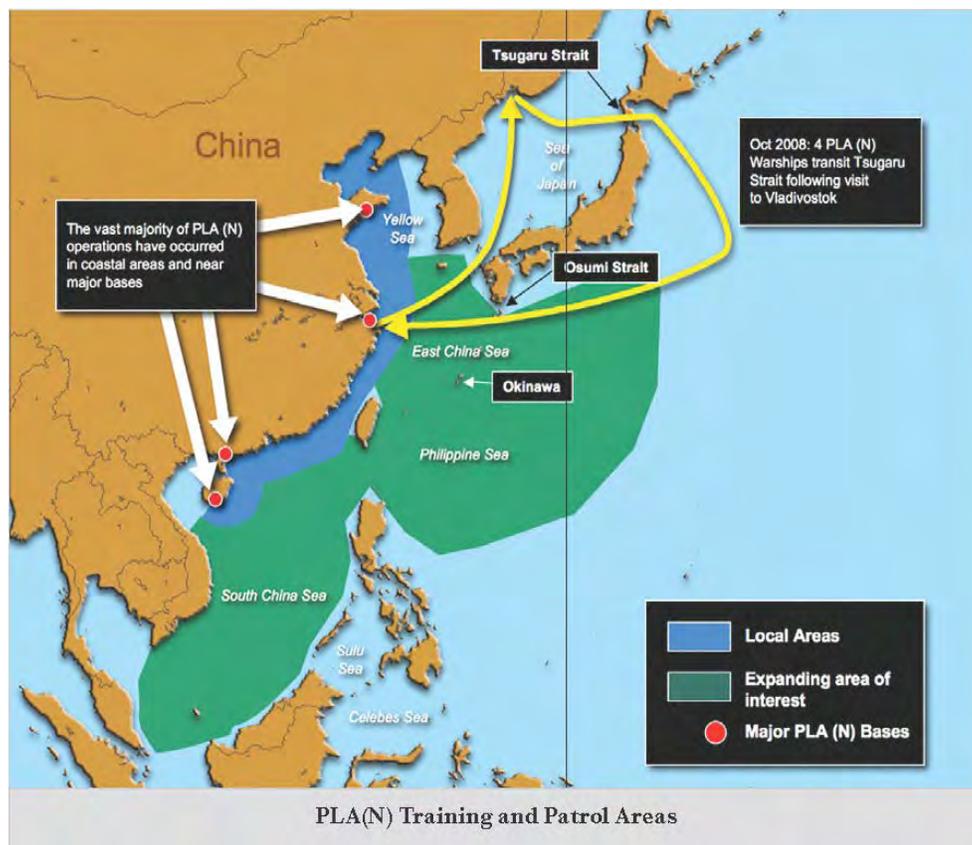
Chinese and Thai marine corps held the "Blue Strike-2010" and "Blue Strike-2012" joint training exercises. During mutual port calls and other activities, the Chinese navy also carried out bilateral or multilateral maritime exercises and training in such tasks as communications, formation movement, maritime 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 10.16: 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:⁴¹²

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 2014 Japanese defense white paper provides another useful perspective on these developments.⁴¹³

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 Chinese government vessels, in December 2008, "Haijian" vessels belonging to the State Oceanic Administration (SOA) of the Ministry of Land and Resources of China hovered and drifted inside Japan's territorial waters near the Senkaku Islands – operations which are not permitted under international law. Subsequently, in August 2011 as well as in March and July 2012, "Haijian" vessels and "Yuzheng" vessels belonging to (then) Bureau of Fisheries of the Ministry of Agriculture of China intruded into Japan's aforementioned territorial waters.

As these examples demonstrate, "Haijian" and "Yuzheng" vessels have gradually intensified their activities in Japan's territorial waters in recent years. Such activities intensified 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.

In September 2010, Japan Coast Guard patrol vessels and a Chinese fishing trawler collided in Japan's territorial sea surrounding the Senkaku Islands. In October 2012, vessels of the East Sea Fleet of the Chinese Navy and "Haijian" and "Yuzheng" 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, including handing over retired Navy vessels to the China Coast Guard that was formally launched in July 2013.

In recent years, activities by Chinese naval and air force aircraft, which appear to be activities for gathering information about Japan of some form, have been observed frequently. The number of scrambles by the JASDF against Chinese aircraft is also increasing dramatically.

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.

Additionally, Chinese naval vessels have advanced into the Indian Ocean. Since December 2008, Chinese naval vessels have been navigating in the Indian Ocean and advanced into the coast of Somalia and in the Gulf of Aden to take part in international anti-piracy efforts. In 2010 and 2013, a Chinese Navy's hospital ship carried out "Mission Harmony," a medical service mission, to assist countries, including countries off the coast of the Indian Ocean.

Furthermore, from the end of 2013 to the beginning of 2014, a Chinese naval nuclear submarine reportedly advanced into the Indian Ocean and conducted operations off the coast of Somalia and in the Gulf of Aden. In the same year, a Chinese naval vessel is said to have advanced into the Indian Ocean from the Sunda Strait and conducted trainings. As such examples demonstrate, the Chinese Navy has improved its capacity to execute operations in more distant waters, including the Indian Ocean.

Taking into consideration such factors as the situation of the development of Chinese naval and air forces, situation of activities in sea areas and airspace, statements in defense white papers, China's geographical location and economic globalization, the maritime activities of the Chinese Navy, Air Force and other organizations are considered to have the following objectives.

The first one is to intercept operations by enemies 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 one is to develop military capabilities to deter and prevent Taiwan's independence. For example, China maintains that it will not allow any foreign intervention in solving the Taiwan issue and realizing the unification of China. In order for China to try to prevent foreign intervention into Taiwan surrounded by the sea in all directions through China's use of force, it needs to enhance its military operational capabilities at sea and airspace.

The third one is to weaken the control of other countries over the islands to which China claims territorial sovereignty, while strengthening the claim of its territorial sovereignty, through various surveillance activities and use of force in the seas and air space surrounding the islands.

The fourth one 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 China Sea and South China Sea.

The fifth one 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 the Chinese Navy and Air Force will develop a capacity to defend areas going beyond the waters near China. 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 seas areas. Therefore, more attention needs to be paid to activities such as operations of naval vessels as well as 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 legal status of coastal areas in China's exclusive economic zones.

The US Reaction and the Air Sea Battle

As noted in earlier discussions of the modernization of the PLAA, these 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 air sea battle in the Pacific and Asia:⁴¹⁴

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.

In 2013, a US military report on Air-Sea Battle discussed the concept at more length:⁴¹⁵

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 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.

CHAPTER 11: PLA AIR FORCE

The PLAAF is still an air force in transition. It continues to change its force structure, as well as the procurement of modern aircraft, which has augmented the ability of the PLAAF to conduct both defensive and offensive missions, thereby increasing the PLAAF's utility to the wider PLA in the context of the Local Wars doctrine.

Since 2000, however, 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.

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.⁴¹⁶ 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."⁴¹⁷ 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.⁴¹⁸

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."⁴¹⁹

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.⁴²⁰ 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.⁴²¹

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.⁴²² 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:⁴²³

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 which 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 has 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 US Official 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 2015 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:⁴²⁴

The PLA Air Force (PLAAF) is the largest air force in Asia and the third largest in the world with more than 2,800 total aircraft (not including unmanned aerial vehicles (UAV) and 2,100 combat aircraft (including fighters, bombers, fighter-attack and attack aircraft)). The PLA Air Force is rapidly closing the gap with western air forces across a broad spectrum of capabilities from aircraft, C2, to jammers, to electronic warfare (EW), to datalinks.

The PLA Air Force continues to field increasingly modern aircraft (now about 600). Although it still operates a large number of older second- and third-generation fighters, it will likely become a majority fourth generation force within the next several years.

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. To further bolster its tactical aircraft forces, China is likely to acquire the Su-35 advanced Flanker aircraft from Russia along with its advanced IRBIS-E passive electronically scanned array radar system.

If China does procure the Su-35, the aircraft could enter service by 2018. In October 2014, Russian Deputy Prime Minister Dmitry Rogozin stated that Russia is likely to sign a contract to export 24 Su-35S fighters to China.

The 2015 DoD report continues to describe China's pursuit of fifth-generation fighter capabilities and its priority to employ stealth capabilities, which will be discussed in more detail later in this chapter. Regarding China's bomber, surface to air missile, and transport capabilities, the report states:⁴²⁵

China continues upgrading its H-6 bomber fleet (originally adapted from the late-1950s Soviet Tu-16 design) to increase operational effectiveness and lethality by integrating new stand-off weapons. China also uses a modified version of the H-6 aircraft to conduct aerial refueling operations for some of its indigenous aircraft, increasing their combat range and has received three IL-78s from Ukraine outfitted as air refuelers with negotiations for additional aircraft ongoing.

The H-6G variant, in service with the PLA Navy, has four weapons pylons that are probably for ASCMs. The PLAAF employs the H-6K variant with new turbofan engines for extended range and the capability to carry six LACMs. Modernizing the H-6 into a cruise missile carrier will give the PLA a long-range stand-off offensive air capability with precision-guided munitions.

The PLAAF possesses one of the largest forces of advanced long-range surface-to-air missile (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 Chinese operational inventories to supplement and eventually replace China's small fleet of strategic airlift assets, which currently consists of a limited number of Russian-made IL-76 aircraft. The Y-20 made its maiden flight during January 2013 and is reported to be using the same Russian engines as the IL-76. China's press reports that the Y-20 that it could be commissioned in 2016. The large transports are intended to support airborne C2, logistics, paradrop, aerial refueling, and reconnaissance operations, as well as HA/DR missions.

The 2015 report continued to describe China's Integrated Air and Missile Defense (IADS) as follows:⁴²⁶

Within 300nm of China's coast, China has credible Integrated Air and Missile Defense (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. Open source reports, including readouts from Air Show China 2014, reveal that China continues to develop and market a wide array of IADS systems 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, unmanned aerial vehicles (UAVs), helicopters, and cruise missiles, Chinese airshow displays claim that new Chinese radar developments claim to detect stealth aircraft. Chinese 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 planned development of China's fifth-generation fighter force that includes high-maneuverability, low observability, and an internal weapons bay based on the J-20 or J-31 prototypes, will bolster China's air-to-air capability. 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 next-generation aircraft, which could enter service as early as 2018, will 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 reconnaissance and strike operations. China is advancing its development and employment of UAVs. Some estimates indicate China plans to produce upwards of 41,800 land- and sea-based unmanned systems, worth about \$10.5 billion, between 2014 and 2023.

During 2013, China began incorporating its UAVs into military exercises and conducted ISR over the East China Sea with the BZK-005 UAV. In 2013, China unveiled details of four UAVs under development—the Xianglong, Yilong, Sky Saber, and Lijian—the last three of which are designed to carry precision-strike capable weapons. The Lijian, which first flew on November 21, 2013, is China's first stealthy flying wing UAV.

Another aspect of China's IADS development is the deployment of land-based air defense brigades beyond the eastern coast of China and improving the air defense of China's naval fleets in the ECS and SCS. This is part of China's longstanding effort to expand its capabilities from focusing on territorial defense to supporting both defensive and offensive operations. (p. 67)

The DoD 2015 report also 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 2015*.

Figure 11.2: The Size of the PLAAF in 2015

Aircraft	Total
Fighters	1,700
Bombers/Attack	400
Transport	475
Special Mission Aircraft	115

Note: The PLA Air Force and Navy have approximately 2,100 operational combat aircraft. These consist of air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 1,450 older fighters, bombers, and trainers are employed for training and research and development. The two air arms 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. Currently, 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.

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2015* April 2015, 80.

The Japanese Official Views of PLAAF Developments

The 2014 Japanese defense white paper provided the following summary description of the PLAAF:⁴²⁷

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:⁴²⁸

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:⁴²⁹

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. Some aspects important to note are the significant drop in fighter aircraft numbers over the period, the 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, 1985-2015 – Part I

FIXED WING								
Bombers		1985	1990	1995	2000	2005	2010	2015
	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	106
	Possibly with YJ-63 missiles	0	0	0	0	20	some	some
Total	620	395+	470	320	180	132	106	

Fighters		1985	1990	1995	2000	2005	2010	2015
	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-7IIIH/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
	J-10	0	0	0	0	0	120+	0
Su-27SK	0	0	24	65	78	some	43	
Su-27UBK	0	0	0	0	0	0	32	
J-11	0	0	0	0	0	116	95	
Total	3630	3900	4024	2515	986	980	842	

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part II

		1985	1990	1995	2000	2005	2010	2015
Fighter, Ground Attack	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/D/E	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	0	78
	J-10A/S	0	0	0	0	0	0	192
	J-11B/BS	0	0	0	0	0	18+	110
	Su-30MKK	0	0	0	40 (delivered)	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
	JZ-8 Finback	0	0	0	0	20	24	24
JZ-8F Finback	0	0	0	0	0	24	24	
Y-8H1	0	0	0	0	0	3	3	
Total		0	790	790	1940	886	388	744
Tanker		1985	1990	1995	2000	2005	2010	2015
	HY-6	0	0	0	6	10	0	0
	H-6U	0	0	0	0	0	10	10
	Il-78 Midas	0	0	0	0	0	0	1
Total		0	0	0	6	10	10	11
Transport	Bae Trident 1E/2E	18	18	18	0	0	0	0
	An-12	some	25	25 (some tankers)	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
	Il-14	some	30	30	0	0	0	0
	Il-18	some	10	10	2	2	2	0
	Il-76MD/TD Candid	0	0	10	14	20	18	16
	Li-2	some	50	50	0	0	0	0
	Tu-154/Tu-154M	0	0	0	15	15	17	14
	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-7H (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	1
	EW	0	0	0	0	0	10	0
	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	453	460	475	515	316	342

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part III

		1985	1990	1995	2000	2005	2010	2015
Airborne Early Warning & Control	KJ-200	0	0	0	0	0	4	4
	KJ-2000	0	0	0	0	0	4	4
Command & Control	B-737-200	0	0	0	0	0	0	2
	Y-8T	0	0	0	0	0	0	3
Training	CJ-5	some	some	some	0	0	0	0
	CJ-6/6A/6B	some	some	some	0	0	400	400
	HJ-5	some	some	some	some	some	0	0
	J-2	0	some	some	0	0	0	0
	JJ-2	0	some	some	0	0	0	0
	JJ-4	some	some	some	0	0	0	0
	JJ-5	some	some	some	0	0	0	0
	JJ-6 (MiG-19UTI)	some	some	some	some	0	0	0
	JJ-7 Mongol A	0	0	0	some	50+	50	200
	JL-8 (K-8)	0	0	0	some	8+	40	350
PT-6 (CJ-6)	0	0	0	some	0	0	0	
Su-27UBK	0	0	0	0	0	32		
Total		some	some	some	some	58+	530	963

Rotary Wing								
		1985	1990	1995	2000	2005	2010	2015
Multi-Role	Z-9 (AS-365N Dauphin 2)	some	10	50	30	20	20	20
	Mi-17-V5	0	0	0	0	0	0	2
Total		some	10	50	30	20	20	22
Transport		1985	1990	1995	2000	2005	2010	2015
	S-70C-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
Bell 214	0	4	4	4	4	4	0	
Total		some	364	436	140	60	60+	28
UAV's		1985	1990	1995	2000	2005	2010	2015
	CH-1 <i>Chang Hong</i>	0	0	0	some	some	some	some
	<i>Chang Kong 1</i>	0	0	0	0	0	some	some
	BQM-32 <i>Firebee</i>	0	0	0	0	0	some	1
	<i>Gongji</i>	0	0	0	0	0	0	4
Harpy	0	0	0	0	0	some	some	
Total		0	0	0	0	0	some	5+

Source: IISS *Military Balance*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 11.3: Force Structure of the PLAAF, 1985-2015 – Part IV

		1985	1990	1995	2000	2005	2010	2015
Surface-Based Air Defense Missiles	HQ-2 (SA-2)/HQ-2A/2B(A)	0	some	some	500	500	300	300
	HQ-61	0	some	some	0	0	0	0
	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-300PMU1 (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	740	584	600	600
AA Guns		1985	1990	1995	2000	2005	2010	2015
	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
Air-to-Air and Air-to-Ground Combat Missiles		1985	1990	1995	2000	2005	2010	2015
	ASMs/LACM	0	some	some	some	some	some	some
	HY-2	0	0	0	some	0	0	0
	HY-4	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-31A/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 expected	some	some
	YJ-81K	0	0	0	some	0	0	0
	KD/YJ-88	0	0	0	0	0	some	some
	YJ-91 (X-31 II)	0	0	0	0	0	some	some
	CJ-10	0	0	0	0	0	0	0
	AAM/ARH	0	0	0	600+	4,500+	some	some
	R-77/AA-12 Adder	some	some	some	100 on order for Su-30	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*, 1985-2015, and reporting by IHS Janes. Adapted by Anthony H. Cordesman and Steve Colley 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 indicators that are best observed visually. 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.

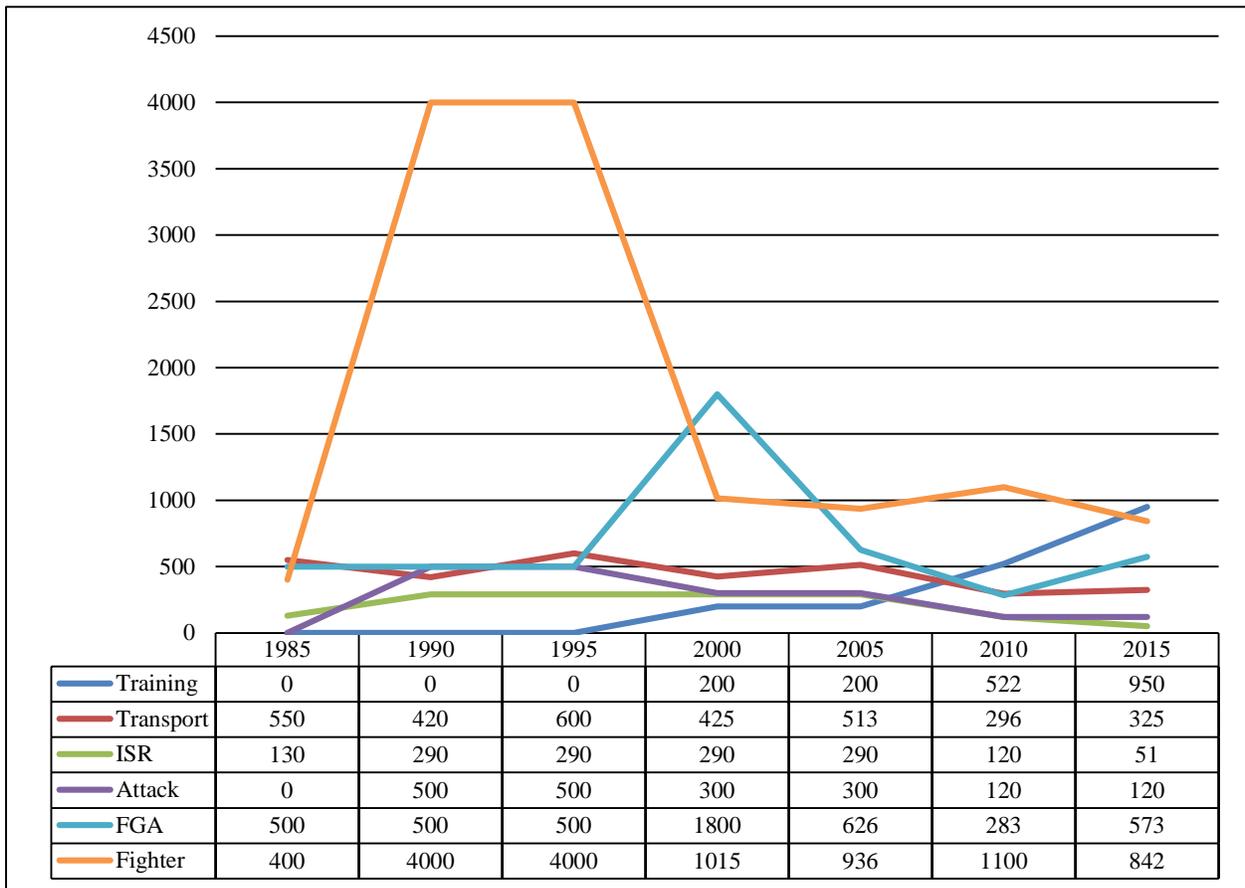
In addition to the previously-described changes in the numbers of fighter-interceptor, fighter-ground attack, transport, and training aircraft, changes in the other categories also have significance.

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 which will give the PLA a stand-off offensive air capability to use against distant targets.⁴³⁰

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.

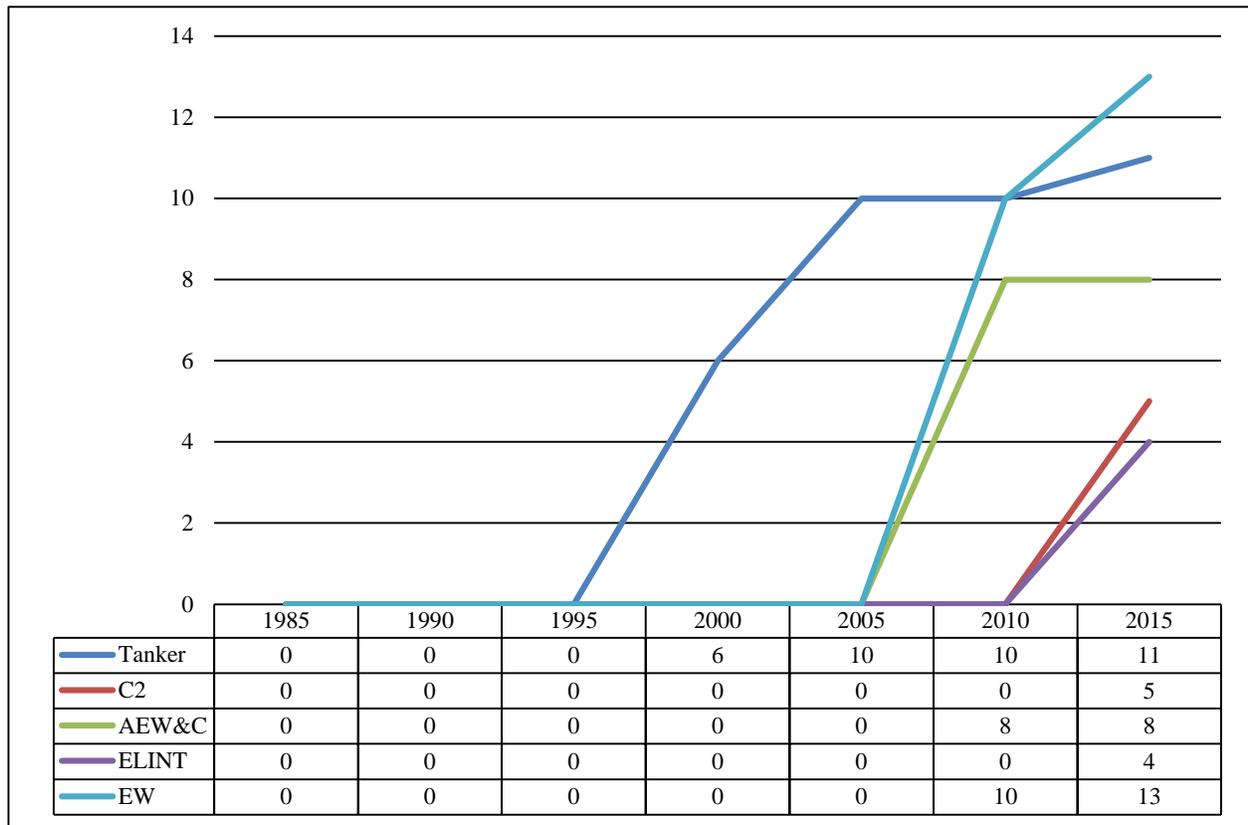
Some American experts argue that the small number of tankers, EW, ELINT, AEW&C, and C2 aircraft indicates two things: first, that the PLAAF still does not function as effectively as the Western or Russian air forces, and also that the PLAAF is focusing on planting the seeds of a broader modernization 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, 1985-2015



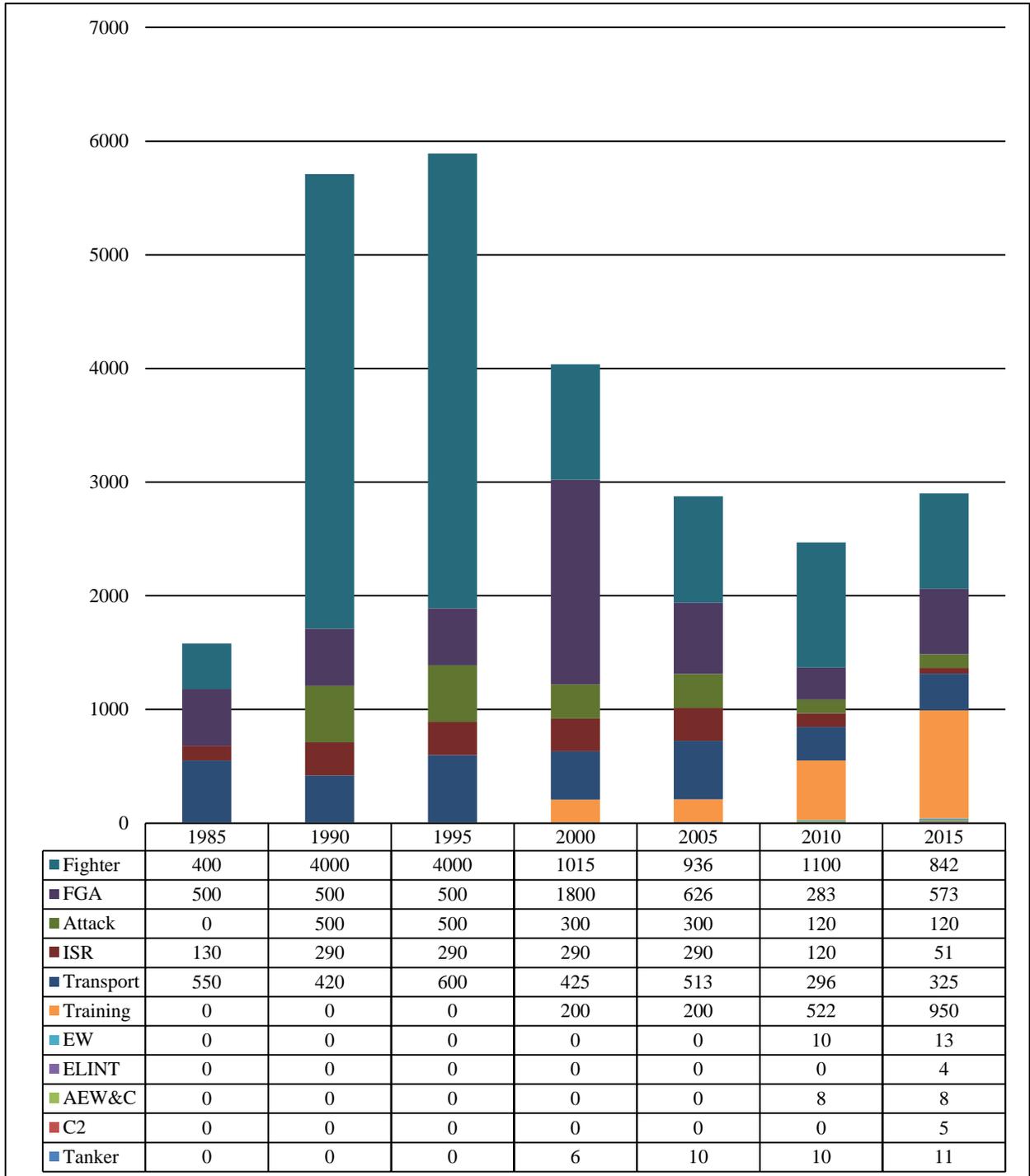
Source: IISS, *Military Balance*, 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 11.5: Historical PLAAF Force Structure, 1985-2014



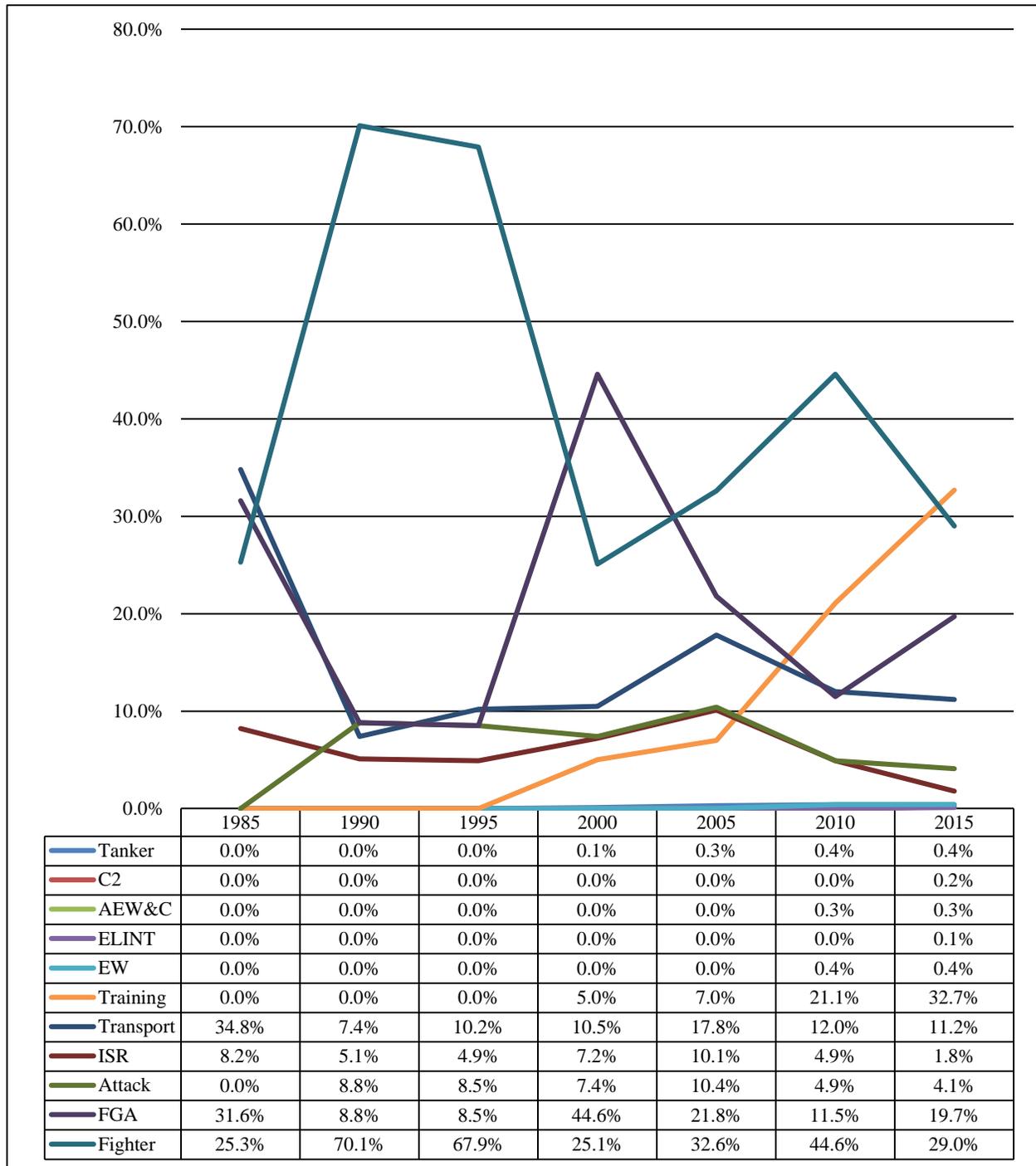
Source: IISS, *Military Balance*, 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 11.6: Historical Trend PLAAF Numbers by Key Missions Area, 1985-2014



Source: IISS, *Military Balance*, 1985-2015, adapted by Anthony H. Cordesman and Steve Colley 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 Steve Colley at the Center for Strategic and International Studies.

Key Aspects of Equipment Modernization

While 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 PLAAF combat power; relative to 2000. The PLAAF is now a decisively more modern force and its combat power has improved as a consequence.

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)

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 2015 DoD report on Chinese military power described China's A2/AD capabilities:⁴³¹

As China modernizes its military and prepares for various contingencies, it continues to develop capabilities that serve to specifically 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 Chinese capabilities as anti-access/area-denial (A2/AD), though China does not specifically refer to them using this term.

China's military modernization plan includes the development of capabilities to attack, at very long ranges, adversary forces that might deploy or operate within the western Pacific 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."

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.⁴³² 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, 2011:⁴³³

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 a year later 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.⁴³⁴

According to the IISS:⁴³⁵

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 optimised to minimise 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 a short timeline of PLA employment of low-observable technology in 2013:⁴³⁶

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:⁴³⁷

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 also 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.⁴³⁸

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 and fifth generation fighters:⁴³⁹

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.⁴⁴⁰

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.⁴⁴¹

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.⁴⁴²

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.⁴⁴³

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.”⁴⁴⁴

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.⁴⁴⁵

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 2013.⁴⁴⁶ 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.⁴⁴⁷

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:⁴⁴⁸

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 2017.⁴⁴⁹

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 or fighter bombers, the modern portion of the PLAAF outnumbers 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.

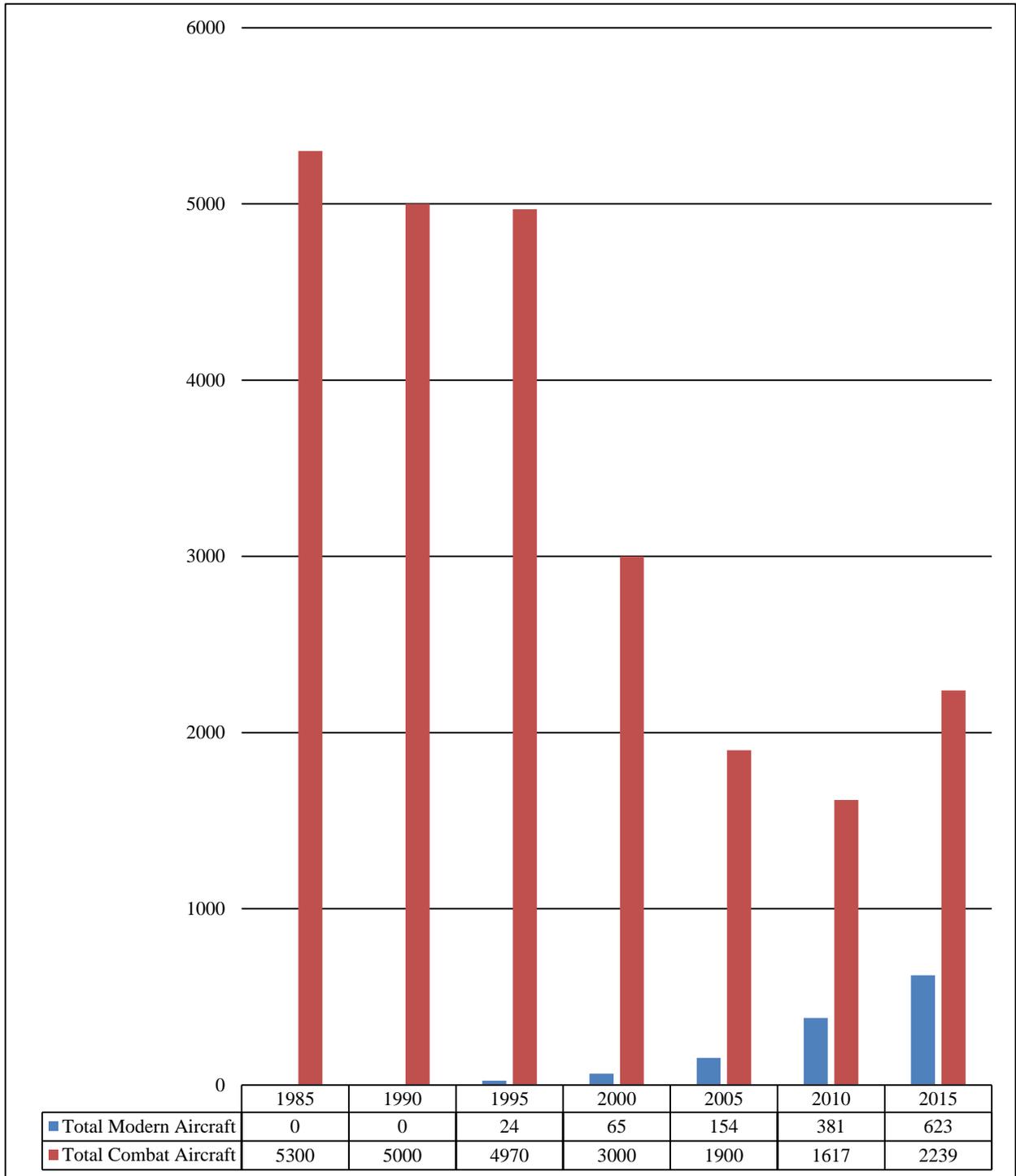
Figure 11.10 tracks the percentage of the PLAAF that is considered modern from 1985 to place these modernization trends into better perspective and help the observer see concurrent changes in force composition and capability. The graph demonstrates the rapid modernization of the PLAAF since the year 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.

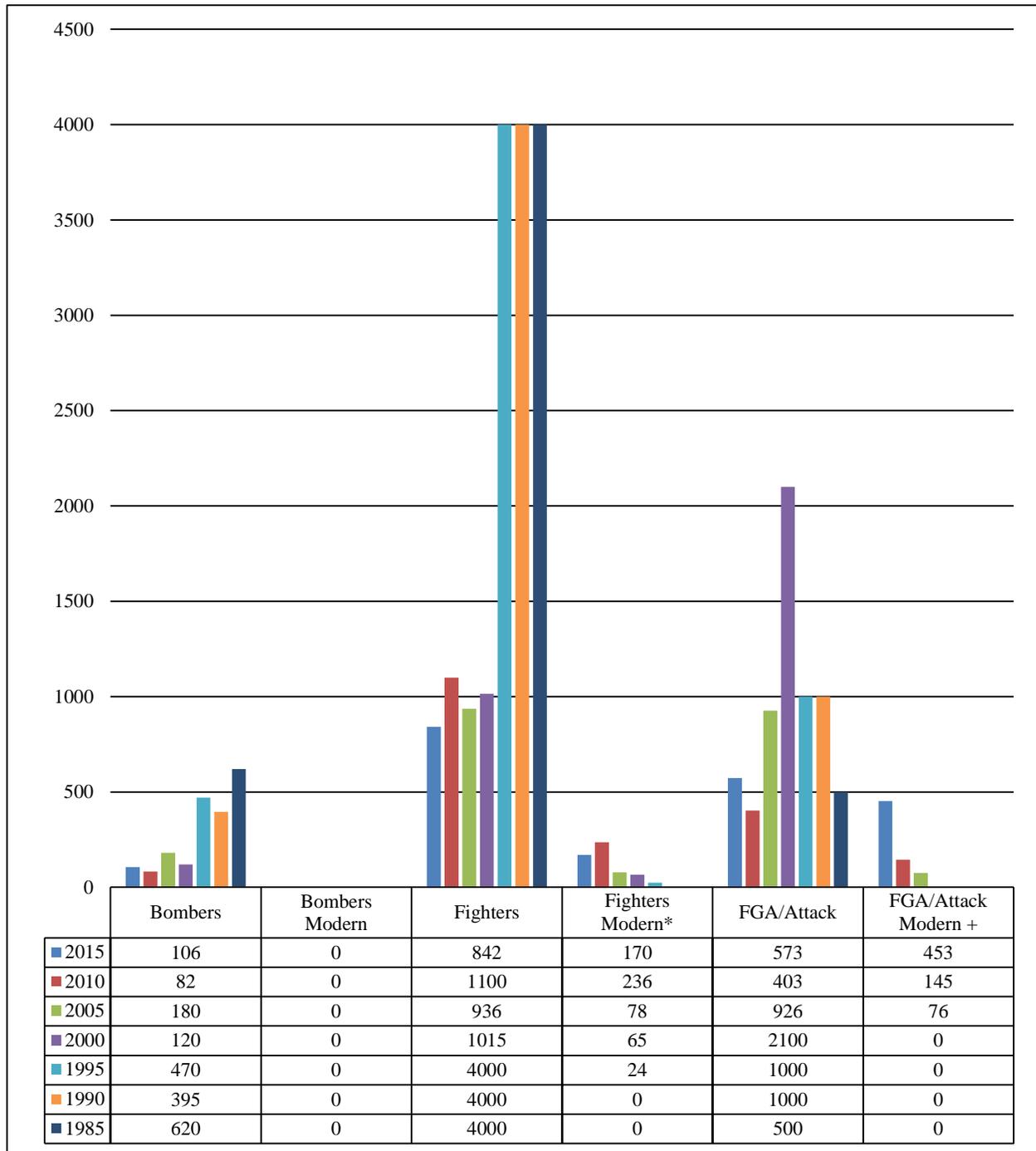
Figure 11.8: Total Versus Modern Aircraft in the PLAAF



*The following systems are considered modern: J-10, J-10A, J-10S, J-11, J-11B, J-11BS, Su-27SK, Su-27UBK, Su-30MKK

Source: IISS, *Military Balance* 1985-2015.

Figure 11.9: Modern Versus Total PLAAF Aircraft by Major Mission Type

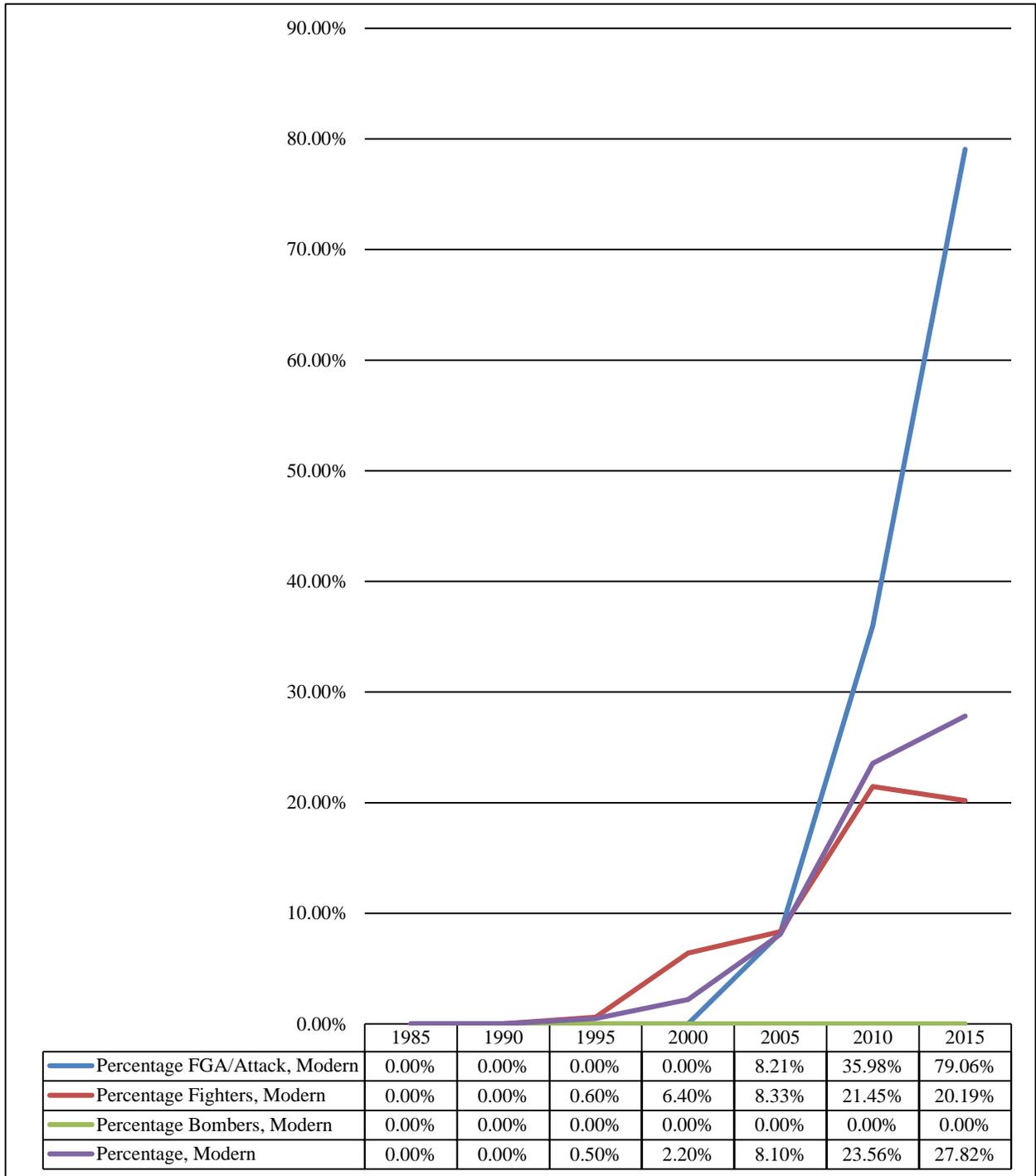


*The following aircraft fall into this category: J-11, Su-27SK, Su-27UBK

†The following aircraft fall into this category: J-10, J-10A, J-10S, J-11B, J-11BS, Su-30MKK

Source: IISS, *Military Balance* 1985-2015.

Figure 11.10: Percentage of Modern PLAAF Aircraft



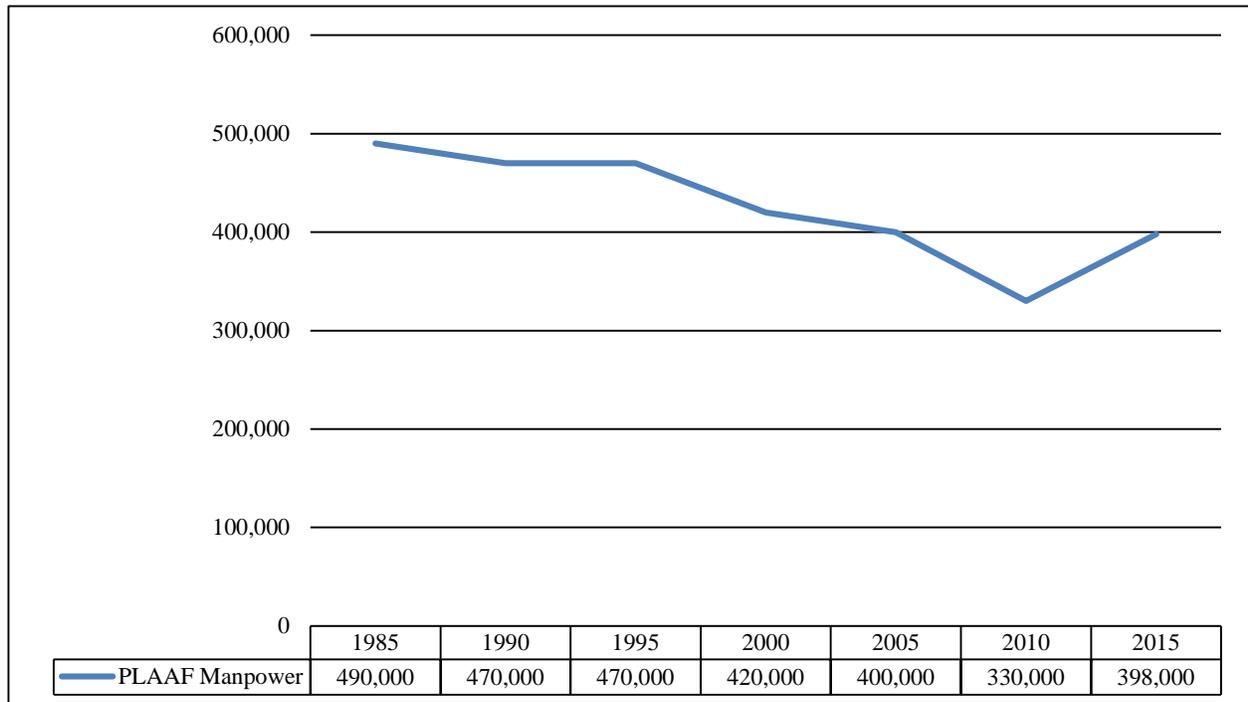
Note: “Percentage Modern” assesses only combat capable aircraft

Source: IISS, *Military Balance* 1985-2015.

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* 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

CHAPTER 12: THE PLA SECOND ARTILLERY FORCE AND DEVELOPING SPACE CAPABILITIES

Since 1985, the Chinese missile forces, which is under the command of the Second Artillery Force (SAF) or Second Artillery Corps (SAC) – has changed strikingly in character. It has 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.

According to the US-China Economic and Security Review Commission, the SAF “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.”⁴⁵⁰

The SAF’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 SAF 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 made during the 1980s that fundamentally altered the SAF’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.

Three 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

SAF Strategy and Developments

China does have a declared strategy for using its missile forces. During the 1980s, the CMC ordered the SAF 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 SAF to maintain both a conventional strike capability and augmented security for its nuclear deterrent.

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 of the most detailed public descriptions of China's strategy and goals for SAF:⁴⁵¹

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 SAF refers to nuclear counter-attack and nuclear deterrence operations.

The requirements placed on the SAF by the new service strategy had significant implications for its force structure, equipment composition, and personnel policies. In the mid-1980s, the SAF was a force comprised mostly of medium- and intermediate-range nuclear and atomic weapons. The SAF 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:⁴⁵²

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 SAF's dual deterrence and dual operations strategy easily fit into the construct of the Local Wars concept the PLA had adopted in 1993, and its emphasis on developing a conventional strike capability fit in with the Local Wars requirements for long-range precision strikes.

As a result, the SAF 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 SAF is described as being capable of conducting independent operations if necessary.

As is the case with the other key elements of PLAS forces, improvements in the realism of training appear to reflect the SAF's ability to conduct joint and independent operations. In addition to training exercises in conjunction with other services across multiple military regions, the SAF has practiced operating under harsh conditions, which may describe contingencies such as loss of communication with the command chain, constrained mobility, and electronic attacks.⁴⁵³

China does not have a clear separation between the assets of the conventional and nuclear assets of the SAF. 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."⁴⁵⁴

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:

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.⁴⁵⁵

The SAF 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 adjust nuclear policy.⁴⁵⁶ Analysts are concerned that some of these actions can be easily misinterpreted as preparation for an attack, potentially sparking an unwanted conflict.⁴⁵⁷

SAF Strategy

China's recent strategy papers have reaffirmed these trends in the SAF, and 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 SAF, provides more details available through open sources than the 2015 defense white paper. It described China's 2013 strategy for building and developing the SAF as follows,⁴⁵⁸

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 SAF will strengthen its capabilities and remain vigilant in peacetime. The most extensive portion of the 2015 paper referring the SAF was limited to the following statement,⁴⁵⁹

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 did further explain SAF force building in 2015 by stating,⁴⁶⁰

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 the nuclear capabilities discussed in the next chapter, and they also have a major impact on its power projection capabilities and the ongoing improvements in its naval and air forces discussed earlier. The SAF'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 21st century. However, the SAF's modernization and force development is an ongoing process, one that will likely continue into the near future.

The SAF's equipment procurement policies are in line with the Local Wars concept, although they give China and the PLA many other options. The SAF 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 SAF's conventional missile systems are increasing in accuracy, thus augmenting the potency of a hypothetical SAF long-range precision strike. In addition, the nuclear element of the SAF's dual mission is enjoying similar progress, although the nuclear deterrent is lagging behind the conventional force in its development of a solid-fueled, mobile forces – China's nuclear deterrent posture still partially relies on fixed, liquid-fueled missiles.

The SAF's modernization and force development is not merely an issue of developing new missiles. The SAF 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 SAF 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 SAF's missile launcher arsenal.

The SAF is currently modernizing and developing new forces with new weapons systems like the DF-21D ASBM, Anti-Satellite missiles, and conventional DF-21C. At the operational level, some reports also indicate that the SAF has built tunnel network with a total length of different tunnels

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.⁴⁶¹

Moreover, the forces with the greatest precision, 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.

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 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.⁴⁶² This assessment summarized Chinese missile developments as follows:⁴⁶³

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 2015 edition of the DoD report on *Military and Security Developments Involving the People's Republic of China*, and the *2014 Report to Congress of the US-China Economic Security Review Commission*, describe the current structure and trends in the SAF in some detail.

The US summarized Chinese missile developments in its 2015 DoD report as follows:⁴⁶⁴

The Second Artillery Force controls China's land-based nuclear and conventional ballistic missiles. It is developing and testing several new classes and variants of offensive missiles, including hypersonic glide vehicles; forming additional missile units; upgrading older missile systems; and developing methods to counter ballistic missile defenses.

The Second Artillery Force possesses at least 1,200 short-range ballistic missiles (SRBMs) in its inventory. China is increasing the lethality of its conventional missile force by fielding a new ballistic missile, the CSS-11 (DF-16), which possesses a range of 800-1,000 km. The CSS-11, coupled with the already deployed conventional variant of the CSS-5 (DF-21) medium-range ballistic missile (MRBM), will improve China's ability to strike not only Taiwan, but other regional targets.

The 2015 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.⁴⁶⁵

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 in the western Pacific Ocean.

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. China's ICBM arsenal currently consists of 50-60 ICBMs, including the silo-based CSS-4 Mod 2 and multiple independently-targetable re-entry vehicle (MIRV)-equipped Mod 3 (DF-5); 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), possibly capable of carrying MIRVs.

The 2015 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, described the warheads involved and their lethality, or describe missile reliability.⁴⁶⁶

Short-Range Ballistic Missiles (Less than 1,000 km): 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.

Medium-Range Ballistic Missiles (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 (3,000-5,500 km): The PLA is developing a conventional, road mobile IRBM, which increases its capability for near-precision strike out to the second island chain. The PLA Navy also is improving its over-the-horizon (OTH) targeting capability with sky wave and surface wave 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 anti-ship ballistic missiles).

Land-Attack Cruise Missiles: The PLA continues to field air- and ground-launched land-attack cruise missiles (LACM) for stand-off, precision strikes. Air-launched cruise missiles include the YJ-63, KD-88, and the CJ-20 (air-launched version of the CJ-10 ground launched cruise missile that also remains fielded in the Second Artillery Force). China recently adapted the KD-88 LACM, with an advertised range of 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 (ASMs) 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 GPS-guided munitions such as the FT-5 and LS-6 that are similar to the U.S. Joint Direct Attack Munitions (JDAM) to UAVs.

Anti-Ship Cruise Missiles: The PLA Navy 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 twelve Russian-built KILO SS. In addition, PLA Navy 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 Navy. 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.

Anti-Radiation Weapons: China is starting to integrate an indigenous version of the Russian Kh-31P (AS-17), known as the YJ-91, into its fighter-bomber force. China may have developed an air-to-air version for use against airborne warning and control system (AWACS) and tanker aircraft. The PLA imported Israeli-made HARPY UAVs and Russian-made anti-radiation missiles during the 1990s.

Artillery-Delivered High Precision Munitions: The PLA is developing or deploying artillery systems with the range to strike targets within or even across the Taiwan Strait, including the PHL-03 300 mm multiple-rocket launcher (MRL) (greater than 100 km range) and the longer-range AR-3 dual-caliber MRL (out to 220 km range).

The *2014 Report to Congress of the US-China Economic Security Review Commission* described the progress in China's missile industry as follows:⁴⁶⁷

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 2015 DoD report:⁴⁶⁸

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.¹³⁶ 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 miles¹³⁸ 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.¹⁴⁰ 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.¹⁴² 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.¹⁴⁴ 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.¹⁴⁹ Although it appears to be primarily intended for conventional missions, a 2013 NASIC report suggests the missile also could carry a nuclear warhead.

Japanese Views

The 2014 Japanese defense white paper provided the following summary of the PLASAF:⁴⁶⁹

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 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 also believed that China is working to increase performance by extending ranges, improving accuracy, mounting warheads, 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. 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 (SSBNs) 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.

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 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. 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.

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 brief description of the PLASAF:⁴⁷⁰

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 SAF 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 SAF 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 SAF 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 SAF is still making progress towards both.

As the previous U.S. reporting on the Chinese program has shown, the SAF has made significant progress in all of these capabilities compared to its position in 1985. In the conventional field, the SAF, which had no conventional missiles in 1985, now has the largest conventional missile arsenal in the Asia-Pacific.⁴⁷¹

Since 1985, the SAF has developed conventional systems that are mobile, solid-fueled, and precise or near-precise in accuracy.⁴⁷² Moreover, it has also developed indigenous cruise missiles and the resulting precision-strike capability offered by such systems. In addition, these conventional systems now enjoy increased survivability due to the development of a reportedly 5,000 kilometer-long tunnel network⁴⁷³ and improving PLAAF air defenses.⁴⁷⁴

The nuclear forces have also made significant progress. Since 1985 the SAF 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 still retain a number of obsolete, liquid-fueled missiles. Consequently, while the SAF's nuclear delivery modernization continues, it has yet to achieve a fully modern force.

All of these developments have been occurring within the context of the SAF's efforts to create a force capable of winning Local Wars along China's periphery. Consequently, the SAF 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 SAF has 1,200-1,700 SRBMs and GLCMs.⁴⁷⁵

In addition, the DoD has reported that the SAF is increasing its numbers of MRBMs, anti-ship ballistic missiles (ASBMs), and long-range GLCMs. Consequently, the SAF enables the PLA to mitigate some of the weaknesses still existent in its other branches. This dynamic, combined with the SAF's proven anti-satellite capability, illustrates the importance of the SAF to the PLA's Local Wars concept.

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 SAF order of battle from 1985-2015. The data in **Figures 12.1 to 12.5** are drawn from the IISS and show the historical trends in Second Artillery Personnel and missile strength.

- **Figure 12.1** provides detailed quantitative data on the SAF's order of battle since 1985.
- **Figures 12.2 to 12.3** 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. **Figures 12.2 and 12.3** 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 12.4** 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 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 percentage of the SAF'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 SAF 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.

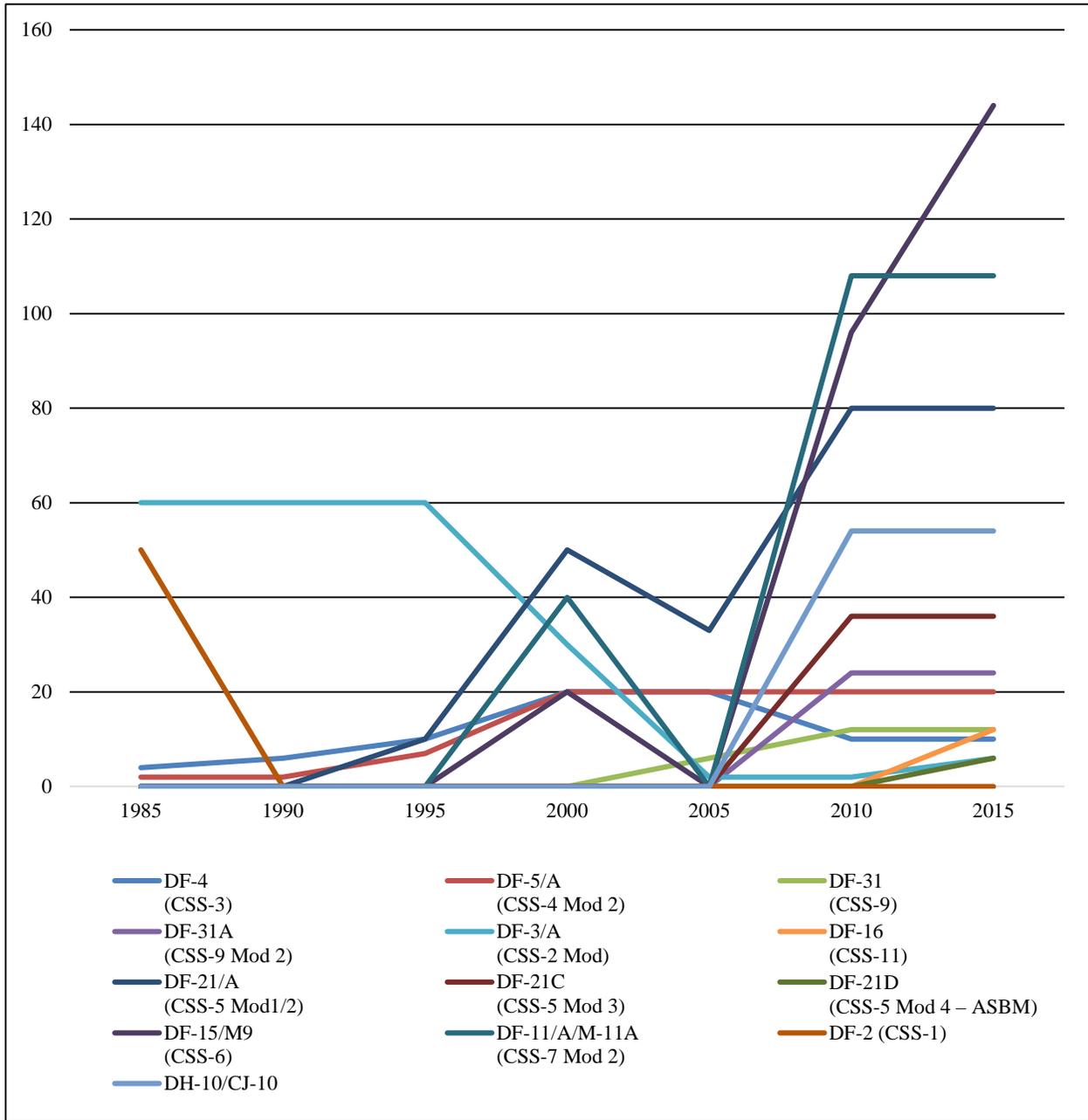
When SRBMs first appeared on the graph in 2000, they accounted for 30% of the SAF's missile launchers; by 2015, SRBMs accounted for approximately 50%. This change is complemented by the introduction of cruise missiles: by 2010, LACMs accounted for roughly 11% of SAF strength. These trends occur in contrast to the effective destruction of the SAF's nuclear intermediate-range

ballistic missile (IRBM) force. In 1985, the SAF'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 SAF 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 SAF'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%⁴⁷⁶ of the SAF's missile force could reach the critical US base on Guam, located in the second island chain.⁴⁷⁷ In 2012, the composition of the SAF is such that only roughly 15% of the SAF'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 12.1: Historical Quantitative Data on the SAF- Part I



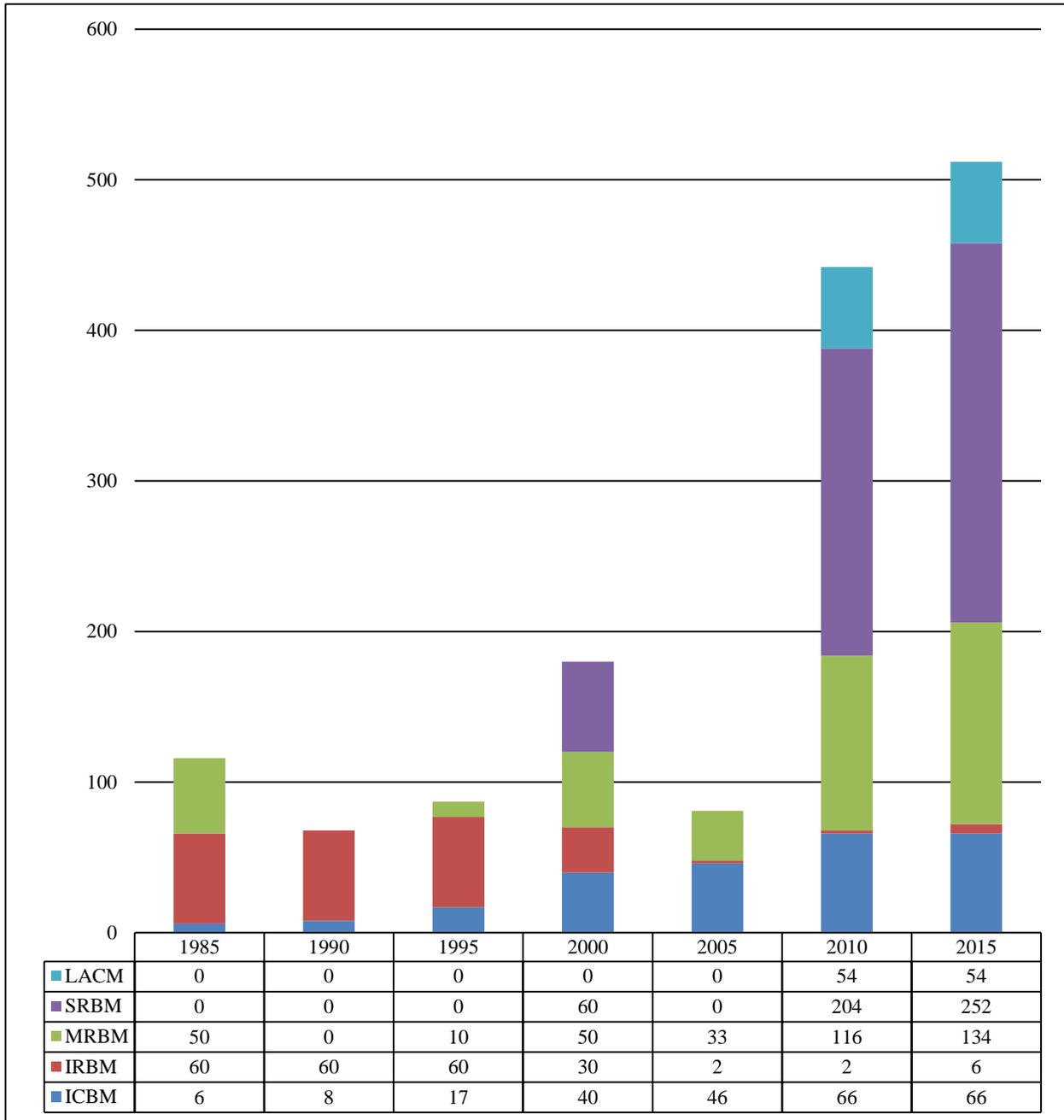
Source: IISS, *Military Balance* 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 12.1: Historical Quantitative Data on the SAF- Part II

		1985	1990	1995	2000	2005	2010	2015
ICBM	DF-4 (CSS-3)	4	6	10+	20+	20	10	10
	DF-5/A (CSS-4 Mod 2)	2	2	7	20+	20	20	20
	DF-31 (CSS-9)	0	0	0	0	6	12	12
	DF-31A (CSS-9 Mod 2)	0	0	0	0	0	24	24
IRBM	DF-3/A (CSS-2 Mod)	60	60	60+	30+	2	2	6
MRBM	DF-16 (CSS-11)	0	0	0	0	0	0	12
	DF-21/A (CSS-5 Mod1/2)	0	0	10	50+	33	80	80
	DF-21C (CSS-5 Mod 3)	0	0	0	0	0	36	36
	DF-21D (CSS-5 Mod 4 – ASBM)	0	0	0	0	0	0	6
SRBM	DF-15/M9 (CSS-6)	0	some	some	20	some	96	144
	DF-11/A/M-11A (CSS-7 Mod 2)	0	some	some	40	some	108	108
	DF-2 (CSS-1)	50	0	0	0	0	0	0
LACM	DH-10/CJ-10	0	0	0	0	0	54	54

Source: IISS, *Military Balance* 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

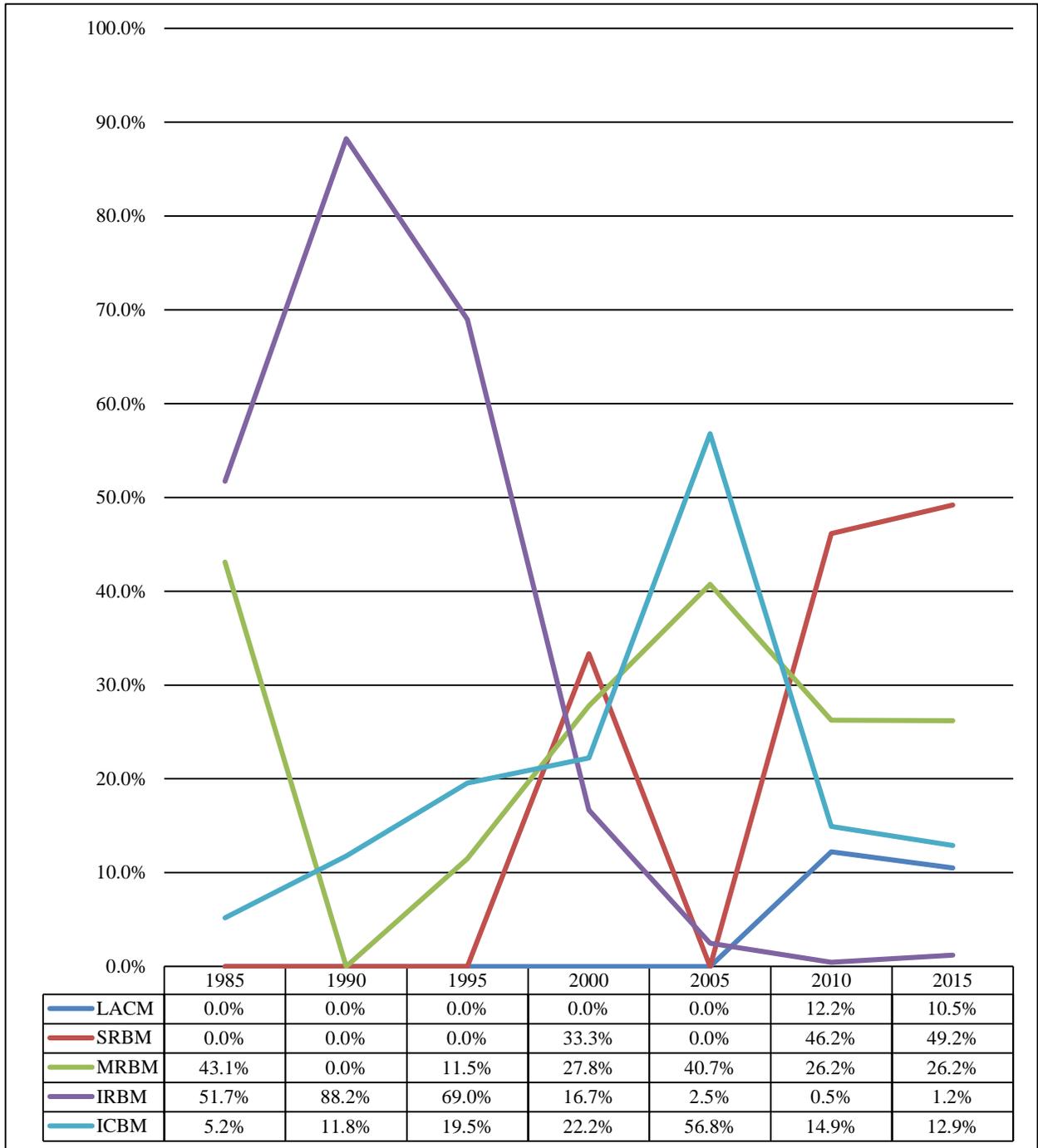
Figure 12.2: Historical Size and Composition of the SAF Arsenal



Note: IISS lists total SRBM missile 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* 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

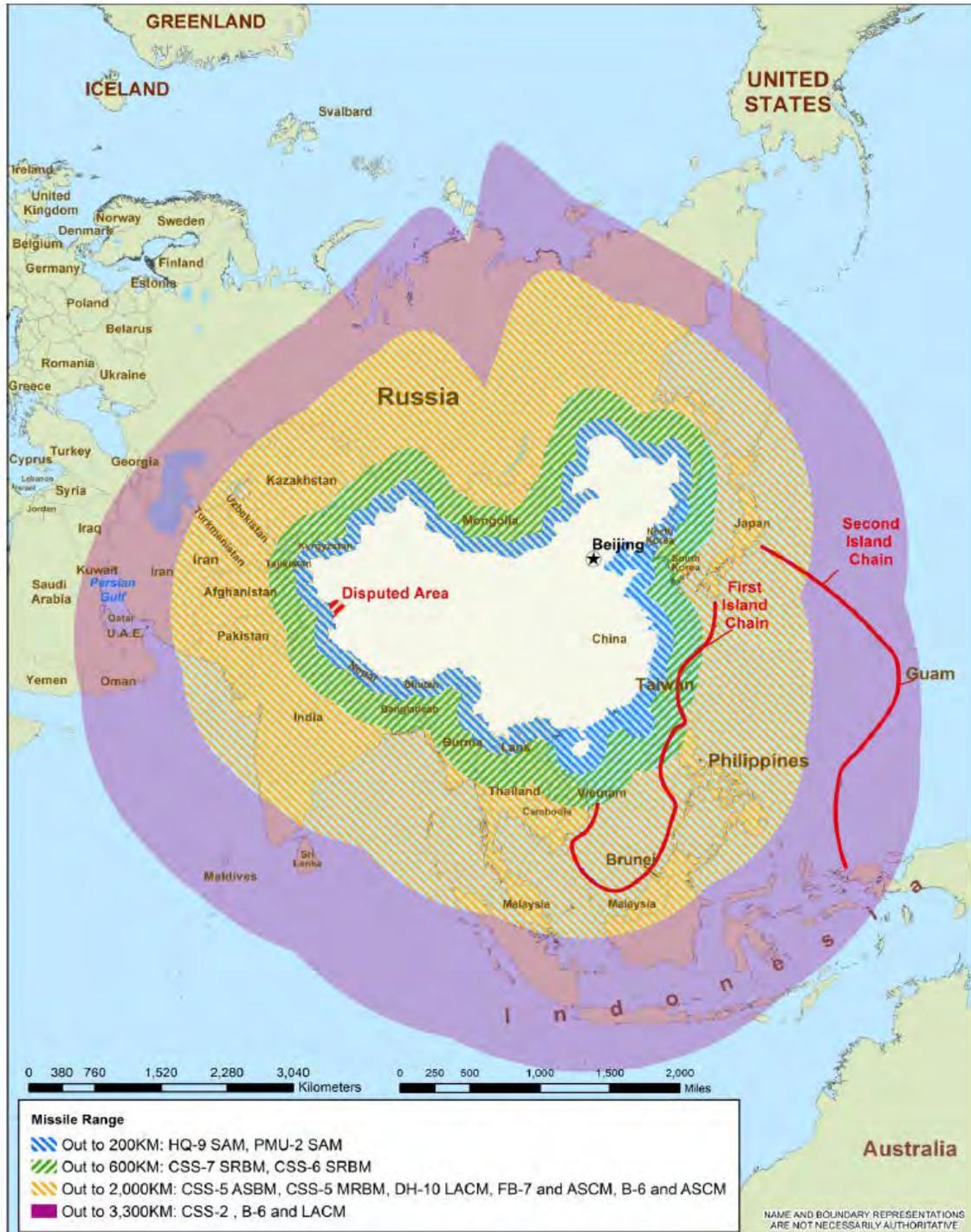
Figure 12.3: The SAF's Changing Force Structure, 1985-2015 (Percent)



Note: Due to rounding, numbers may not add up to 100.

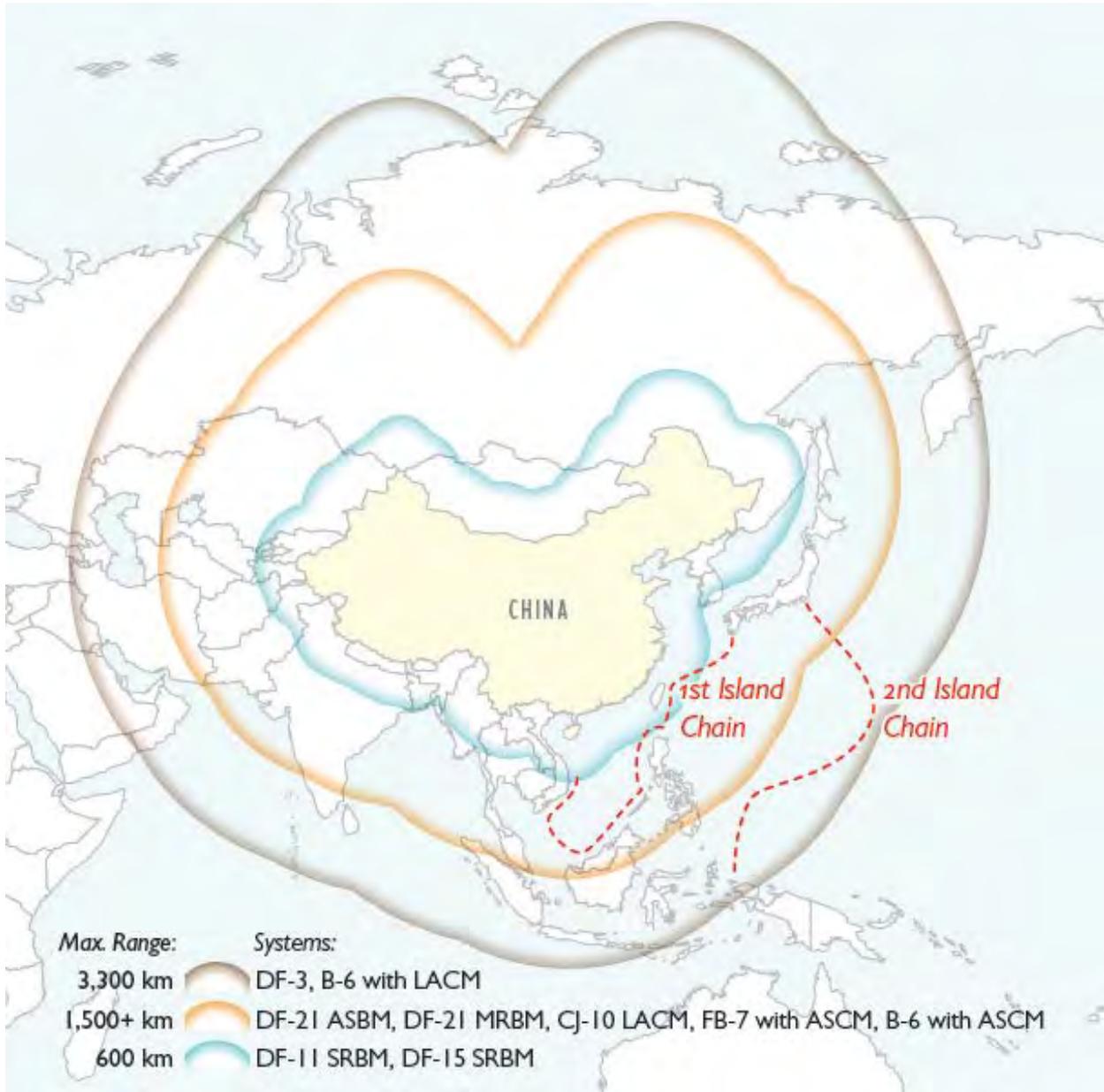
Source: IISS, *Military Balance* 1985-2015, adapted by Anthony H. Cordesman and Steve Colley at the Center for Strategic and International Studies.

Figure 12.4: 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 12.4: 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 12.1 to 12.3 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 SAF's force

structure. The number of missiles per missile launcher indicates military planning, operational concepts, and SAF 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 SAF’s missile holdings.

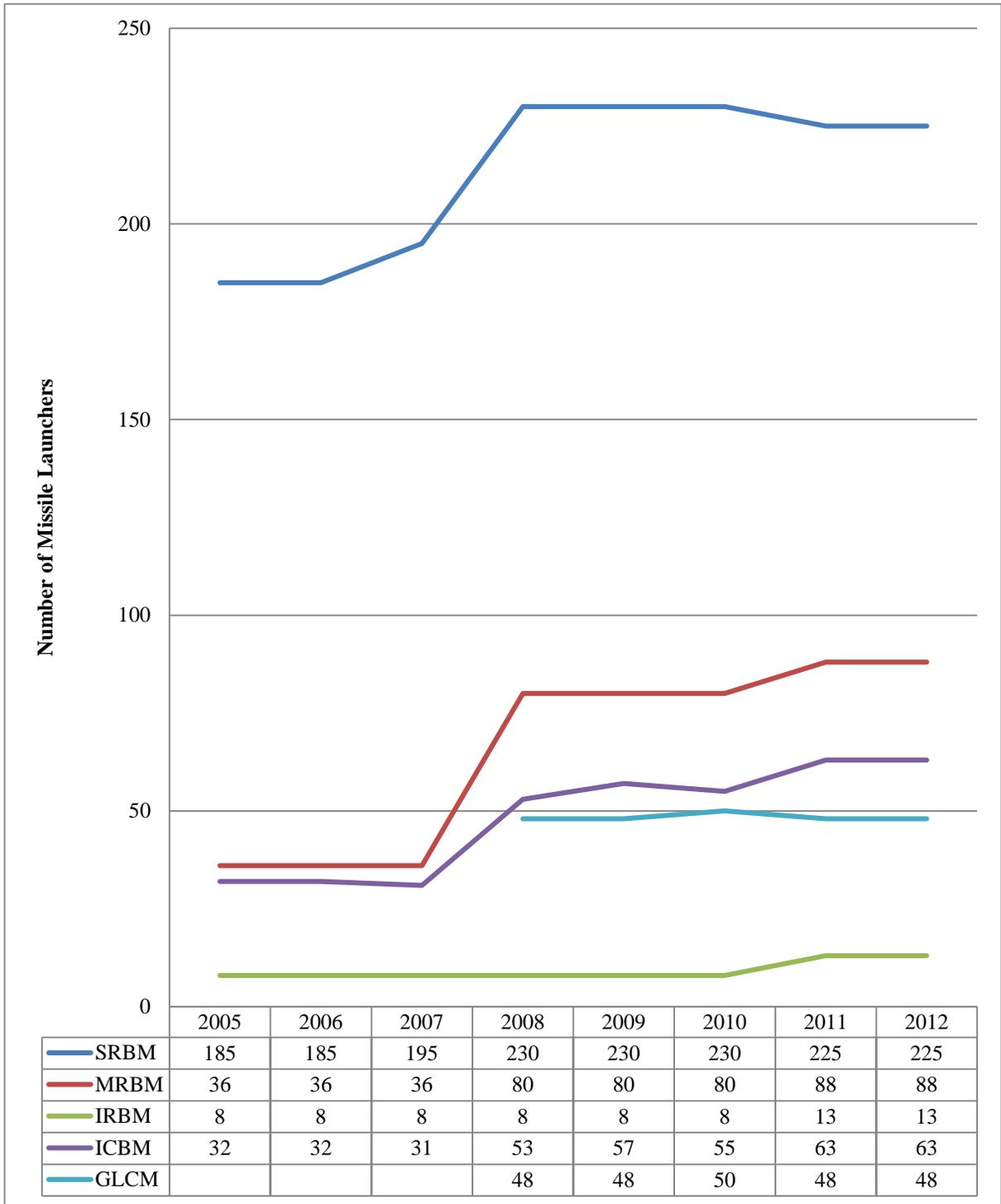
Figures 12.5 and 12.6 have significant implications.

- **Figure 12.5** shows DoD-reported numbers for year-on-year growth in SAF missile launchers.
- **Figure 12.6** shows DoD-reported SAF 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 SAF plans to fire repeated salvos of SRBMs and LACMs during hypothetical contingencies.

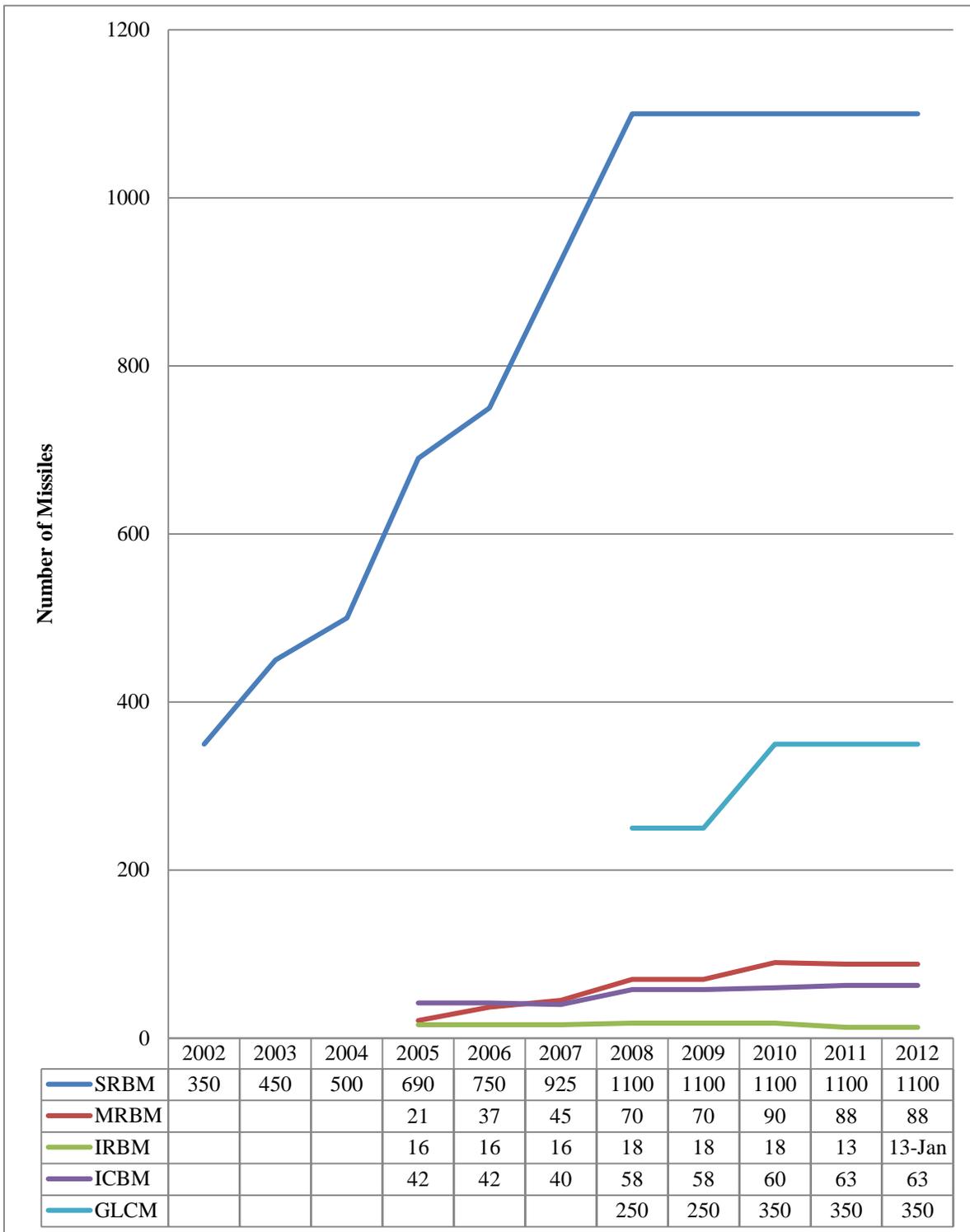
Unlike the SAF’s inventory of medium- and longer-range missiles, potential adversaries could face multiple salvos per SRBM or GLCM launcher, possibly in a counter-air role as has been proposed by RAND.⁴⁷⁸ Such a capability falls perfectly in line with the conventional requirements of Local Warfare under 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 12.5: 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 12.6: 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 12.1** reflect several important trends in the modernization of the SAF. Since 1985, in line with the PLA concept of winning Local Wars under Conditions of Informatization, the SAF 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 12.7**. 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:⁴⁷⁹

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 SAF has steadily increased the number of Short-Range Ballistic Missiles (SRBMs) in its arsenal. All are mobile and solid-fueled, enabling the SAF to conduct rapid strikes against regional threats while limiting the risk of preemption. Moreover, in line with the Local Wars concept, the SAF 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."⁴⁸⁰ The 2013 DoD on Chinese military power report noted that, "the PLA is also introducing new SRBM variants with improved ranges, accuracies, and payloads."⁴⁸¹

Figures 12.8 and 12.9 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:⁴⁸²

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 SAF 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 SAF SRBM combat power.

A RAND report released in 2009 illustrates this point effectively. Comparing open-source information on various SAF 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 12.8 and 12.9** illustrate these developments.

- **Figure 12.8** is a graph that shows open-source data collected and used by RAND to estimate the parameters of the SAF's SRBM capability.
- **Figure 12.9** 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 SAF'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 SAF's SRBM-based combat power. Thus, while the growth in SRBM numbers indicates growth in the SAF'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 12.7: NASIC Estimate of the Regional Balance of Short-range Ballistic Missiles (SRBMs)

MISSILE	PROPELLANT	DEPLOYMENT MODE	MAXIMUM RANGE (km)	Number of Launchers (By Country)*
RUSSIA				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	
CHINA				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	
NORTH KOREA				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	
INDIA				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	
PAKISTAN				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	
IRAN				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	
SYRIA				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.

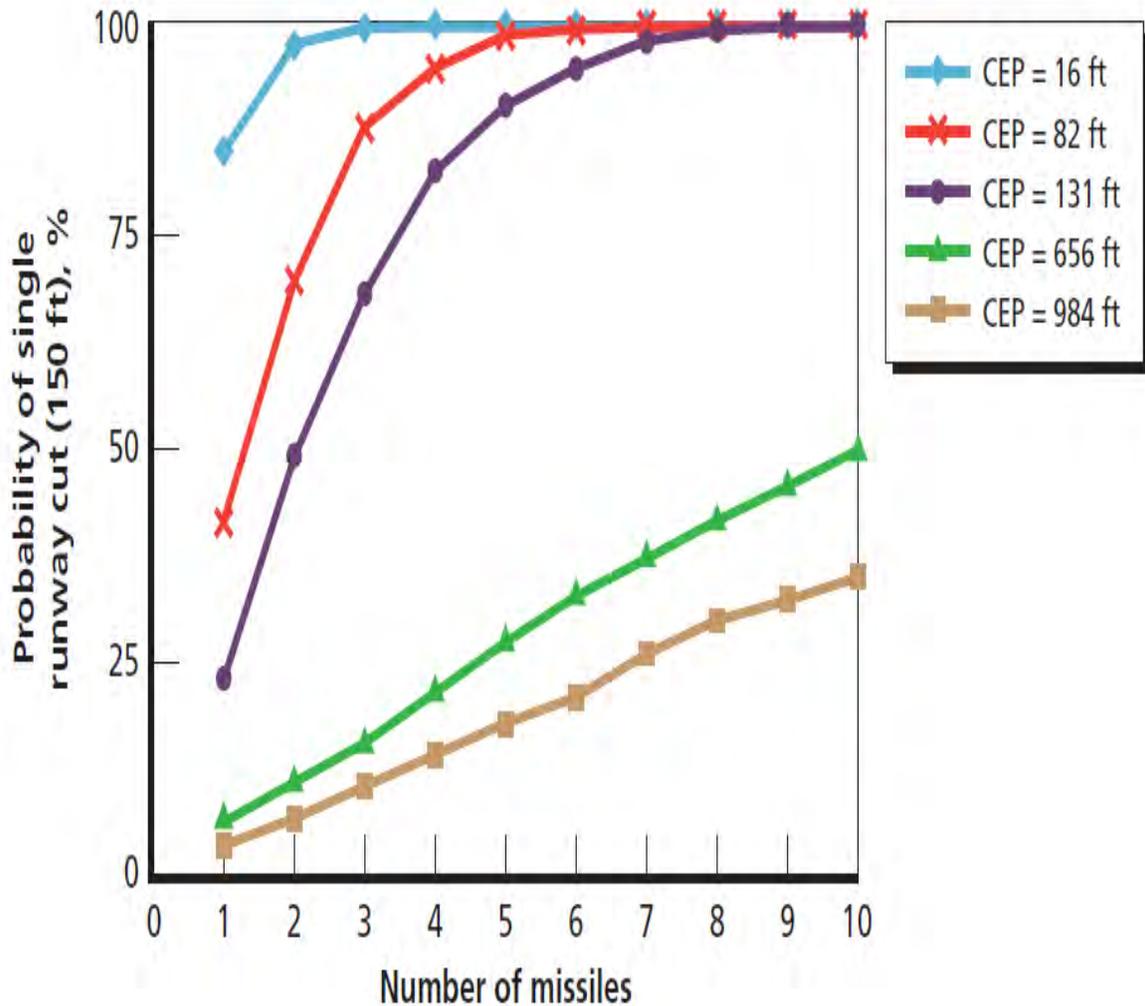
Figure 12.8: RAND Data on PRC SRBMs and the “Notional SRBM” Model (2009)

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 12.9: 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 12.10**. *It should be stressed that this assessment does not include sea-launched or air-launched cruise missiles, which sharply understate the capabilities of US forces and the potential threat perceived by China.*

The NASIC summarizes key regional trends as follows:⁴⁸³

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:⁴⁸⁴

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. There also 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.⁴⁸⁵ Accordingly, extensive studies have been made in order to determine how best to penetrate missile defenses and deter carrier groups from approaching the battlefield.⁴⁸⁶

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. 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.⁴⁸⁷

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.⁴⁸⁸ 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 regarding its own cruise missile development, particularly ASCM's.⁴⁸⁹ 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.⁴⁹⁰ Although the LRASM is being developed by DARPA to rectify this issue, it is still in a development stage.

Figure 12.10: NASIC Estimate of the Regional Balance of Land Attack Cruise Missiles

MISSILE	LAUNCH MODE	WARHEAD TYPE	RANGE (km)	IOC
CHINA				
YJ-63	Air	Conventional	Undetermined	Undetermined
DH-10	Undetermined	Conventional or nuclear	Undetermined	Undetermined
FRANCE				
APACHE-AP	Air	Submunitions	100+	2002
SCALP-EG	Air and ship	Penetrator	250+	2003
Naval SCALP	Sub and surface ship	Penetrator	250+	2013+
UAE				
BLACK SHAHEEN*	Air	Penetrator	250+	2006
GERMANY, SWEDEN, SPAIN				
KEPD-350	Air	Penetrator	350+	2004
INDIA, RUSSIA				
Brahmos 1	Air, ground, ship, and sub	Conventional	less than 300	2010+
Brahmos 2	Air, ground, ship, and sub	Conventional	less than 300	2013+
ISRAEL				
Popeye Turbo	Air	Conventional	300+	2002
PAKISTAN				
RA'AD	Air	Conventional or nuclear	350	Undetermined
Babur	Ground	Conventional or nuclear	350	Undetermined
RUSSIA				
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
SOUTH AFRICA				
MUPSOW	Air and ground	Conventional	150	2002
Torgos	Air and ground	Conventional	300	Undetermined
TAIWAN				
Wan Chien	Air	Conventional	250+	2006
HF-2E	Ground	Conventional	Undetermined	Undetermined
UNITED KINGDOM				
Storm Shadow	Air	Penetrator	250+	2003
IRAN				
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 12.12**. 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:⁴⁹¹

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:⁴⁹²

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.”⁴⁹³ The 2015 DoD report reiterated this point, assessing, “China is

fielding a growing number of conventionally armed MRBMs.”⁴⁹⁴ This trend is evident in the development of the more precise DF-21C and DF-21D missile systems.

As the next chapter described, the SAF’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,⁴⁹⁵ forced the SAF 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 SAF replaced the aging, liquid-fueled DF-2 MRBM with the solid-fueled mobile DF-21A/B MRBM. Between 1985 and 2000, the SAF 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 SAF 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 12.13**, 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 SAF seeks an invulnerable second-strike capability, and the sudden appearance of cruise missile units.

Figure 12.11: NASIC Estimate of the Regional Balance of MRBMs and IRBMs

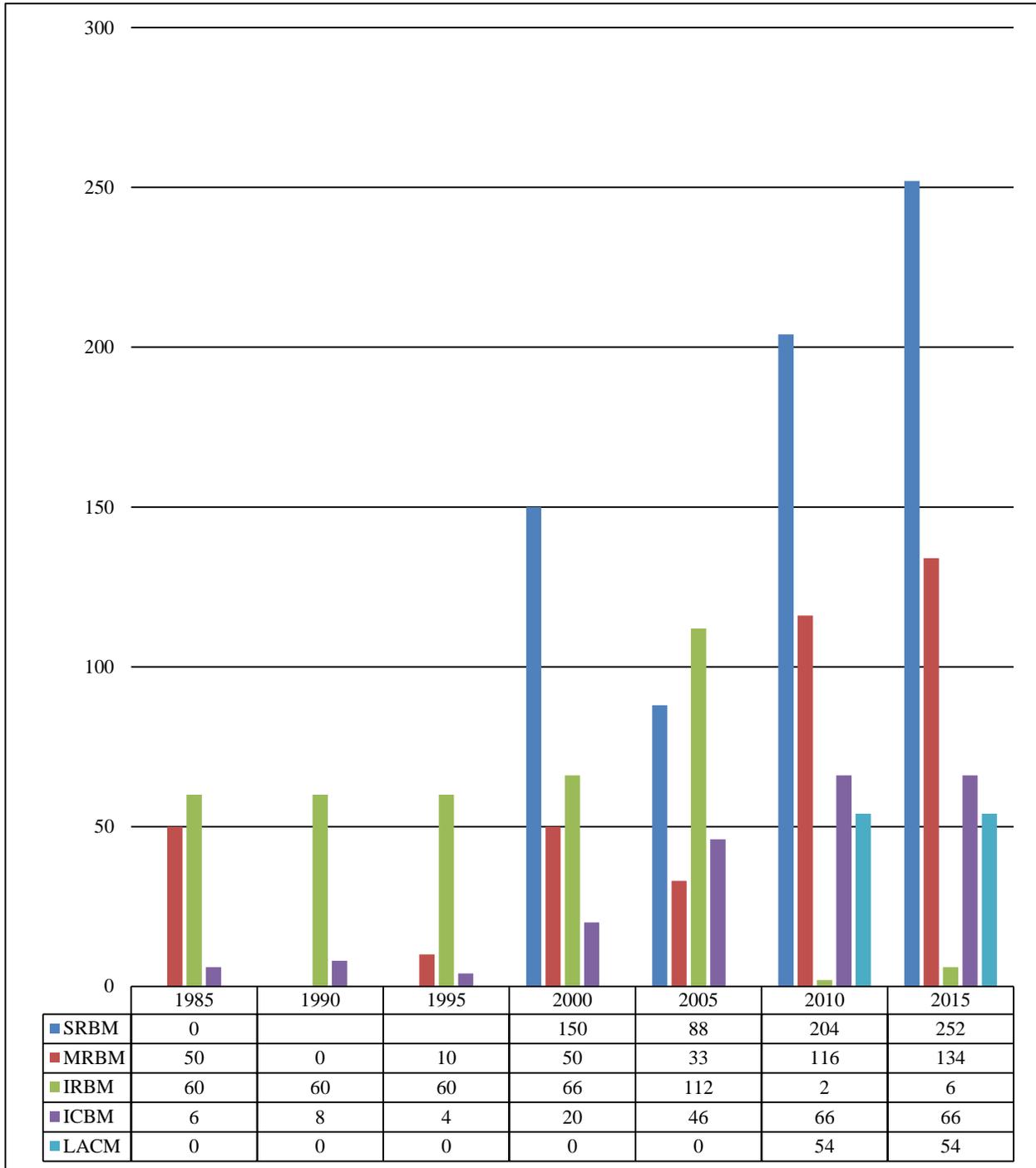
MISSILE	NUMBER OF STAGES	PROPELLANT	DEPLOYMENT MODE	MAXIMUM RANGE (km)	NUMBER OF LAUNCHERS*
China					
CSS-2	1	Liquid	Transportable	3,000	5 to 10 (Limited Mobility)
CSS-5 Mod 1	2	Solid	Road-mobile	1,750+	Fewer than 50
CSS-5 Mod 2	2	Solid	Road-mobile	1,750+	Fewer than 50
CSS-5 Conventional	2	Solid	Mobile	1,750+	Fewer than 30
CSS-5 ASBM	2	Solid	Mobile	1,500+	Unknown
Saudi Arabia (Chinese-produced)					
CSS-2 (conventional)	1	Liquid	Transportable	3,000	Fewer than 50 (Limited Mobility)
North Korea					
No Dong	1	Liquid	Road-mobile	1,250	Fewer than 50
IRBM	1	Liquid	Road-mobile	3,000+	Fewer than 50
India					
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
Pakistan					
Ghauri	1	Liquid	Road-mobile	1,250	Fewer than 50
Shaheen 2	2	Solid	Road-mobile	2,000	Unknown
Iran					
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 12.12: 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 in 2013 is shown in **Figure 12.14**. This Figure again illustrates a broad set of trends in the

regional balance – a balance that both affects and is affected by China. The NASIC summarizes key regional trends as follows:⁴⁹⁶

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:⁴⁹⁷

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 numbers¹⁹. 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 12.5** and **Figure 12.6** 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 SAF reduced its holdings of its relatively vulnerable, liquid-fueled, and non-mobile DF-4s while it deployed 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 SAF 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 12.16** 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 SAF's intercontinental deterrence capability and its increasing survivability. Paired with improved PLAAF AD and the development of the SAF's tunnel network, the modernization of the SAF's ICBM arsenal has positive implications for the SAF's ICBM survivability, and thus for one of the SAF's two core missions. Moreover, China's newer missiles, such as the DF-31A and DF-41, are now believed to be equipped with MIRV warheads, an issue discussed in detail in the next chapter.

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 CSS-4 has similar capabilities, the CSS-4 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.⁴⁹⁸ China appears to have supplied missiles to Saudi Arabia, Iran, Iraq, Libya, Pakistan, Syria, and North Korea.⁴⁹⁹

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,⁵⁰⁰

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:⁵⁰¹

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:

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:⁵⁰²

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:⁵⁰³

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 12.13: 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*
Russia						
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
China						
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
North Korea						
Taepo Dong-2	2 or 3	1	Liquid	Fixed	5,500+	Unknown**
Hwasong-13	Undetermined	Undetermined	Undetermined	Road-mobile	5,500+	Unknown
India						
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
RUSSIA						
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
CHINA						
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
INDIA						
K-15	2	1	Solid	ARIHART	700	12; Not yet deployed

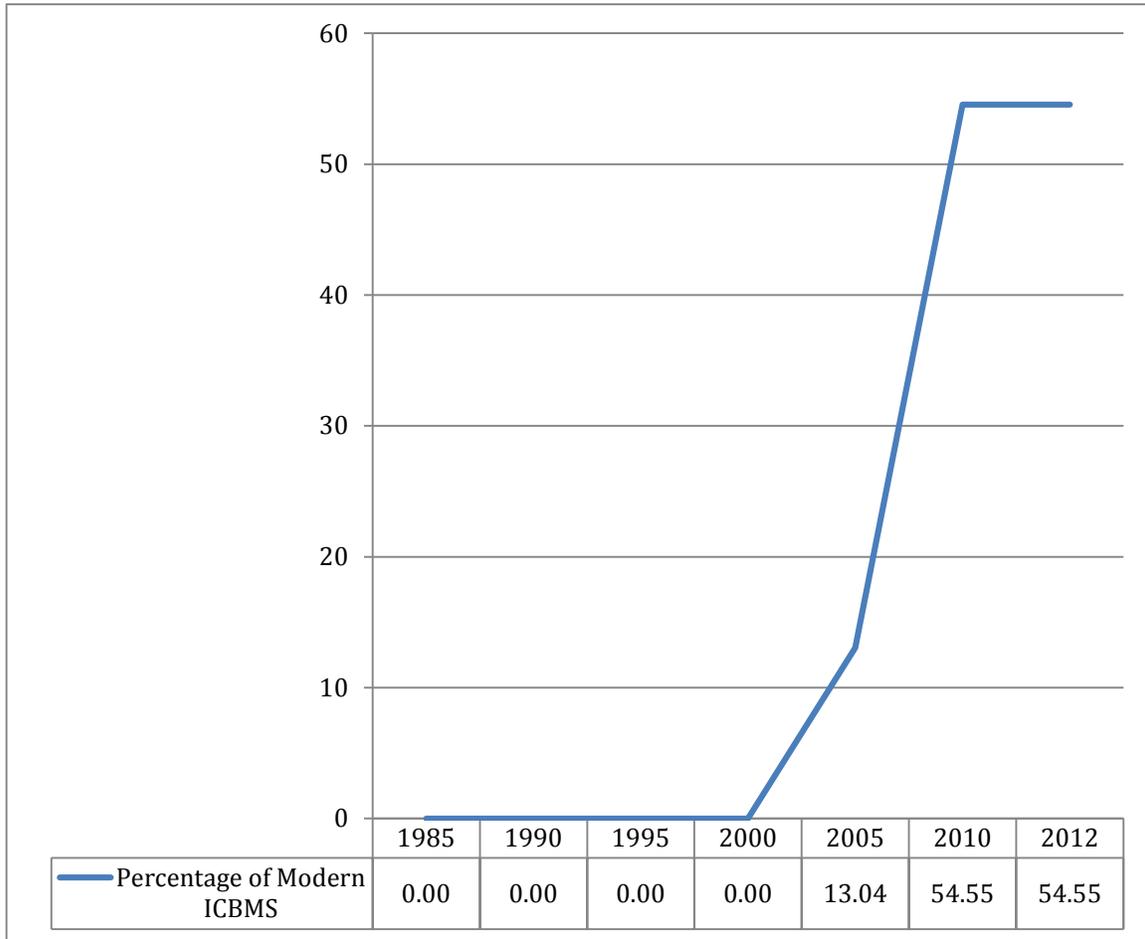
Note: All ranges are approximate.

* 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.

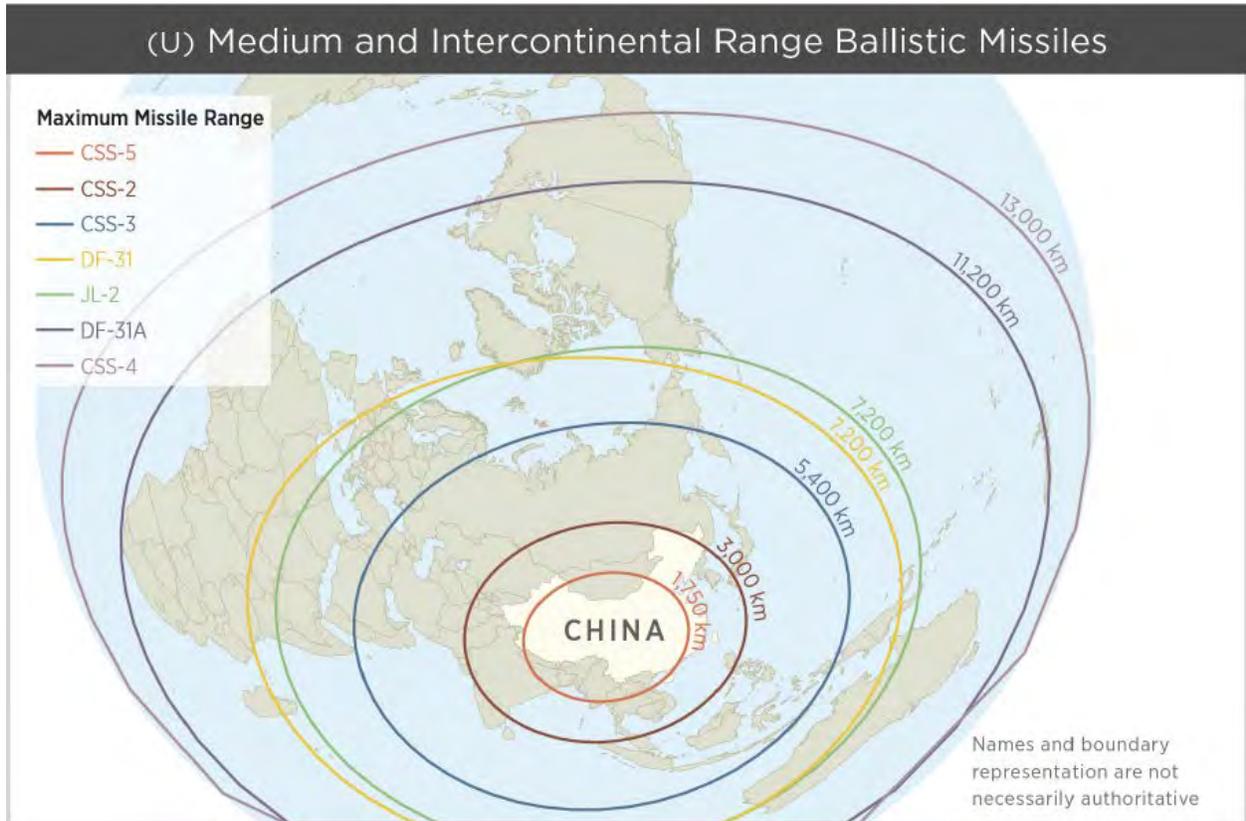
Source: Adapted from US National Air and Space Intelligence Center, Defense Intelligence Agency Missile and Space Intelligence Center and Office of Naval Intelligence, *Ballistic & Cruise Missile Threat*, NASIC, May 2013, 21.

Figure 12.14: Percentage of Modern ICBMs in the SAF'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 12.15: 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* 2015, April 2015, 88.

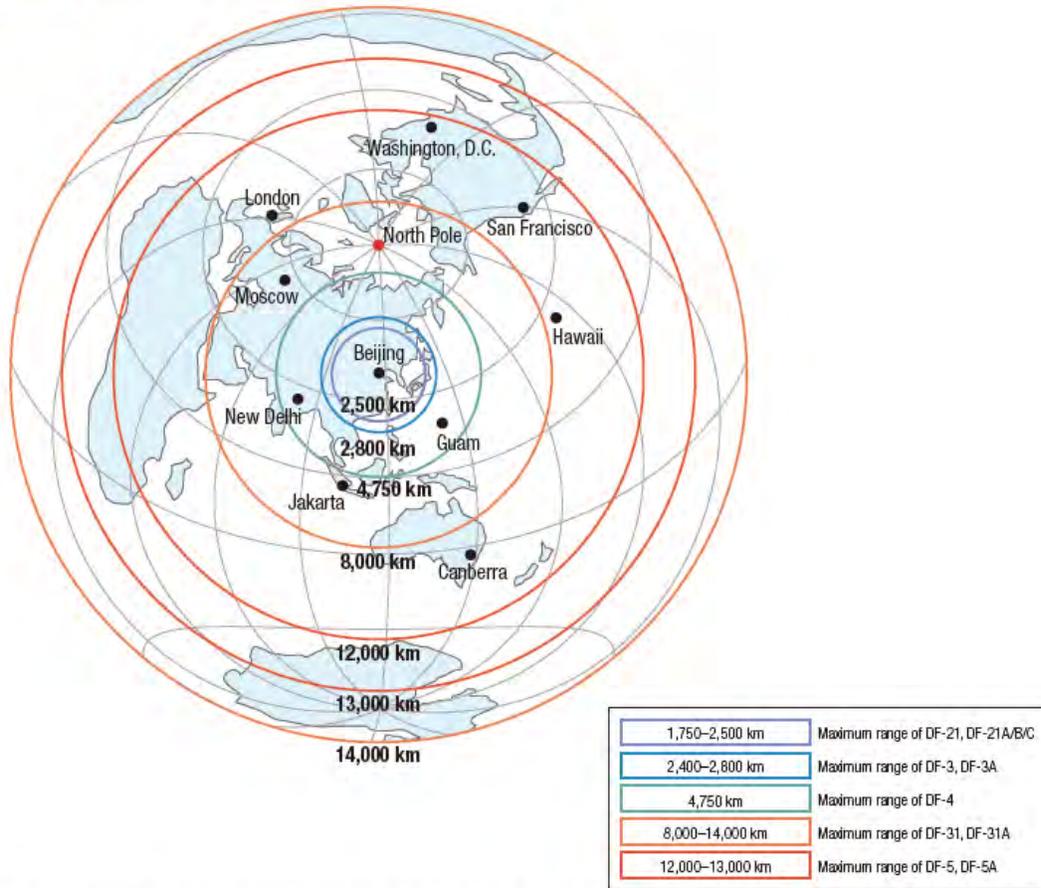
Figure 12.15: China's Conventional Strike Capabilities – Part II



Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 87.

Figure 12.16: 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 was 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:⁵⁰⁴

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 contrast, the 2015 DoD report on *Military and Security Developments Involving the People's Republic of China* noted that:⁵⁰⁵

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 also 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."⁵⁰⁶

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.⁵⁰⁷

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.⁵⁰⁸

Improved Personnel

The doctrinal, operational, tactical, and technical requirements generated by the SAF's modernization and development program have required a SAF 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;⁵⁰⁹ the SAF 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 SAF forces, but Chinese media reports corroborate the new emphasis on "realistic training."⁵¹⁰ These reports frequently describe training exercises along the lines of the 2009 Outline of Military Training and Education, discussed previously – one story in *Jiefangjun Huobao* described joint training at the brigade level.⁵¹¹ Such efforts, if carried out on a sustained and well-resourced basis, form a significant means of augmenting SAF 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.⁵¹² 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.⁵¹³

The Chinese report on *The Diversified Employment of China's Armed Forces*, issued in 2013, explained the SAF's combat readiness and training expectations as follows,⁵¹⁴

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 SAF. 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.”⁵¹⁵ 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 SAF 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 SAF brigade’s officers were 85% undergraduate degree holders.⁵¹⁶

The PRC Ministry of Defense website also discussed the SAF’s operational capabilities and personnel training as follows in 2015:⁵¹⁷

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

Chinese Space Strategy and Developments

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.”⁵¹⁸

This belief that space is the new strategic high ground stems from China’s “Space Dream” strategy as explained by President Xi Jinping in which “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.”⁵¹⁹ This is equally true in the strategy that is transforming the Chinese military toward one of information superiority under the Local Wars concept. The US-China Economic and Security Review Commission highlighted the importance of space-based programs for the PLA’s strategy:⁵²⁰

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.

Space and Developments

China is expanding its own space-based systems in ways that will enhance its deterrent, missile, and other military capabilities. The Party leadership has emphasized such activities as long-range missiles and other aerospace programs in its military modernization push. 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:⁵²¹

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.

In 2010, China conducted 15 space launches while expanding its space-based surveillance, reconnaissance, intelligence, meteorological, navigation, and communications satellites. At the same time, China is developing a multi-dimensional program in order to improve its ability to prevent or limit adversaries' use of space-based assets.⁵²²

One example of Chinese space technologies is the Beidou satellite position, navigation, and timing system, which has been in development and regional use since 2000. 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.”⁵²³

The 2013 DoD report on China cited earlier stated that:⁵²⁴

In 2012, China conducted 18 space launches. China also expanded its space-based intelligence, surveillance, reconnaissance, navigation, meteorological, and communications satellite constellations. In parallel, China is developing a multi-dimensional program to improve its capabilities to limit or prevent the use of space-based assets by adversaries during times of crisis or conflict. (p. 9)

During 2012, China launched six Beidou navigation satellites. These six satellites completed the regional network as well as the in-orbit validation phase for the global network, expected to be completed by 2020. China launched 11 new remote sensing satellites in 2012, which can perform both civil and military applications. China also launched three communications satellites, five experimental small satellites, one meteorological satellite, one relay satellite, and a manned space mission. (p. 9)

China continues to develop the Long March 5 (LM-5) rocket, which is intended to lift heavy payloads into space. LM-5 will more than double the size of the Low Earth Orbit (LEO) and Geosynchronous Orbit (GEO) payloads China is capable of placing into orbit. To support these rockets, China began constructing the Wenchang Satellite Launch Center in 2008. Located on Hainan Island, this launch facility is expected to be complete around 2013, with the initial LM-5 launch scheduled for 2014. (p. 9-10)

China is the third country to develop an independent human spaceflight program, and early in 2012 the PRC achieved its first manned space docking at an orbital laboratory. The country has a stated goal of building a 60-ton space station for future missions. China has traditionally been relying 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 US' X-37B.⁵²⁵

Other Military 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.

The 2015 DoD report on China described additional space capabilities that China could use for military application:⁵²⁶

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 2015 report continued explain space launch trends and provided a graph depicting the new satellites launched each year since 2010, seen in **Figure 12.17**:⁵²⁷

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.

China plans to put more than 20 new navigational satellites in medium-earth orbit to improve the functionality of its Beidou system over the next few years. The DoD 2015 report provided the following data on China's rapidly maturing space capabilities:⁵²⁸

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.

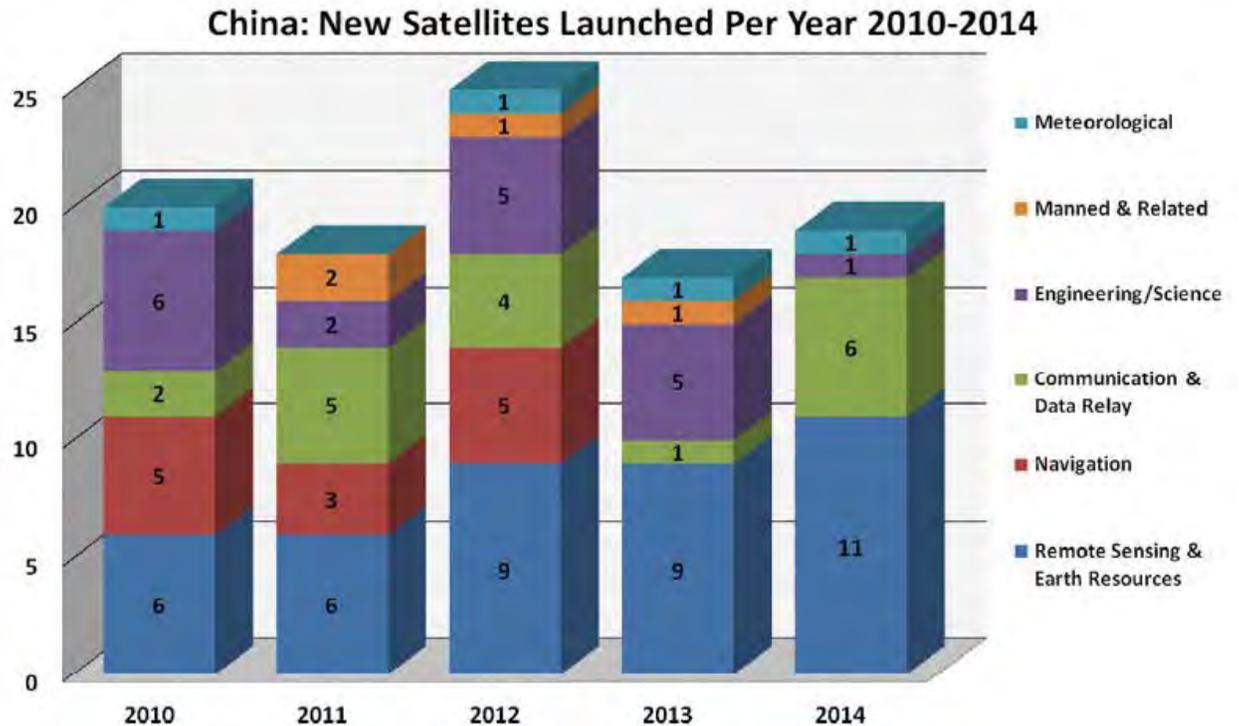
By the end of October 2014, China had launched 16 spacecraft, either domestically or via a commercial space launch provider. These spacecraft mostly expanded China's SATCOM and ISR capabilities, while a few others tested new space technologies. Noteworthy 2014 accomplishments for China's space program 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.

Figure 12.17: 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

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.”⁵²⁹

China has tested anti-satellite weapons that could also have a massive impact on US battle management and ISR systems, and may have some capability to use EMP weapons. China conducted anti-satellite (ASAT) weapons tests in January 2007 and 2010. 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.”⁵³⁰

The DoD’s 2015 report China noted that:⁵³¹

In parallel with its space program, China continues to develop a variety of capabilities designed to limit or prevent the use of space-based assets by adversaries during a crisis or conflict, including the development of directed-energy weapons and satellite jammers. On July 23, 2014, China conducted a space launch that had a similar profile to the January 2007 test that resulted in the deliberate destruction of a defunct weather satellite, and the creation of hundreds of pieces of long-lived space debris.

Much of that debris continues to orbit the Earth where it poses a risk to the safe operation of many nations’ satellites. China’s 2014 launch did not result in the destruction of a satellite or space debris. However, due to the evidence suggesting that this was a follow-up to the 2007 destructive test, the United States expressed concern that China’s continued development of destructive space technologies represented a threat to all

peaceful space-faring nations, and was inconsistent with China's public statements about the use of space for peaceful purposes.

The 2015 DoD report continued to describe the launch of an object in 2013 that could have been used for counter-space missions:⁵³²

On May 13, 2013, China launched an object into space on a ballistic trajectory with a peak altitude above 30,000 km. This trajectory took it near geosynchronous orbit, where many nations maintain communications and earth-sensing satellites. Analysis of the launch determined that the booster was not on the appropriate trajectory to place objects in orbit and that no new satellites were released. The post-boost vehicle continued its ballistic trajectory and re-entered Earth orbit 9.5 hours after launch.

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 thus far has refrained from providing additional information.

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." 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."

DIA Director James Clapper stated in his 2015 Senate testimony that:⁵³³

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. In July 2014, China conducted a non-destructive antisatellite missile test. China conducted a previous destructive test of the system in 2007, which created long-lived space debris. 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.

Anti-Access/Area Denial Sea-based Space Programs

China's A2AD programs rely on a mix of space-based systems. 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.

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 program, which 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.⁵³⁴

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.⁵³⁵

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.⁵³⁶

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.⁵³⁷

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:⁵³⁸

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:⁵³⁹

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.

CHAPTER 13: CHINA'S NUCLEAR FORCES AND WEAPONS OF MASS DESTRUCTION

There is no way to assess the exact probability that the US or China will ever make threats to use nuclear weapons in a regional conflict or ever escalate to their actual use, but the probability they would even make explicit threats seems extremely low.

Each side's nuclear weapons have a deterrent impact in restraining the other's behavior without such threats, and even raising the possibility of an actual nuclear exchange would threaten the stability of Asia, the global economy, and the US and Chinese economies in ways in which the end result could not be calculated. Both sides seem likely to calculate that moving beyond the tacit threat posed by the existence of the other's nuclear forces would almost certainly be so destructive as to be more costly than any strategic or military gains in a limited war 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 limited deterrence strategy, China is probably taking into account not only the United States nuclear stance but 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.

Chinese Military Nuclear Strategy

Since the Mao era, Chinese official documents have 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 SAF, where 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 still 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 in the most minimal way is the primary goal of China's nuclear forces.

China only provides limited transparency on the size and modernization of its nuclear forces and characterizing the trends in China's nuclear forces, and the doctrine they operate under, has been the subject of much discussion. Some 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 stating that:⁵⁴⁰

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.

The strategy continues to reaffirm China's "no first use" (NFU) policy regarding the employment of their nuclear weapons by specifically stating, according to the report by the Union of Concerned Scientists, that:⁵⁴¹

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*:⁵⁴²

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.

Assured retaliation and uncertainty help describe Chinese thinking 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.⁵⁴³

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.⁵⁴⁴

According to the Union of Concerned Scientists report, Chinese strategy states: ⁵⁴⁵

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, if deterrence fails, the Chinese have talked about trying to limited retaliation, in part because they do not feel that their nuclear forces are secure or capable enough to target enemy military forces in a way that would give them a significant military advantage. Public analyses of Chinese nuclear forces indicate they remain limited. Jin-class SSBNs are very new and are presumably still somewhat noisy and detectable. Land based missiles are detached from warheads when in storage, and missile units consist of a large group of ground vehicles and helicopters when on the move.⁵⁴⁶

This helps explain why *The Science of Military Strategy* provides the following guidelines regarding its limited retaliatory nuclear attack:⁵⁴⁷

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 and not military targets 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:⁵⁴⁸

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.

Change and Missile Defense

Chinese nuclear forces and strategy are changing. One reason has been is that advances in ballistic missile defense (BMD) have raised concerns in China that they may threaten assured retaliation and uncertainty. If BMD systems are made effective, assured retaliation will depend not only on nuclear weapons surviving a first-strike but also on warheads penetrating missile defenses and reaching 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 ballistic missile defense systems are still under development, and can now be saturated and overwhelmed, Chinese strategists have been forming their analyses based on a worst-case scenario where BMD systems are very effective. Even if though some U.S. BMD systems have been to be curtailed or even scrapped, Chinese analysts tend to believe that an American missile defense project never truly ends.⁵⁴⁹ Consequently, considering the effects of BMD systems on their own nuclear strategy has become be 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 began debating 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.⁵⁵⁰ 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.⁵⁵¹

China's Evolving Nuclear Forces

There are many other factors driving such changes. 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.⁵⁵² It has also become a party to the Comprehensive Test Ban Treaty, the Biological and Toxin Weapons Convention, and the Chemical Weapons Convention.

Until at least 2013, China's *The Science of Military Strategy* has maintained a no-first-use policy. China's 2008 Defense White Paper stated that:⁵⁵³

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:⁵⁵⁴

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

US View

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 MIRVs for its nuclear systems. The US DoD report on Chinese military power for 2015 provided the following analysis of how these developments interact with China's no first use policy.⁵⁵⁵

China's nuclear weapons policy prioritizes maintaining a nuclear force able to survive an attack and respond with sufficient strength to inflict unacceptable damage on an enemy. A new generation of mobile missiles, with warheads consisting of 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 is an additional driver behind China's nuclear force modernization.

The PLA has deployed new command, control, and communications capabilities to its nuclear forces. These capabilities improve the Second Artillery Force's ability to command and control multiple units in the field. Through the use of improved communications links, the ICBM units now have better access to battlefield information, uninterrupted communications connecting all command echelons, and unit commanders are able to issue orders to multiple subordinates at once, instead of serially, via voice commands.

China 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. 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 likely continue to invest considerable resources to maintain a limited, but survivable, nuclear force to ensure the PLA can deliver a damaging responsive nuclear strike.

The 2015 DoD report continued to describe Chinese developments of land-based and sea-based platforms, as well as future efforts:⁵⁵⁶

Land-Based Platforms: China's nuclear arsenal currently consists of 50-60 ICBMs, including the silo-based CSS-4 Mod 2 and Mod 3(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 liquid-fueled CSS-2 intermediate-range ballistic missiles (IRBM) and road-mobile, solid-fueled CSS-5 (DF-21) MRBM for regional deterrence missions.

Sea-based Platforms: China continues to produce the JIN-class 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 7,400 km. Together these will give the PLA Navy 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 – China will probably send out the first in 2015.

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 (MaRV), MIRVs, decoys, chaff, jamming, and thermal shielding. The United States and China acknowledge that the Chinese tested a hypersonic glide vehicle in 2014. China's official media also cites numerous Second Artillery Force 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 command and control systems and processes that safeguard the integrity of nuclear release authority for a larger, more dispersed force.

Multiple Independently-Targetable Re-entry Vehicles (MIRV)

China was slow to miniaturize warheads and to begin 'MIRVing,' although it 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.⁵⁵⁷

The *New York Times* explains China's decision 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"⁵⁵⁸.

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 reentry vehicles (MRV) and that MIRV technology, capable of "maneuvering to several different release points to provide targeting flexibility" was several years away.⁵⁵⁹

Actual deployment took several years as China began upgrading its DF-5s into MIRVs. DoD's 2015 report to Congress changed its stance on China's MIRV capability from its 2014 report, and stated that,⁵⁶⁰

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. China's ICBM arsenal currently consists of 50-60 ICBMs, including the silo-based CSS-4 Mod 2 and multiple independently-targetable re-entry vehicle (MIRV)-equipped Mod 3 (DF-5); 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), possibly capable of carrying MIRVs. (pg. 8)

According to the Federation of American Scientists,⁵⁶¹

...the MIRVed version of the DF-5...is not thought to be loaded with warheads under normal circumstances. In a crisis, the warheads would first have to be brought out of storage and mated with the missile. Moreover, The Pentagon lists two versions of the DF-5 deployed: the DF-5A (CSS-4 Mod 2) and the new DF-5 MIRV (CSS-4 Mod 3). So only a portion of the 20 missiles in as many silos apparently have been equipped for MIRV.

Role of Chinese Tunnel Facilities

There 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.⁵⁶²

Experts like Phillip Karber note 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.⁵⁶³ **Figure 13.1** 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 US DoD reports have seen the tunnel network as a defensive asset, the 2015 DoD report highlighted a level of uncertainty caused by China's lack of transparency, and acknowledged the role PLA underground facilities can play in denial and deception:⁵⁶⁴

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:⁵⁶⁵

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.

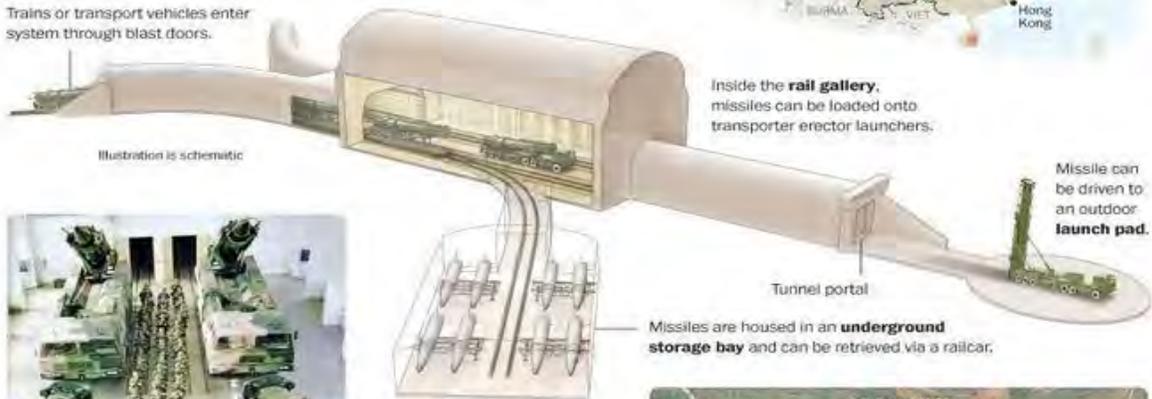
Figure 13.1: China's Nuclear Tunnel Storage System

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.



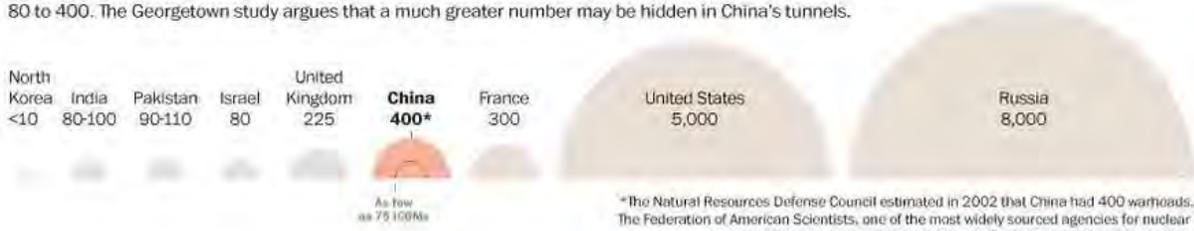
UNCONVENTIONAL RESEARCH
The students based their findings on not only traditional sources, such as major books, journals and strategy manuals, but also on nontraditional sources, including the mapping software Google Earth, Chinese television coverage (right) and military Web sites and blogs (left).



Approximate areas of reported tunneling since 1967

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.

The Strategic Nuclear Balance

These uncertainties in Chinese forces also affect estimates of the nuclear balance. Unclassified estimates of the present structure of US, Chinese, and other outside nuclear forces are shown in the following figures:

- **Figure 13.2** compares the overall strength of US and major Northeast Asian nuclear powers.
- **Figure 13.3** 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 13.4** 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 US thinking about the nuclear balance still focuses on Russia, North Korea, and the risk of Iran acquiring nuclear weapons – not on China. The forces on each side are also anything but static. The US is pursuing a reduction in nuclear forces. 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 US will have much larger weapons numbers for the foreseeable future might mean the US 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 US and Russia.

Nevertheless, the US and China are major nuclear powers with boosted and thermonuclear weapons. 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 US 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 US would confront the risk of North Korean use of such weapons – or even a serious threat to use such weapons – which could force the US to respond and ultimately confront China with a nuclear crisis on its borders.

Figure 13.2: Chinese, US and Russian Nuclear Forces**CHINA**

Quantity	Role/Type
Strategic Missiles (figures are estimates)	
ICBM	
12	DF-31 (CSS-9)
24	DF-31A (CSS-9 Mod 2)
10	DF-4 (CSS-3)
20	DF-5A (CSS-4 Mod 2)
MRBM	
80	DF-21/21A (CSS-5 Mod 1/2)
36	DF21C (CSS-5 Mod 3)
6	DF-21D (CSS-5 Mod 4 – ASBM)
12	DF-16
IRBM	
6	DF-3A (CSS-2 Mod)
SRBM	
108	DF-11A/M-11A (CSS-7 Mod 2)
144	DF-15/M-9 (CSS-6)
LACM	
54	CJ-10 (DH-10)
Navy	
1	Xia <i>With 12 JL-1(CSS-N-3) strategic SLBM</i>
3	Jin <i>With up to 12 JL-2 (CSS-NX-4) strategic SLBM (operational status unknown, 1 additional vessel in build)</i>

Figure 13.2: Chinese, US and Russian Nuclear Forces

UNITED STATES

Quantity	Role/Type
Navy	
14	Ohio SSBN 730 <i>Each with up to 24 UGM-133A Trident D-5 strategic SLBM</i>
Air Force	
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 2015*. Figures do not include equipment used for training purposes. Some equipment and personnel figures are estimates. All equipment figures represent equipment in active service.

Figure 13.2: Chinese, US and Russian Nuclear Forces**RUSSIA**

Quantity	Role/Type
Navy	
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>
2	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>
Strategic Rocket Force Armies	
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>
Strategic Missiles	
54	RS-20 (SS-18) Satan (mostly mod 5, 10 MIRV per msl)
160	RS-12M (SS-25) Sickle
40	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
46	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 2015*, 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 2015*. Figures do not include equipment used for training purposes. Some equipment and personnel figures are estimates. All equipment figures represent equipment in active service.

Figure 13.3: Comparative Estimate of Global Holdings of Nuclear Weapons

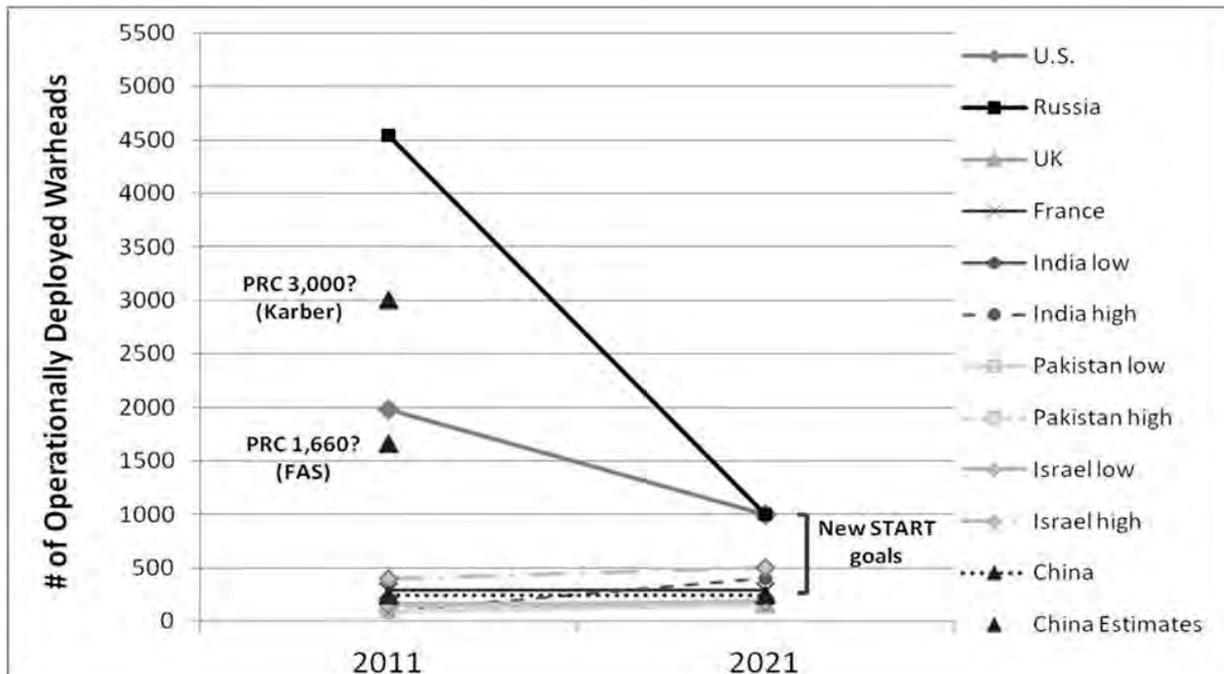
Country	Russia		US		China		DPRK	
Information Source	FAS ⁵⁶⁶ 2015	CAC ⁵⁶⁷ 2013	FAS 2015	CAC 2013	FAS 2015	CAC 2013	FAS 2015	CAC 2013
Operational: Strategic	1,780	1,740	1,900	1,950	0	n/a	0	n/a
Operational: Non-strategic	0	0	180	200	?	n/a	n/a	n/a
Non-deployed/ Reserve	2,720	2,700 (+ 4,000 awaiting dismantlement)	2,720	2,650 (+ 3,000 awaiting dismantlement)	250	240-300	<10	<10
Total Inventory	7,500	8,500	7,500	7,700	250	300	<10	<10
Growth Trend	Decreasing		Decreasing		Growing		Growing	

Country	UK		Israel		Pakistan		India		France	
Information Source	FAS 2015	CAC 2013								
Operational: Strategic	150	<160	0	n/a	0	n/a	0	n/a	290	<300
Operational: Non-strategic	n/a	50								
Non-deployed/ Reserve	65	65	80	80	100-120	90-110	90-110	80-100	10	n/a
Total Inventory	215	225	80	80 (200)	100-120	90-110	90-110	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, April 28, 2015, <http://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/

Figure 13.4: Nuclear Competition and Uncertainty



Source: Henry Sokolski, “China’s Nuclear Weapons and Fissile Materials Holdings: Uncertainties and Concerns,” George Mason University, March 26, 2012.⁵⁶⁸

Assessments of China’s Nuclear Forces

The US has not provided detailed data on Chinese nuclear forces, nor has the US made them a key focus of its arms control efforts. The US only gives them passing mention in its recent unclassified reporting on US doctrine for sizing and employing US 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, think tanks like The Nuclear Threat Initiative (NTI) do provide considerable detail. The NTI describes China’s nuclear forces as follows:⁵⁶⁹

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-10 (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 report on recent Chinese weapons developments is as follows:⁵⁷⁰

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 2015:⁵⁷¹

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 reports that:⁵⁷²

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 ± 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 ± 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 addressed the distribution of China's nuclear forces in a 2015 report:⁵⁷³

We estimate that China has approximately 260 nuclear warheads in its stockpile for delivery by approximately 160 land-based ballistic missiles as well as aircraft and an emerging ballistic submarine fleet. This estimate is 10 warheads higher than last year, primarily due to additional sea launched ballistic missiles. Each missile in the Chinese arsenal is equipped to carry a single warhead, except a small number of silo-based missiles that have been equipped to carry multiple warheads. The warheads are not mated with missiles under normal circumstances and are instead kept separate in central storage facilities.

China is the only one of the five original nuclear weapon states that is quantitatively increasing the size of its nuclear arsenal, although the pace is slow. The arsenal's capabilities are also increasing as older missiles are replaced with newer and more capable ones. China is assigning a growing portion of its warheads to long-range missiles, and the US intelligence community predicts that by the mid-2020s China could "more than double" its number of warheads on missiles that are capable of threatening the United States to "well over 100" (Burgess, 2012: 19; US Air Force, National Air and Space Intelligence Center, 2013: 3).

We estimate that China's current arsenal includes as many as 60 long-range missiles that can reach the United States, although only 45 of those can strike the continental United States. Some Chinese missiles also have strike missions against Russia and India.

The Bulletin of the Atomic Scientists described China's land based nuclear forces as follows,

Modernization of the Chinese land-based ballistic missile force took an important new step in 2015 with reports that the country had equipped some of its silo-based ICBMs with multiple independently targetable re-entry vehicles (MIRVs). The upgrade is part of a broad modernization of China's land-based ballistic missile force, under which it is replacing older, transportable, liquid-fuel, slow launching missiles with longer-range, road-mobile, solid-fuel, quick-launching missiles based at new or upgraded Second Artillery garrisons. As a result of this effort, a greater portion of China's future land-based missile force will have longer ranges and be more maneuverable.

The current force has approximately 160 nuclear-capable land-based missiles of seven types, half of which are short range and medium-range; the number of long-range missiles is increasing slowly.

The oldest missile in China's inventory, the DF-3A (CSS-2), is a liquid-fueled, single-stage, maneuverable, intermediate range ballistic missile that can deliver a 3.3- megaton warhead up to 3,000 kilometers (km), sufficient to target southeastern Russia and Japan. The Pentagon's annual report to Congress on China in 2014 did not mention the DF-3A but the missile reappeared in the 2015 report (Defense Department, 2015). Apparently only one brigade of perhaps eight transportable DF-3A launchers remains but China may be in the process of retiring them and replacing them with the DF-21 (Kristensen, 2014a).

China also continues to maintain a single brigade of its second-oldest missile, the DF-4 (CSS-3) intercontinental ballistic missile (ICBM). The two-stage, liquid-fueled missile can deliver a 3.3- megaton warhead more than 5,500 km, sufficient 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. The DF-4 is being replaced by the DF-31.

China's DF-5A (CSS-4 Mod 2) - a liquid-fueled, two-stage, silo-based ICBM - has a range that exceeds 13,000 kilometers and has apparently been targeted at the United States and Russia since the early 1980s. The DF-5A is a longer-range modified version of the DF-5 (CSS-4 Mod 1). The Pentagon reported in May 2015 that China had equipped some of the DF-5As with multiple independently-targetable re-entry vehicles (MIRV) (Defense Department, 2015: 8). The MIRV'ed DF-5A is known as CSS-4 Mod 3. China has had the ability to deploy multiple warheads on the DF-5 for decades without doing so but apparently has recently decided to equip some of the DF-5 missiles with MIRVs, partly in response to the US deployment of a ballistic-missile defense system (Defense Department, 2015: 8, 31; Kristensen, 2015; Sanger and Broad, 2015). We estimate that China has approximately 20 DF- 5As, 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) medium-range ballistic missile (MRBM). The DF-21 exists in two nuclear versions: the DF-21 (CSS-5 Mod 1) and the newer DF-21A (CSS-5 Mod 2). The Mod 1 version has a range of 1,750-plus km but the new version probably has a longer range of about 2,150 km. The US intelligence community estimates that China's inventory of DF-21s increased from 19 to 50 missiles in 2006 to 75 to 100 missiles in 2011 (Defense Department, 2006: 50; 2011: 78). Today there are fewer than 50 launchers of each type deployed, with an estimated 80 to 90 launchers in total (US Air Force, National Air and Space Intelligence Center, 2013: 17). China has also started deploying conventionally armed versions of the DF-21 (the DF-21C and DF-21D, the latter an anti-ship missile). This potentially dangerous mix of nuclear and conventional missiles increases the risk of misunderstanding, miscalculation, and mistaken nuclear escalation in a crisis.

Deployment of the new DF-31 (CSS-10 Mod 1) ICBM, first introduced in 2006, appears to have stalled for the time being with fewer than 10 launchers (possibly as few as eight) deployed along with an equal number of missiles. The three-stage, road-mobile DF-31 which is transported on a six-axle TEL (transporter-erector-launcher) in a 15- meter-long canister has a range of more than 7,000 km, which is insufficient to target the continental United States. The DF-31 might have been intended to take over the regional targeting of Russia, India, and Guam from 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, yet its range (11,000-plus kilometers) with a payload of a single 200- to 300- kiloton warhead is shorter than that of the DF-5A ICBM. We estimate that China deploys about 25 DF-31A ICBMs in three brigades. Fourteen years ago, the US intelligence community estimated that by 2015 China would have 75 to 100 warheads on ICBMs (DF-31As and DF-5As), primarily targeted at the United States (CIA, 2001: 3). This prediction did not come to pass. Of China's 50 to 60 ICBMs an estimated 44, capable of carrying approximately 64 warheads in total, can target the continental United States.

Earlier versions of the Pentagon's annual China report indicated that the DF-31A could target the entire continental United States, but that was misleading because the range was measured from the Chinese border closest to the United States rather than actual deployment sites inside the country. Later versions of the report stated that the DF-31A can reach "most locations" within the continental United States (Defense Department, 2013: 6; 2015: 8) but apparently not all. Some targets on the US East Coast would still require use of the longer-range DF-5A.

The Pentagon has reported since at least 1997 that China is developing another road-mobile ICBM known as the DF-41. After the initial reporting, references to the missile disappeared from the public estimates but they have recently reappeared in the 2014 and 2015 annual Pentagon reports on China. The 2015 report states that "China also is developing a new road-mobile ICBM, the CSS-X-20 (DF-41), possibly capable of carrying MIRVs" (Defense Department, 2015: 8).

In his prepared testimony to the Senate Armed Services Committee in March 2015, STRATCOM commander Admiral Cecil Haney described the situation a little differently, saying China was "conducting flight tests of a new mobile missile, and developing a follow-on mobile system capable of carrying multiple warheads"

(Haney, 2015: 3). This statement implies that two new ICBMs are in development and that the second would be MIRV capable rather than “possibly capable” as stated in the Pentagon report.

Of China’s many types of short-range ballistic missiles, one is thought to be nuclear capable: the DF-15 (CSS-6). After reporting that the nuclear test conducted on August 16, 1990 may have been “related to development of a warhead for a Chinese short-range ballistic missile” (CIA 1990: 1), the CIA concluded in a September 1993 memorandum” that China will begin to field nuclear-armed CSSX-6’s [sic] 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 this apparent nuclear capability, it is unclear whether China ever completed and fielded a nuclear warhead for the DF-15. Regardless of nuclear status, DF-15-equipped units are thought to be mainly for conventional missions.

The same report provides the following assessment of Chinese sea-based nuclear forces:

China has built two types of submarine launched ballistic missiles (SLBMs), the JL-1 and JL-2, which were developed for two types of nuclear-powered ballistic missile submarines.

The 1,700-km-range, two-stage JL-1 (CSS-NX-3) SLBM developed for a single old Xia-class (Type 092) submarine first entered service in 1986 and is not considered operational. The Xia is based at the North Sea Fleet base near Qingdao in the Shandong province. The submarine underwent a lengthy shipyard overhaul in 2005 and 2006 but appears to have stayed in port since then. The Xia/JL-1 weapon system is expected to be retired soon.

Development of the new JL-2 (CSSNX-14) SLBM for the second-generation Jin-class (Type 094) submarine is nearing completion. The US intelligence community has predicted for several years that the missile was about to become operational, only to see further delays. After several setbacks, China appears to have overcome technical difficulties and successfully test-launched the JL-2 in 2013.

The JL-2 is a modified version of the DF-31. Equipped with a single warhead and possibly penetration aids, the JL-2 has never been flight tested to its full range but is estimated to have a range of 7,000-plus km. The 2015 Pentagon report estimates the range as 7,400 km (Defense Department, 2015: 9). Such a range is sufficient to target Alaska, Guam, Russia, and India from waters near China - but, unless the submarine carrying the weapon sails significantly eastward, not the continental United States.

Four Jin-class submarines are operational (without missiles) and all home ported at the South Sea Fleet base on Hainan Island, according to the Office of Naval Intelligence (ONI) (Office of Naval Intelligence, 2015: 14). There is some uncertainty about how many nuclear-powered ballistic missile submarines (SSBNs) China plans to build.

The ONI predicted nearly a decade ago that China might build five Jin SSBNs (Kristensen, 2007). That projection was repeated in 2013 when ONI estimated that there would be four to five boats by 2020 (Kristensen, 2014b). The 2015 Pentagon report appears to agree with that projection, saying “up to five may enter service” before China begins work on a next-generation SSBN (Defense Department, 2015: 9).

Yet in early 2015 other government sources began suggesting that China might produce more Jin SSBNs. 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). And in April 2015 Admiral Samuel J. Locklear, commander of US Pacific Command, told the same committee that “up to five more [Jin SSBNs] may enter service by the end of the decade” for a total of eight Jin submarines (Locklear, 2015: 9).

The reason there are different estimates of how many Jin-class SSBNs China plans to build is unclear. The higher number seems strange given that China is already expected to proceed to development and production of a third-generation (Type 096) SSBN over the next decade.

With 12 missile-launch tubes per submarine, four operational Jin SSBNs could carry 48 missiles with as many warheads’ a significant increase from the 12 SLBMs that the sole Xia-class submarine was equipped with.

The Pentagon asserts that the Jin/JL-2 weapon system “will give the PLA [Chinese] Navy its first credible sea-based nuclear deterrent” (Defense Department, 2013: 6). Yet the Chinese SSBN fleet faces several doctrinal, technical, and operational constraints. Under current doctrine, China’s Central Military Commission 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 doctrine.

Moreover, no Chinese ballistic missile submarine has ever sailed on a deterrent patrol so China's navy and the Central Military Commission have essentially no experience in operating a submarine force during realistic military operations. Developing this capability will require development of new command and control technologies and procedures.

But even if China deployed warheads on the SSBNs and sent them to sea in a crisis, where would they sail? For a JL-2 to reach the continental United States, for example, 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.

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 makes its submarine program puzzling, for it is much riskier to deploy nuclear weapons at sea, where submarines can be sunk by unfriendly forces, than to hide them in caves or forests deep inside China's extensive territory (Kristensen, 2014a).

The Global Security Estimate

Global Security provides the following summary of China's historical development of nuclear weapons and potential future steps:⁵⁷⁴

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 US 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 US 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 US 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 Lanchou. 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) provides another unclassified summary of China's nuclear weapons programs:⁵⁷⁵

U.S. governmental and non-governmental assessments¹ 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

The Federation of American Scientists (FAS) provides additional detail on Chinese tests and weapons developments:⁵⁷⁶

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.

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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 US government felt could be said about Chinese nuclear weapons on an unclassified basis. There are other US 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.

The United States Nuclear Posture

Since the end of the Cold War, the US has been removing its deployed nuclear weapons from Europe and Asia. In 2008, the US informed Japan it would be retiring its sea-based nuclear warhead Tomahawk cruise missiles from the region.⁵⁷⁷

The US had over 1,900 deployed strategic warheads as of April 2015. It had an additional 180 active theater nuclear weapons. The FAS reported that the US had an estimated 2,680 warheads in central storage. In addition to these warheads, approximately 2,340 retired by intact warheads under the control of the US Department of Energy are in storage, bringing the total US inventory of roughly 7,100 warheads. The US has cut a total of 158 strategic warheads and 88 launchers since February 2011 and plans on making further reductions by 2018.⁵⁷⁸

The US summarized its strategy in dealing with deterrence and nuclear forces as follows in its FY2016 defense budget overview:⁵⁷⁹

Nuclear Deterrence: Strengthening the nuclear enterprise remains the number one mission priority within the Air Force. 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 heavy bombers provide two legs of the Nation’s nuclear TRIAD. Dual-capable fighters and bombers extend deterrence and provide assurance to allies and partners. The Air Force continues its efforts to further the skills and leadership of its NDO-Airmen and institutionalize improvements and capitalize on gains made since the Air Force began reinvigorating the nuclear enterprise in 2008.

Intercontinental Ballistic Missile (ICBM): The FY 2016 budget funds additional investments to sustain and modernize the ICBM force. These investments include: ICBM Fuze replacement, Ground Based Strategic Deterrent (GBSD) flight system development, the addition of officer Assignment Incentive Pay and enlisted Special Duty Assignment Pay, and various security upgrades to include replacement of the nuclear warhead Payload Transporter Van and the addition of Remote Visual Assessment II to the missile fields.

Theater nuclear weapons present another set of complex issues because US policy has changed and the current status of such forces in contingencies outside Europe remains somewhat ambiguous.

A report by Amy Woolf of the US Congressional Research Service noted that,⁵⁸⁰

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 US remains committed to civil nuclear programs as well. It has 99 nuclear power reactors producing approximately 20% of US energy needs.⁵⁸¹

The documents the President submitted with his proposed FY2016 U.S. defense budget described several other current US plans for strategic forces, deterrence, and defense. It is not clear how they will affect the future US stockpile of nuclear weapons, but they do reflect both budget cutbacks and ongoing improvements in other areas:⁵⁸²

The FY 2016 President’s Budget funds the development and deployment of robust ballistic missile defense (BMD) capabilities to support the Administration’s priorities: protecting the U.S. homeland, deployed forces, allies, and partners. The budget includes \$9.6 billion for missile defense, including \$8.1 billion for the Missile Defense Agency.

For homeland defense, the budget request maintains the commitment to increase the number of deployed Ground-Based Interceptors (GBI) to 44 by FY 2017; continue development of the Redesigned Exo-atmospheric Kill Vehicle (REKV); and proceed with the development of the Long-Range Discrimination Radar (LRDR). When combined with the planned GBI reliability and system engineering improvements, these improvements will enable the homeland missile defense system to deal effectively with the maturing Intercontinental Ballistic Missile (ICBM) threat from North Korea and a potential ICBM threat from Iran.

The FY 2016 President’s Budget also reflects the Department’s commitment to building the regional missile defense forces that are interoperable systems 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 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 2016 President’s Budget request:

- 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 recent 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) Extended Range concept development; and procures 30 THAAD interceptors in FY 2016.
- Procures 80 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 and the David's Sling Weapon System.
- Continues conversion of Aegis ships to provide BMD capability and procures 40 SM-3 Block IB missiles to be deployed on Aegis BMD ships and at the Romania Aegis Ashore site.

The U.S. Force on Russia at a Time of Rising Chinese Capability

The US has long focused on Russia, paying little attention to Chinese nuclear forces. The US has also begun to promote significant nuclear weapons reductions. President Obama declared in April 2009 that the US 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 US 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 US 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.⁵⁸³

- 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 21st 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 21st 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 Specified in Section 491 of 10 U.S.C.* referenced China directly, making clear that the US will continue to seek maintenance of strategic stability with China and Russia.⁵⁸⁴

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.⁵⁸⁵ While concentrating on Russia and the European theatre, it seems that China was not mentioned once.

North and South Korea

US 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. 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.'"⁵⁸⁶

US officials assess 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.'"⁵⁸⁷ 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.⁵⁸⁸

One 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.⁵⁸⁹ Furthermore:⁵⁹⁰

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 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.”⁵⁹¹ 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:⁵⁹²

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.”⁵⁹³

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.⁵⁹⁴

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.⁵⁹⁵ Gen. Curtis M. Scaparrotti, the Commander of US forces in the ROK stated publicly 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.⁵⁹⁶

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.⁵⁹⁷

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.⁵⁹⁸

Despite the progress of the DPRK's nuclear program, it is 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.⁵⁹⁹ 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, 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.⁶⁰⁰ 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.⁶⁰¹ As noted earlier, US 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.

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.⁶⁰²

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 US had flown two radar-evading B-2 spirit bombers over South Korea, flying from the US 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 US 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 US-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.⁶⁰³

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.⁶⁰⁴

In early April 2013, the DPRK passed a decree at the 7th session of the 12th Supreme People's Assembly on "further consolidation of the self-defense nuclear power status."⁶⁰⁵ 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.⁶⁰⁶

Simultaneously, the US 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.⁶⁰⁷

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 2013.⁶⁰⁸

In response to the Musudan missiles on the east coast, Japan deployed ballistic missile interceptors near Tokyo.⁶⁰⁹ The US 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,⁶¹⁰ 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.⁶¹¹

The US deployed B-2 and B-52 bombers, both with nuclear capabilities, over the ROK, and used F-22s in drills with the ROK.⁶¹² On April 10, ROK-US 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.⁶¹³

The US 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 US remained committed, and also warned Beijing to restrain the DPRK or face an expanding US 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.⁶¹⁴ At the same time, in an attempt to avoid misperception by the DPRK, a long-scheduled test of Minuteman-3 ICBMs was delayed.⁶¹⁵

Several foreign companies operating in the ROK announced they were considering contingency plans for their employees’ safety,⁶¹⁶ 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.⁶¹⁷ While on a visit to China, Secretary of State John Kerry attempted to garner increased Chinese support of the US position

towards the DPRK – meaning, a reduction in Chinese support of the North – and reportedly offered to reduce US missile defense in the Asia-Pacific if the DPRK abandoned its nuclear program.⁶¹⁸

However, in early 2015 the US 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 US radar sensors extend deeper into Chinese territories.⁶¹⁹

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.”⁶²⁰

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.⁶²¹

According to US 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.”⁶²² 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.⁶²³

The creation of a ROK nuclear weapons program also became the subject of a new political debate after the DPRK's new military provocations in 2010. Conservatives of the Saenuri party wanted the US 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%).⁶²⁴

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.⁶²⁵ 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 US should restore the nuclear balance on the Peninsula by reintroducing US nuclear weapons, which had been removed in 1991.⁶²⁶

A small but growing number of South Koreans are concerned that the US, 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 US and international community has been unable to end the DPRK’s nuclear program.⁶²⁷

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 US was not stopping the DPRK’s development of nuclear weapons, and the US 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.⁶²⁸

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.

Yet, 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 US 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.⁶²⁹

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.⁶³⁰ 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 US-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 US 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 2025.⁶³¹ 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.⁶³²

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.⁶³³

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 US 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, an Open Briefing report on Indian nuclear forces drawing on material published in the Bulletin of the Atomic Scientists noted that India continued to improve the nuclear strike capabilities of its combat aircraft and develop sea-based ballistic and cruise missiles, and that its nuclear weapons stocks and missiles could be summarized as follows:⁶³⁴

India is estimated to have produced approximately 520 kilograms of weapons-grade plutonium (IPFM, 2011), sufficient for 100–130 nuclear warheads; however, not all of the material has been converted into warheads. Based on available information about its nuclear-capable delivery vehicles, we estimate that India has produced 80–100 nuclear warheads. It will need more warheads to arm the new missiles it is currently 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 is building an unsafeguarded prototype fast-breeder reactor at the Indira Gandhi Centre for Atomic Research near Kalpakkam (about 1,000 kilometers or 620 miles south of Visakhapatnam), which will significantly increase India's plutonium production capacity once it becomes operational.

...India has three types of land-based missiles that may be operational: the short-range Prithvi I, the short-range Agni I, and the medium-range Agni II. The Prithvi I has been deployed for almost 15 years, but the Agni I and II, despite being declared operational, both have reliability issues that have delayed their full operational service.

India has been busy growing its missile program, with four more Agni versions in progress: an Agni II+ was test-launched in 2010 but failed; the longer-range Agni III, after at least four flight-tests, remains under development; and the Agni IV may be a technology bridge to the newest type, the long-range Agni V, which had its first test-launch in April. Some of these Agni programs may serve as technology-development platforms for longer-range versions.

The bulk of the Indian ballistic missile force is comprised of three versions of Prithvi missiles, but only one of these versions, the army's Prithvi I, has a nuclear role. Given its small size (9 meters long and 1 meter in

diameter), the Prithvi I is difficult to spot on satellite images, and therefore little is known about its deployment locations. The Prithvi I is a short-range missile (up to 150 kilometers or 93 miles) and is the mainstay of the Strategic Forces Command, India's designated nuclear weapons service.

In December 2011, India successfully test-launched its two-stage Agni I missile, which has a range of 700 kilometers (435 miles), for the eighth time—suggesting that the missile might finally have become fully operational. But a ninth test-launch scheduled for early May 2012 was postponed due to a technical glitch.

The road- or rail-launched Agni II, an improvement on the Agni I, can fly up to 2,000 kilometers (1,243 miles) and can carry a 1,000-kilogram payload, and it takes just 15 minutes for the missile to be readied for firing. The missile has been test-fired eight times with several failures, but more recent test-flights, on May 19, 2010 and September 30, 2011, were successful, demonstrating some progress toward making the Agni II fully operational. A 2010 test-launch of an extended-range Agni II, known as the Agni II+, failed.

Still under development is India's rail-mobile Agni III, a two-stage, solid-fuel missile with a range of more than 3,000 kilometers (1,864 miles)... India took a significant step forward with the successful test-launch of the Agni V ballistic missile on April 19, 2012. With a range reportedly greater than 5,000 kilometers (3,107 miles), the Agni V can reach any target in China; however, the missile needs more testing and is still several years away from operational deployment.

A slightly more dated article in the *Bulletin of Atomic Scientists* describes Pakistan's nuclear program as including its F-16 fighters and the following nuclear and missile capabilities:⁶³⁵

Pakistan is building two new plutonium production reactors and a new reprocessing facility with which it will be able to fabricate more nuclear weapons fuel. It is also developing new delivery systems. Enhancements to Pakistan's nuclear forces include a new nuclear-capable medium-range ballistic missile (MRBM), the development of two new nuclear-capable short-range ballistic missiles, and the development of two new nuclear-capable cruise missiles.

We estimate that Pakistan has a nuclear weapons stockpile of 90–110 nuclear warheads, an increase from the estimated 70–90 warheads in 2009 (Norris and Kristensen, 2009). The US Defense Intelligence Agency projected in 1999 that by 2020 Pakistan would have 60–80 warheads (Defense Intelligence Agency, 1999); Pakistan appears to have reached that level in 2006 or 2007 (Norris and Kristensen, 2007), more than a decade ahead of predictions. In January 2011, our estimate (DeYoung, 2011) 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 US estimate for "deployed weapons" ranged from the mid-90s to more than 110 (Sanger and Schmitt, 2011).¹ With four new delivery systems and two plutonium production reactors under development, however, the rate of Pakistan's stockpile growth may even increase over the next 10 years.

The Pakistani government has not defined the number and type of nuclear weapons that its minimum deterrent requires. But Pakistan's pace of nuclear modernization—and its development of several short-range delivery systems—indicates that its nuclear posture has entered an important new phase and that a public explanation is overdue.

...Pakistan has three operational nuclear-capable ballistic missiles: the short-range Ghaznavi (Hatf-3) and Shaheen-1 (Hatf-4) and the medium-range Ghauri (Hatf-5). It has at least three other nuclear-capable ballistic missiles under development: the medium-range Shaheen-2 (Hatf-6), which may soon be operational, and the short-range Abdali (Hatf-2) and Nasr (Hatf-9) systems.

...Pakistan is developing two new cruise missiles, the Babur (Hatf-7) and Ra'ad (Hatf-8), and it uses similar language to describe both missiles. According to the ISPR, the Babur and Ra'ad both have "stealth capabilities" and "pinpoint accuracy," and each is described as "a low-altitude, terrain-hugging missile with high maneuverability"

One has to assume that there should be a high level of rational restraint and deterrence, but both states have a history of overreaction, nationalism, and failure to demonstrate stability and restraint in arms control. More broadly, historical precedent, particularly over the 20th century, does not make a strong case for behavior based on rational bargaining.

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.

Russia

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.⁶³⁶

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,⁶³⁷

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 harbours 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.⁶³⁸

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:⁶³⁹

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 centres 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 kilometres. 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 modernisation 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 (US\$136bn) for aerospace defence, and the plan is for around 100 SAM and Pantsyr-S1 systems, as well as more than 30 Vityaz medium-range missile systems, to be in service by 2020. Vityaz 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,⁶⁴⁰

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

While China is a party to many of the international agreements regulating biological weapons, past US 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 US 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 US has doubted that China was fully declaring its previous and current activities in this area, the US reported most of its concerns resolved in 2011.⁶⁴¹

CHAPTER 14: 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, is emerging 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 emerging as the largest and most modern Asian military power, and a military power strong enough to project power outside Asia in an increasingly multi-polar world. This is steadily increasing the willingness of China 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 asserting its emergence as a major 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 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 which 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 did begin to modernize 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.

Taiwan and Other Flashpoints

No analysis of China's actions and strategy can focus simply on its current actions and objectives and 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 raising 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.⁶⁴² The issues affecting the South China Sea have been summarized in this report’s examination of the PLAN, and addressed 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.

While the U.S. and China did face a crisis over the Taiwan Straits in 1995-1996, 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.

Chinese Military Strategy in the Taiwan Strait

Chinese strategy toward Taiwan remains focused on making Taiwan an integral part of China, and 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”.⁶⁴³ 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 states that:⁶⁴⁴

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 states that:⁶⁴⁵

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 2015 that this ambiguity preserves China’s flexibility in dealing with Taiwan and specifically cites China’s Anti-Secession Law:⁶⁴⁶

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.

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 14.1** 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*, 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 a much longer document 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.

The 2013 report provides the following Taiwanese view of China's active defense and security environment:⁶⁴⁷

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 continues to offer an extensive review of the developments and spending of the PLA in the following excerpt and in Figures 14.1 – 14.3:

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-Strait relations and expanded exchanges in an attempt to create advantageous conditions for cross-Strait 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-Strait 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. The PRC's defense budget from 2004 to 2013 is shown in [Figure 14.2].

Figure 14.2 shows the budget overview of the PLA as assessed by the Taiwan Ministry of National Defense in its 2013 defense white paper. Key portions are:

1. Budget Overview

The PRC's defense budget was RMB720.2 billion (roughly US\$116.3 billion) in 2013, growing 7.4% compared with the 2012 budget (RMB670.3 billion, roughly US\$106.4 billion). According to "China's National Defense in 2010" and the 2012 report "The Diversified Employment of China's Armed Forces," the increased defense budget was mainly used to increase salaries for its servicemen, improve conditions for coast guard and forces in remote and difficult regions, increase non-war military operation capabilities and infrastructure, ensure earthquake disaster relief, and carry out convoy missions in the Gulf of Aden and Somali waters. However, considering the cost of procuring, modifying, outfitting, and maintaining new strategic equipment, the budget announced by the PRC cannot support other military developments, indicating that its actual expenditure must be concealed in other non-military budgets.

2. Immense Hidden Budget

In response to requirements of defense missions, the PRC is actively purchasing new weapons and equipment from Russia, and uses arms purchases to negotiate technology transfers; the PRC also uses reverse engineering together with its scientific research results to indigenously develop weapons and equipment, hoping to achieve national defense autonomy.

The PRC's expenditure on defense technology research, weapons sales income, weapons procurement expenditure, revenue of defense industries, and expenses of the People's Armed Police (listed under the public

security budget) have all been excluded from its defense budget. Considering that the various expenses are distributed under different departments, we can determine that there remains immense expenses concealed under non-military budget items, and that the PRC's actual defense spending is 2 to 3 times the amount it discloses (roughly US\$232.7-349.0 billion).

Figure 14.3 shows the assessment made by the Taiwan Ministry of National Defense in its 2013 defense white paper on the overall expenses excluded and budgetary discrepancies in the PRC's defense budget. The paper states that,

3. Rapid Increase of the Budget of the People's Armed Police

While the PRC promoted economic development, local governments adopted the policy to put economic development above all else, and used public power to remove all investment obstacles, which led to frequent large scale protests and conflicts. Furthermore, the PRC considers separatism in Tibet and Xinjiang to be a serious threat to the stability of its borders. For this reason, the People's Armed Police's budget has showed double digit growth every year since 2006, purchasing new equipment to carry out missions for maintaining stability and handling conflicts, so as to ensure regional stability and the CCP's political power. The People's Armed Police's budget and execution from 2004 to 2013 is shown in [Figure 14.4].

Figure 14.4 shows the budget of the PRC's People's Armed Police as assessed by the Taiwan Ministry of National Defense, and provides important insights into China's use of its paramilitary forces to achieve its strategic objectives:

Deployment of New Strategic Equipment

To realize its military modernization and in response to multiple military threats, the PRC in recent years has been actively developing new unmanned aircraft, fighters, stealth bombers, nuclear-powered submarine and submarine-launched intercontinental ballistic missile, aircraft carrier, helicopter carrier, and carrier-based aircraft.

1. Current Status of Strategic Equipment

The PRC's first aircraft carrier Liao Ning was formally handed over to the Navy for training; nuclear-powered attack submarines and ballistic missile submarines have been handed over to fleets for service, and are currently testing the JL-2 submarine-launched ballistic missile; the Air Force has been outfitted with the new strategic bomber and air-refueling tanker, and the Second Artillery has been outfitted with new tactical (strategic) missiles and new strategic nuclear missiles.

2. Development of New Equipment

The PLA is actively developing and modifying weapons and equipment, such as the Ground Force's new heavy tanks, armed reconnaissance, transport, and attack helicopters; the Navy's helicopter carriers, aircraft carriers (traditional and nuclear powered), amphibious landing vessels, new warships, and new nuclear-powered submarines; the Air Force's stealth bombers, stealth fighters (fourth and fifth generation fighters), ships unmanned aircraft, large warning aircraft, large (medium) transport aircraft, and long-range bombers; the Second Artillery's new tactical (strategic) missiles.

3. Current Status of Foreign Military Purchases

The PRC has continued to purchase large hovercrafts, AIP traditional submarines, Su-35 fighters, and D-30KP-2 engine from Russia and Ukraine. It has further purchased Ka-28 and Ka-31 helicopters for its aircraft carrier Liaoning, and has developed new warning and anti-submarine helicopters through reverse engineering.

Active Management of the East China Sea and South China Sea

After cross-strait relations gradually relaxed, although the Taiwan Strait remains the strategic emphasis of the PRC, the strategic importance of the East China Sea and South China Sea has significantly increased. The PRC is currently actively managing its air superiority in the regions, expanding Far Sea contingency response forces, and has delivered the first aircraft carrier to its Navy to declare its sovereignty. When ships of the PRC and the Philippines confronted each other in the South China Sea, and when Japan raised the dispute over sovereignty of Diaoyutai, the PRC immediately assembled a mobile fleet to the sea areas of dispute.

1. Management of the East China Sea to Safeguard Sovereignty of Diaoyutai

Due to the naming and nationalization of uninhabited islands of Diaoyutai by Japan, the PRC dispatched military aircraft and ships to gradually expand the patrol intensity of Diaoyutai and surrounding sea areas. This also caused Japan to strengthen surveillance over surrounding sea areas and air space, and strengthen its defense capabilities via the "Treaty of Mutual Cooperation and Security between the United States and Japan," resulting in numerous confrontations between the PRC and Japan.

2. Management of the South China Sea to Safeguard Sovereignty of Islands in the Region

Disputes in the South China Sea and exclusive economic zone issues are affected by claimant countries and the PRC's sovereignty protection and military deployment, becoming a new factor in regional stability. At present, Vietnam purchased high-tech weapons from Russia in hopes of matching the PRC. After the confrontation between ships of the PRC and the Philippines in March 2013, the US and Philippines expanded their 29th Balikatan Exercises in April 2013, and the Philippines agreed to let the US use its military bases, forming a challenge to the PRC in managing the South China Sea and safeguarding island sovereignty.

3. Strengthening Public Ship Support Mechanisms

The PRC handed over 10 decommissioned Navy ships that were refitted to the China Maritime Surveillance and China Fisheries Law Enforcement Command to better defend its sovereignty in sea areas. During annual training evaluations and live exercises, the ships are assembled under the State Oceanic Administration as ocean pollution monitoring ships to carry out guard missions, so as to strengthen the command and control mechanism between ships.

Starting in January 2013, Hainan Province's Public Security Department and Border Control Department authorized the boarding, detaining and chasing away of foreign ships illegally in sea areas under its jurisdiction in accordance with the "Hainan Province Coastal Border Control Regulations." This is expected to make the PRC's force utilization at sea even more flexible.

Strengthening A2/AD Capabilities

The PRC believes that in the event it uses military force against Taiwan, its greatest threat is the intervention of foreign forces. Therefore, in order to effectively resist and deter foreign forces from intervening, the PLA is actively developing regional intelligence, surveillance, and reconnaissance systems and new weapons to gradually enhance its comprehensive A2/AD capabilities in the West Pacific.

Furthermore, the PRC is actively conducting exercises for its action plans in response to possible intervention operations of foreign forces. The PLA Navy's fleets once simultaneously traveled to the waters of Okinotorishima for cross-region Far Sea training, conducting drills of the action plan to resist foreign forces, so as to gain superiority within the first island chain and gradually achieve strategic objectives of Far Sea defense.

Response to Multiple Security Threats

To execute diverse military missions, the PRC utilizes international organizations, such as the Shanghai Cooperation Organization (SCO), to organize joint counter-terrorism and joint search and rescue exercises in sea areas around the Asia-Pacific with multiple countries, using the exercises to strengthen its influence on international affairs. Furthermore, the PRC expanded non-war military operations training, increasing the ratio of simulated training for high-tech weapons and equipment, and emphasizing exercises related to nighttime, complex climate, and complex electromagnetic environments. This shows that the PLA is capable of effectively completing diverse military and non-military missions under multiple security threats.

Significant Expansion of Maritime Operations

The PRC began actively managing the South China Sea in 2010, and accelerated its force buildup at the same time, strengthening its sea and air superiority to declare its sovereignty. PLA Navy vessels passed through the Osumi Strait, Japan twice and its operations crossed over the Bonin Islands into the West Pacific, indicating that the PRC is exercising its right of freedom of navigation on high seas and expand its training sea area. PLA Navy fleets conducted roughly 30 cross region Far Sea trainings from 2005 to 2013, reaching as far as the area east of the Ogasawara Islands, showing its ambition to achieve Far Sea defense.

Figure 14.1: 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 Combat Equipment: Tanks and armored vehicles: Over 1,500 Helicopters: Over 200 Heavy artillery: Over 1,000	Over 1,250,000 Tanks and armored vehicles: Over 15,400 Helicopters: Over 600 Heavy artillery: Over 7,200 (including anti-tank guns)
Navy	Force: Over 30,000 Battleships: Over 190 Principal Combatants: Large battleships: Over 20 Amphibious ships: Over 10 Submarines: 4	Over 260,000 Over 800 Large battleships: Over 70 Amphibious ships: Over 40 Submarines: Over 60
Air Forces	Force: Over 30,000 Principal Combatants: Fighters: Over 370 (F-16, M-2000, IDF and F-5)	Over 370,000 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 Principal Combatants: n/a	Force: Over 149,000 Strategic Missiles: Over 190 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>

Figure 14.2: 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	108,989.0	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 14.3: 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 14.4: 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>

The US Perspective on the China-Taiwan Balance

Reporting by the U.S. Department of Defense has consistently stressed the build-up of Chinese military capabilities relative to Taiwan. **Figure 14.5** shows a DoD estimate of the balance of forces in 2015. The *Military and Security Developments Involving the People's Republic of China 2015* 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: ⁶⁴⁸

U.S. policy toward Taiwan derives from its One-China Policy, based on the three Joint Communiqués and the Taiwan Relations Act (TRA). United States policy opposes any unilateral changes to the status quo in the Taiwan Strait by either side. The U.S. continues to support peaceful resolution of cross-Strait differences in a manner acceptable to the people on both sides.

Consistent with the TRA, the United States has helped to maintain peace, security, and stability in the Taiwan Strait 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 \$12 billion in arms sales to Taiwan since 2010.

At the same time, it describes the PLA's capabilities and options:⁶⁴⁹

The PLA is capable of increasingly sophisticated military action 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 over strategic deception. Another option is that China would sacrifice overt, large-scale preparations in favor of surprise to force rapid military and/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; and,
- Fight to a standstill and pursue a political settlement after a protracted conflict.

The DoD 2015 report continues to describe the PLA's alternative courses of action aside from direct military engagement against Taiwan:⁶⁵⁰

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.

The 2015 DoD report explains China's other military options against Taiwan, specifically limited force, air and missile campaigns, and amphibious invasion:⁶⁵¹

China might use a variety of disruptive, punitive, or lethal military actions in a limited campaign against Taiwan, likely 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 degrade the populace's confidence in the Taiwan leadership. Similarly, PLA special operations forces could infiltrate Taiwan and conduct attacks against infrastructure or leadership targets.

...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.

...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.

Finally, the DoD 2015 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: ⁶⁵²

Missile Forces. The Second Artillery Force 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 PLA Air Force 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 them 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 a counterattack. Third, China's development of support aircraft provide it improved ISR to support PLAAF operations in a contingency.

Navy Forces. The PLA Navy 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 deter and counter any potential third party intervention in a Taiwan conflict.

Ground Forces. 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 2015 report then details Taiwan's defensive capabilities: ⁶⁵³

Taiwan has historically relied upon multiple military variables to deter PLA aggression: 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. China's increasingly modern weapons and platforms (more than 1,200 conventional ballistic missiles, an ASBM program, ships and submarines, combat aircraft, and improved C4ISR capabilities) have eroded or negated many of these factors.

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 (NCO) 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 275,000 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 military spending has dropped to approximately 2 percent of GDP. Meanwhile, China's official defense budget has grown to roughly 10 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 counter-balance China's growing capabilities.

Figure 14.5: The Balance in the Taiwan Straits in 2015

Taiwan Strait Military Balance, Ground Forces			
	China		Taiwan
	<i>Total</i>	<i>Taiwan Strait Area</i>	<i>Total</i>
Personnel (Active)	1.25 million	400,000	130,000
Group Armies	18	8	3
Infantry Divisions	12	3	0
Infantry Brigades	23	6	8
Mechanized Infantry Divisions	7	3	0
Mechanized Infantry Brigades	25	7	3
Armor Divisions	1	0	0
Armor Brigades	17	8	4
Army Aviation Brigades and Regiments	11	6	3
Artillery Brigades	22	10	5
Airborne Divisions	3	3	0
Amphibious Divisions	2	2	0
Amphibious Brigades	3	3	3
Tanks	6,947	2,758	1,100
Artillery Pieces	7,953	3,891	1,600

Taiwan Strait Military Balance, Air Forces			
	China		Taiwan
	<i>Total</i>	<i>Within range of Taiwan</i>	<i>Total</i>
Aircraft			
Fighters	1,700	130	388
Bombers/Attack	400	200	22
Transport	475	150	21
Special Mission Aircraft	115	75	10

Taiwan Strait Military Balance, Naval Forces			
	China		Taiwan
	<i>Total</i>	<i>East and South Sea Fleets</i>	<i>Total</i>
<i>Aircraft Carriers</i>	1	0	0
<i>Destroyers</i>	21	14	4
<i>Frigates</i>	52	42	22
<i>Corvettes</i>	15	11	1
<i>Tank Landing Ships/ Amphibious Transport Dock</i>	29	26	12
<i>Medium Landing Ships</i>	28	21	4
<i>Diesel Attack Submarines</i>	53	34	4
<i>Nuclear Attack Submarines</i>	5	2	0
<i>Coastal Patrol (Missile)</i>	86	68	45

Notes:

The PLA Army units are organized into Group Armies. Infantry, armor, artillery, and army aviation units are organized into a combination of divisions and brigades deployed throughout the PLA's seven military regions (MR). The ground forces of China also include the two marine brigades under the Navy and the 15th Airborne Army of the Air Force. A significant portion of these assets are deployed in the Taiwan Strait area, specifically the Nanjing, Guangzhou, and Jinan MRs. Taiwan has seven Defense Commands, three of which have Field Armies. Each Army contains an Artillery Command roughly equivalent to a brigade plus.

The PLA Navy has 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.

The PLA Air Force and Navy have approximately 2,100 operational combat aircraft. These consist of air defense and multi-role fighters, ground attack aircraft, fighter-bombers, and bombers. An additional 1,450 older fighters, bombers, and trainers are employed for training and research and development. The two air arms 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. Currently, 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.

Source: DoD, *Report to Congress on Military and Security Developments Involving the People's Republic of China 2015*, April 2015, 78-80.

The Japanese Perspective of the China-Taiwan Balance

The Japanese 2014 defense white paper took a somewhat different perspective from that of the U.S.:⁶⁵⁴

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 (Kuomintang), 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 which 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:

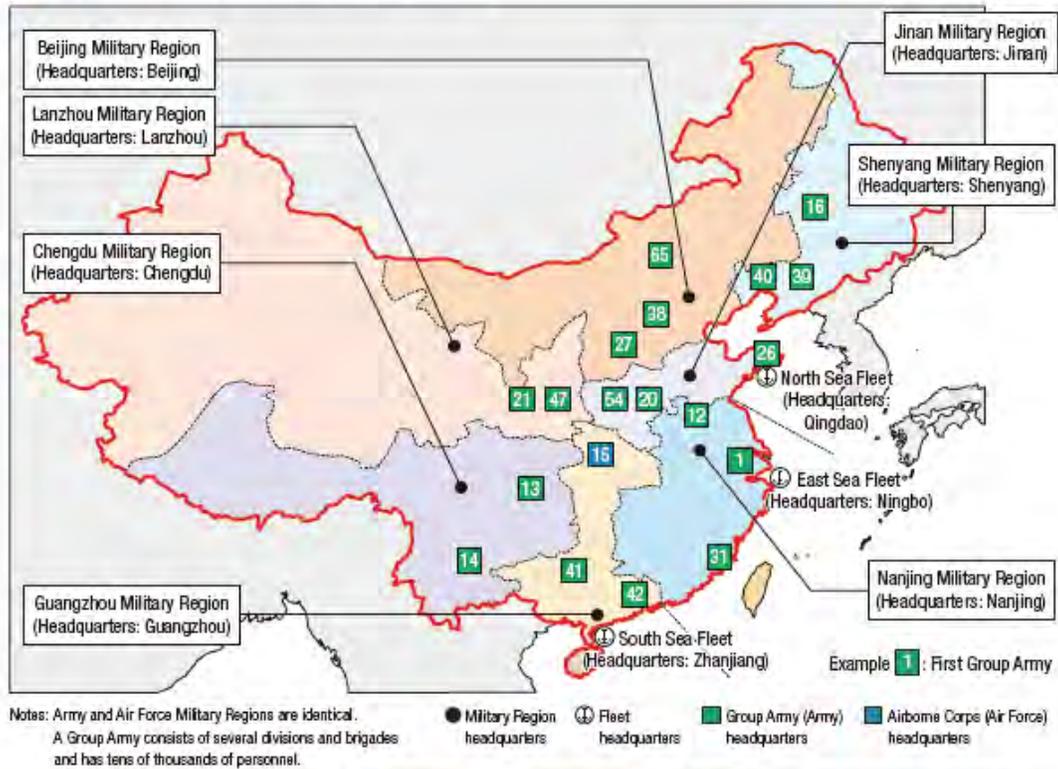
- 1) Regarding ground forces, China possesses an overwhelming number of troops; however, their capability of landing on and invading the island of Taiwan is limited. Nevertheless, China is making efforts to improve its landing and invasion capabilities in recent years, such as building large landing 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 14.6 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 14.6: 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.

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 14.7 to 14.8** depict 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.⁶⁵⁵ 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,⁶⁵⁶

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 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 14.7** illustrates a brief summary of trends in force structure and strength of the PLA.
- **Figure 14.8** displays trends in PLA forces in the immediate vicinity of the Taiwan Strait.
- **Figure 14.9** shows trends in the force structure of the ROC armed forces.

It should also be remembered that additional PRC forces beyond the vicinity of the Strait could be committed to a potential Taiwan contingency.

Figure 14.7: A Summary of Trends in the PLA

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Millions of Personnel (Active)	1.6	1.4	1.4	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
Infantry Divisions	20	25	25	19	19	19	17	-	15	15	12
Infantry Brigades	20	33	33	24	24	25	22	-	16	16	23
Mot. Infantry Divisions	-	-	-	-	-	-	-	18	-	-	-
Mot. Infantry Brigades	-	-	-	-	-	-	-	22	-	-	-
Mech. Infantry Divisions	5	-	-	4	4	4	6	8	6	6	7
Mech. Infantry Brigades	5	-	-	5	5	5	6	6	17	17	25
Armor Divisions	10	9	9	9	9	9	9	9	1	1	1
Armor Brigades	10	11	11	8	8	8	8	9	16	16	17
Army Aviation Brigades/Regts	-	-	-	-	-	-	-	-	-	-	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
Airborne Divisions	*	3	3	3	3	3	3	3	3	3	3
Amphibious Divisions	-	-	-	2	2	2	2	-	2	2	2
Amphibious/ Marine Brigades	2	2	2	3	3	3	3	2	3	3	3
Tanks	6500	7000	7000	6700	6700	7000	7000	7000	7000	7000	6947
Artillery Pieces	11000	11000	11000	7400	7400	8000	8000	8000	8000	8000	7953

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Aircraft Carriers	0	0	0	0	0	0	0	0	1	1	1
Destroyers	21	25	25	29	25	25	26	26	23	24	21
Frigates	43	45	47	45	48	49	53	53	52	49	52
Corvettes	-	-	-	-	-	-	-	-	-	8	15
Tank Landing Ship/Amphibious Transport Dock	20	25	25	26	27	27	27	28	29	29	29
Medium landing Ships	23	25	25	28	28	28	28	23	26	28	28
Diesel Attack Submarines	51	50	53	54	54	54	49	48	49	51	53
Nuclear Attack Submarines	6	5	5	5	6	6	5	5	5	5	5
Coastal patrol (Missile)	51	45	41	45	70	85	86	86	85	85	86

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fighters	1,500	1,525	1,550	1,630	1,655	1,680	1,680	1,570	1,700	1,700	1,700
Bombers/ Attack	780	775	775	620	645	620	620	550	600	400	400
Transport	500	450	450	450	450	450	450	300	475	475	475
Special Mission	-	-	-	-	-	-	-	-	-	-	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 2009-2015*.

Figure 14.8: Trends in PLA Forces Deployed in the Vicinity of the Taiwan Strait

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Personnel (Active)	375,000	400,000	400,000	440,000	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
Infantry Divisions	9	9	9	8	8	6	5	-	5	5	3
Infantry Brigades	11	12	12	11	11	11	9	-	6	6	6
Mot. Infantry Divisions	-	-	-	-	-	-	-	5	-	-	-
Mot. Infantry Brigades	-	-	-	-	-	-	-	11	-	-	-
Mech. Infantry Divisions	3	-	-	1	1	1	2	4	2	2	3
Mech. Infantry Brigades	1	-	-	1	1	1	1	1	7	7	7
Armor Divisions	4	4	4	4	4	4	4	4	0	0	0
Armor Brigades	4	4	4	3	3	3	3	4	7	7	8
Artillery Divisions	3	3	3	2	2	2	2	2	2	2	0
Artillery Brigades	5	5	5	6	6	6	6	6	6	6	10
Army Aviation Brigades/Regts	-	-	-	-	-	-	-	-	-	-	6
Airborne Divisions	*	3	3	3	3	3	3	3	3	3	3
Amphibious Divisions	-	-	-	2	2	2	2	-	2	2	2
Amphibious/Marine Brigades	2	2	2	3	3	3	3	2	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
Artillery Pieces	5,500	3,200	3,200	2,900	2,900	3,400	3,400	3,400	3,000	3,000	3,891

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Aircraft Carriers	0	0	0	0	0	0	0	0	0	0	0
Destroyers	13	16	16	17	17	15	16	16	16	14	14
Frigates	34	40	40	36	39	40	44	44	44	40	42
Corvettes	-	-	-	-	-	-	-	-	-	6	11
Tank Landing Ships	20	22	22	24	25	25	25	26	27	26	26
Medium landing Ships	15	20	20	23	23	23	21	18	24	21	21
Diesel Attack Submarines	29	28	28	32	32	32	33	30	33	32	34
Nuclear Attack Submarines	-	-	-	1	1	2	2	2	2	2	5
Coastal patrol (Missile)	34	34	34	35	55	65	68	67	67	67	68

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fighters	425	425	425	330	330	330	330	310	330	130	130
Bombers/Attack	280	275	275	160	160	160	160	180	160	200	200
Transport	50	75	75	40	40	40	40	40	40	150	150
Special Mission	-	-	-	-	-	-	-	-	-	-	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 2009-2015*.

Figure 14.9: Trends in the ROC Armed Forces

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Personnel (Active)	200,000	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
Infantry Divisions	-	-	-	-	-	-	-	-	0	0	0
Infantry Brigades	25	13	13	8	8	8	8	-	8	8	8
Mot. Infantry Divisions	-	-	-	-	-	-	-	-	-	-	-
Mot. Infantry Brigades	-	-	-	-	-	-	-	8	-	-	-
Mech. Infantry Divisions	-	-	-	-	-	-	-	-	0	0	0
Mech. Infantry Brigades	3	-	-	3	3	3	3	3	3	3	3
Armor Divisions	-	-	-	-	-	-	-	-	0	0	0
Armor Brigades	5	5	5	5	5	4	4	4	4	4	4
Army Aviation Brigades/Regts	-	-	-	-	-	-	-	-	-	-	3
Artillery Divisions	-	-	-	-	-	-	-	-	0	0	0
Artillery Brigades	-	3+	3+	5	5	5	5	5	5	5	5
Airborne Divisions	-	-	-	-	-	-	-	-	0	0	0
Amphibious Divisions	1	-	-	-	-	-	-	-	0	0	0
Amphibious /Marine Brigades	3	2	2	3	3	3	3	2	3	3	3
Tanks	1,900	1,800	1,800	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

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Aircraft Carriers	0	0	0	0	0	0	0	0	0	0	0
Destroyers	6	2	4	4	4	4	4	4	4	4	4
Frigates	21	22	22	22	22	22	22	22	22	22	22
Tank Landing Ship/ Amphibious Transport Dock	12	12	12	12	12	12	12	12	12	12	12
Medium landing Ships	4	4	4	4	4	4	4	4	4	4	4
Diesel Attack Submarines	4	4	4	4	4	4	4	4	4	4	4
Nuclear Attack Submarines	-	-	-	-	-	-	-	-	0	0	0
Coastal patrol (Missile)	50	50	50	51	59	61	61	61	45	45	45
Corvette	-	-	-	-	-	-	-	-	-	0	1

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Fighters	420	330	330	390	390	388	388	388	388	388	388
Bombers/Attack	-	-	-	-	-	22	22	22	22	22	22
Transport	40	40	40	40	40	21	21	21	21	21	21
Special Mission	-	-	-	-	-	-	-	-	-	-	10

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*.

The Naval Balance

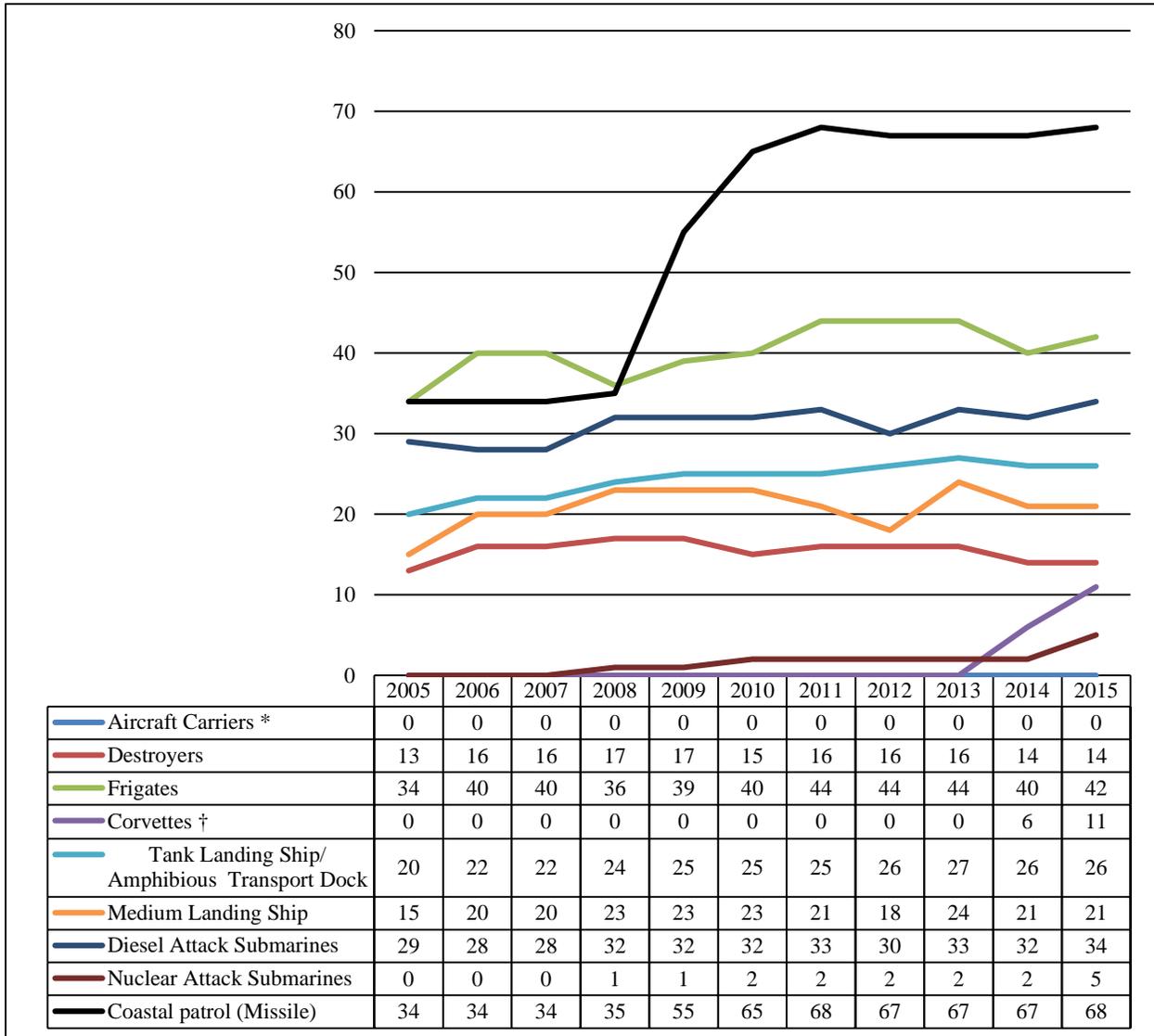
The numerical indicators presented in the previous figures have shown that the naval balance in the Taiwan Strait is shifting in favor of the PRC. The Figures for the years 2005-2015 indicate that, while Taiwan has kept its naval force numbers at a relatively stable level (with the exception of patrol craft), the PRC has engaged in a constant, if moderate, increase in the number of naval forces allocated to the Taiwan Strait.

Figures 14.10 and 14.11 illustrate the numerical changes in naval forces on both sides over time; these data 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 have significant drawbacks. 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 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 14.10: Absolute Trends in PLAN Deployments to the East and South Sea Fleets

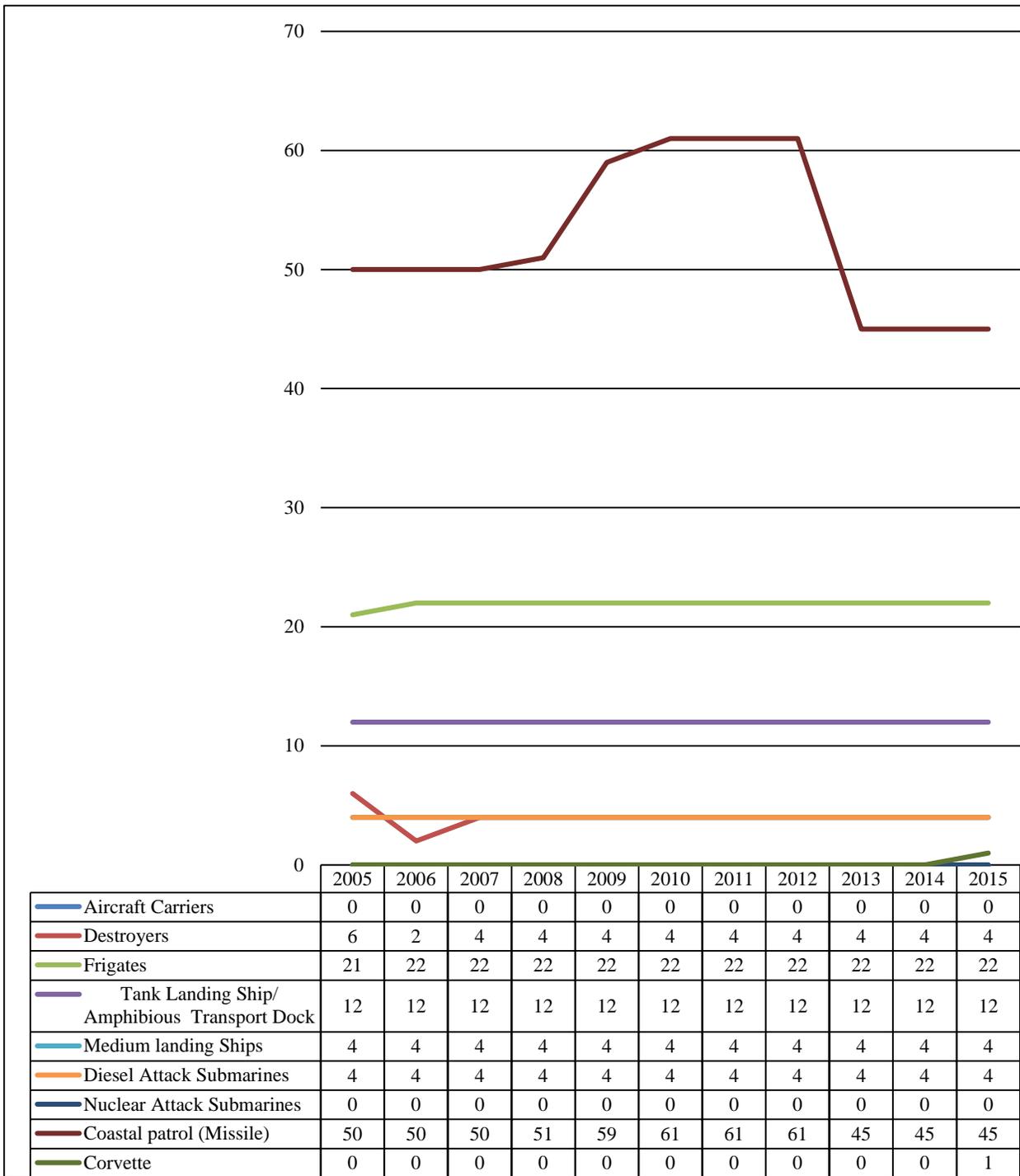


*Aircraft carriers were recently introduced into the PLAN. Therefore, a comparison between current force levels and 2005 force levels could not be made. The carrier *Liaoning*, is currently deployed with the North Sea Fleet.

†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 14.11: Absolute Trends in ROC Naval Forces



*This is the first year that this DoD Report counts corvettes. Taiwan does not have corvettes, according to the 2014 DoD Report.

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*.

Figures 14.10 and 14.11 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 14.12 and 14.13 illustrate this changing balance by using 2005 as a baseline and charting relative increases in force numbers on both sides. **Figure 14.12** demonstrates the changing relative force strength of PLAN deployments to the Taiwan Strait while **Figure 14.13** 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 shifted significantly in the favor of the PRC by 2012. Of course, this trend does 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.

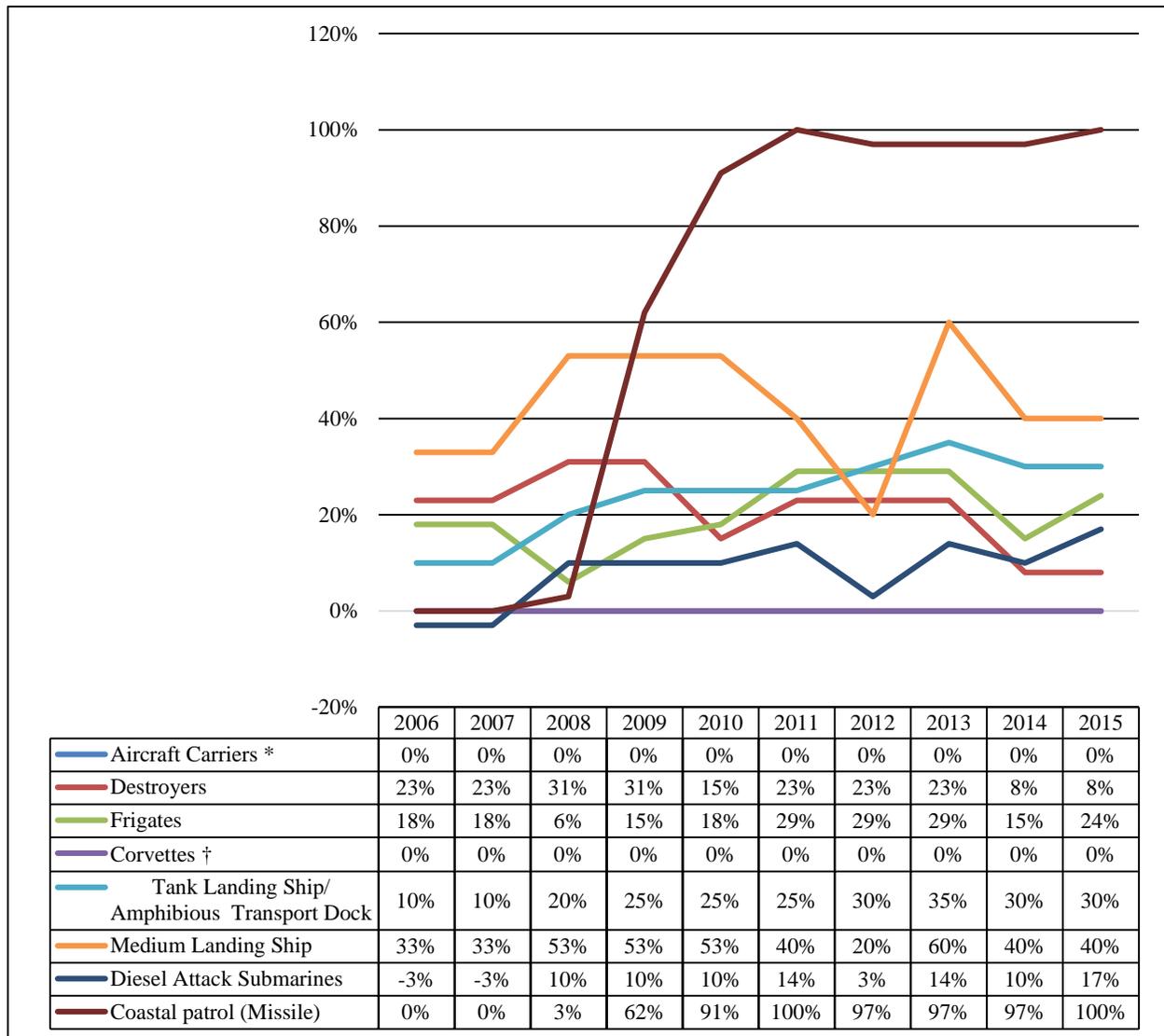
It is necessary to reiterate that these trends do not account for the myriad factors that would influence a PRC-ROC naval contest. Both sides operate numerous systems and forces not shown in the quantitative data below that would influence the naval contest. However, numbers do play a role in determining the outcome of combat.

It is interesting in this regard that the DoD report on *Military and Security Developments Involving the People's Republic of China for 2014* highlights the following largely naval scenario similarly to the 2015 report:⁶⁵⁷

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 14.12: Relative Increases in PLAN Deployments to the East and South Sea Fleets since 2005 (percentage increase)

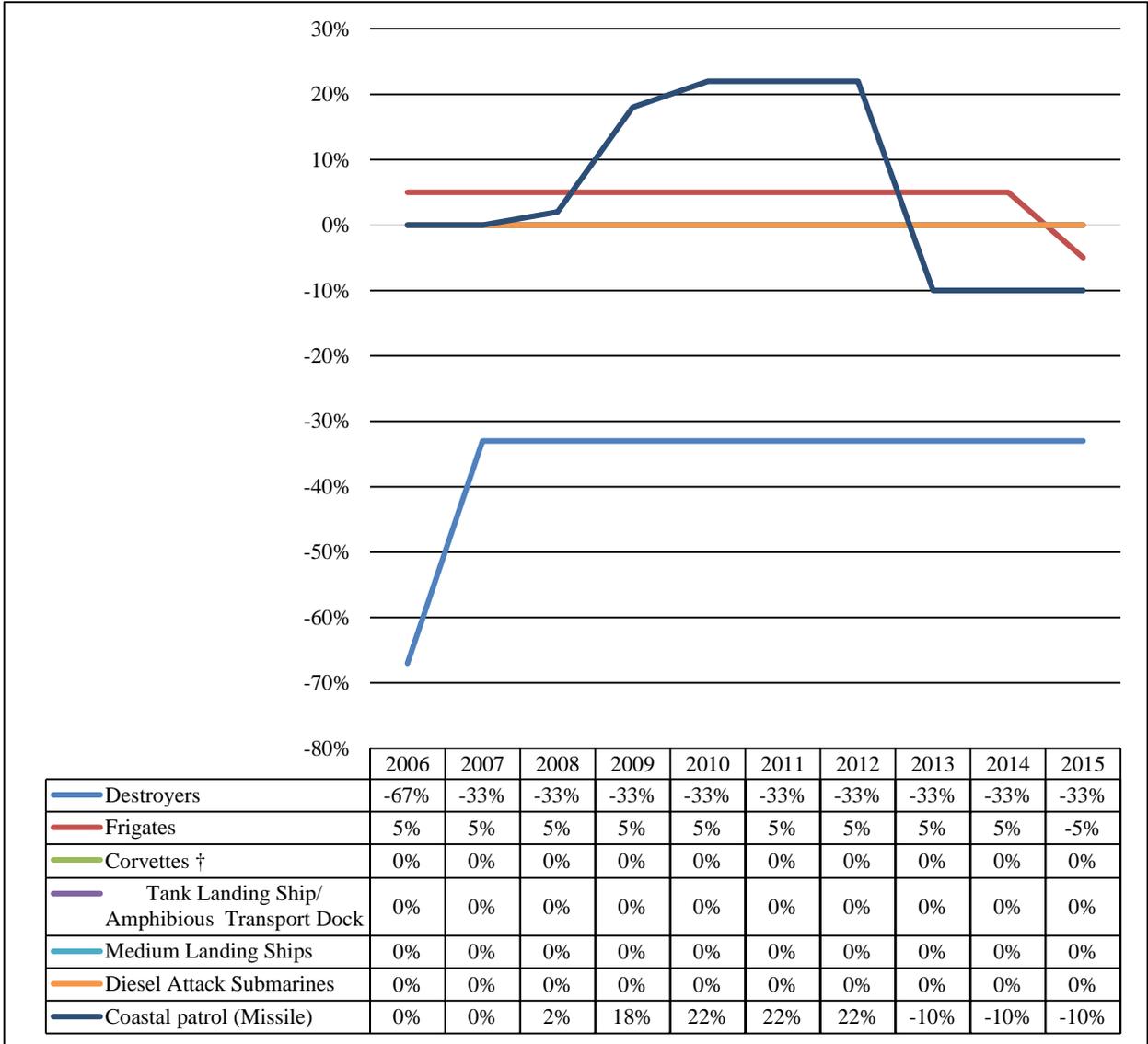


*Aircraft carriers were recently introduced into the PLAN. Therefore, a comparison between current force levels and 2005 force levels could not be made. The carrier *Liaoning*, is currently deployed with the North Sea Fleet.

†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 2009-2015*.

Figure 14.13: 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 2009-2015*.

The Air and Missile Balance

The air and missile balance in the Taiwan Strait is changing in more complex ways than the naval balance. Rather than a clear shift in the favor of one country or another, the numbers of aircraft alone cannot indicate a shift in the military balance. Although the ROC Air Force (ROCAF) has introduced bomber 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 exist numerous components of the aerial balance that lie outside a symmetric comparison of aircraft: long-range SAMs, SRBMs, naval forces, and long-range artillery all have the potential to influence any aerial combat over the Taiwan Strait. Consequently, based the DoD-supplied numbers alone, it is difficult to state definitively whether the military balance is shifting in one direction or another in this area. Such a determination would require an analysis of changes over time in numerous equipment categories as well as qualitative trends in training, skill, and leadership.

Considering this reality, the air and missile balance has a synergistic effect on the sea and land military balances that make up the Taiwan Strait balance. Changes in the aerial 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.

Concurrently, the deployment of more DDGs and guided missile frigates (FFGs) with more capable SAMs by the PLAN may also have a significant effect on the aerial balance. Moreover, the air forces involved have missions in addition to air superiority and close air support; for example, the PLAAF transport aircraft near the Strait indicate 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.

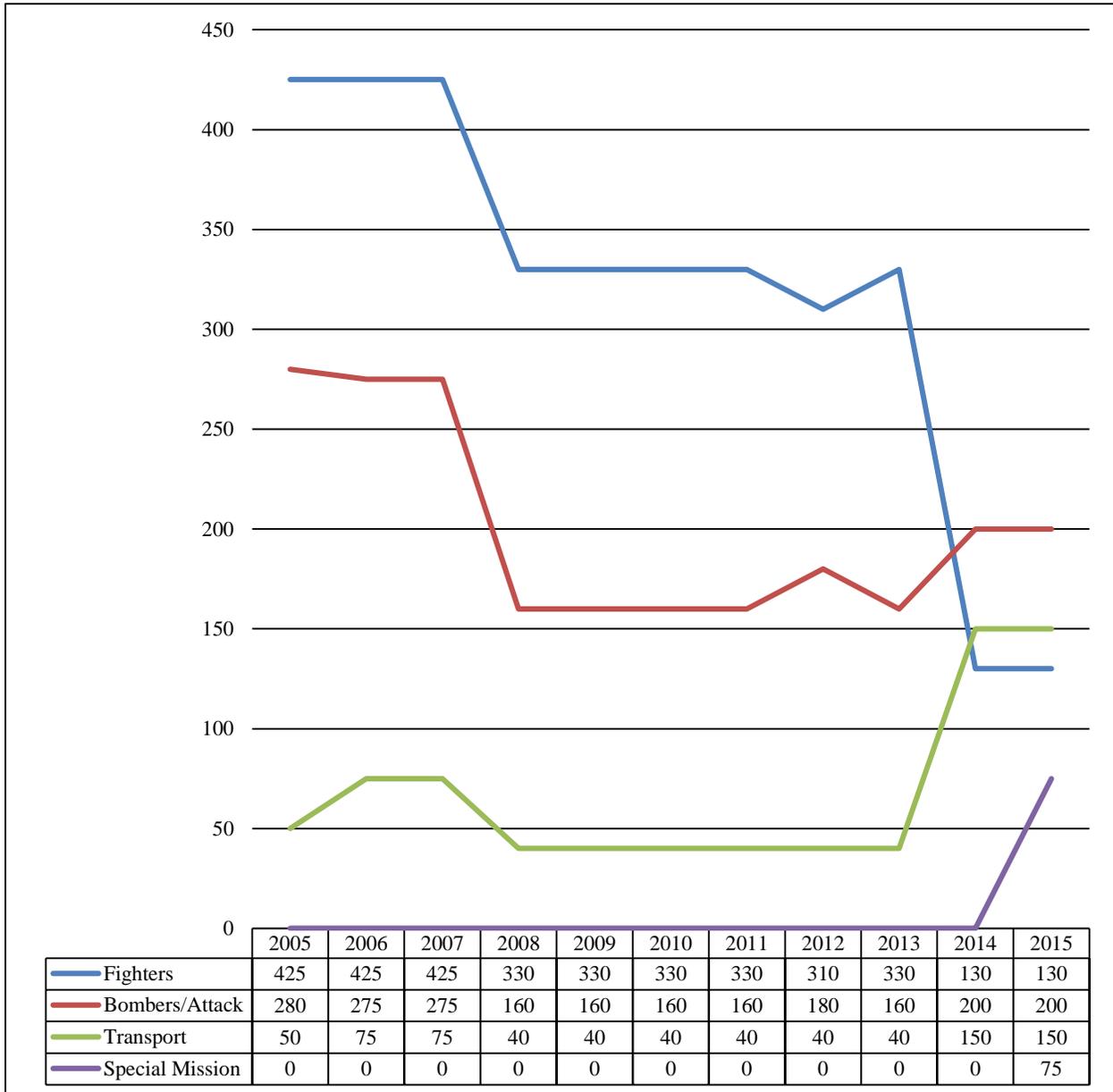
Most significantly, the DoD has reported that the SAF has over 1,200 SRBMs deployed opposite Taiwan.⁶⁵⁸ these forces are capable of fulfilling a counter-air role, and the 2009 RAND report mentioned above documents how effectively a SRBM force of such a size and sophistication could significantly impede ROCAF air operations. To quote the RAND report:⁶⁵⁹

...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.

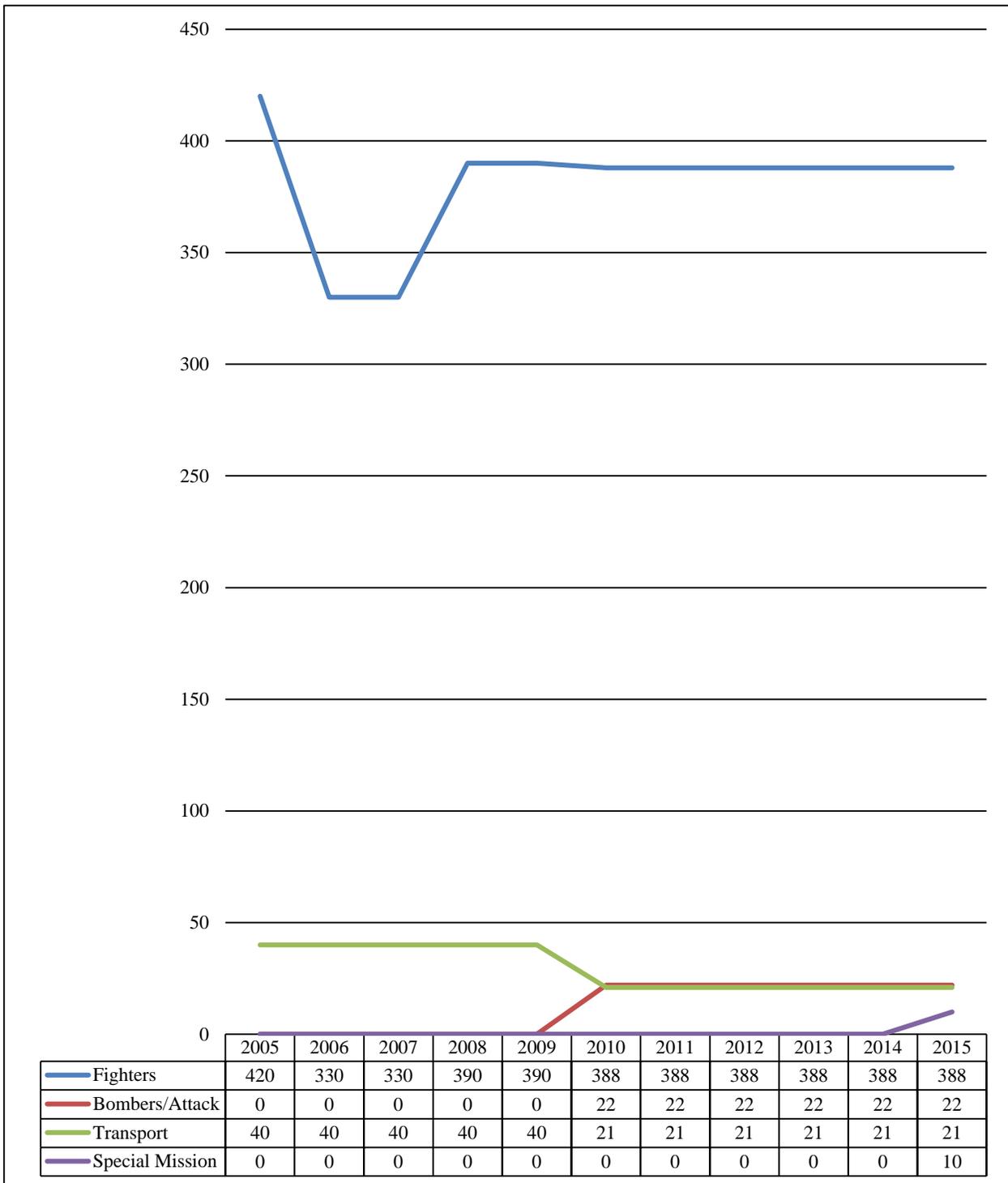
With these caveats in mind, **Figures 14.14 and 14.15** show the changing absolute trends in the PLAAF and ROC Taiwan Strait aerial balance affecting deployments in the Taiwan Strait area. These Figures show that both air forces have decreased the absolute number of fighter and transport aircraft in the Taiwan Strait. However, the ROCAF's fighter strength has 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 14.14: 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 14.15: 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 2009-2015*.

It is difficult to judge the significance of the individual national trends shown in **Figures 14.14 and 14.15** without also looking at the relative trends that result from these numbers. As stated previously, the ROC armed forces operate on the assumption of numerical inferiority, so it is difficult to determine whether the reductions on both sides actually alter the military balance.

In order to provide context for these numbers, as well as to better enable an estimation of the changes occurring in the Taiwan Strait military balance, **Figures 14.16 and 14.17** show the relative trends in the force numbers of both the PLAAF and ROCAF. **Figure 14.18** 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. Consequently, a smaller force may counter-intuitively be more capable than a larger one.

With that caveat, the relative numbers indicate that the PLAAF has reduced combat aircraft at a relatively higher pace than the ROCAF. Between 2005 and 2015, 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, as the ROC's fighter forces have grown slightly in strength since 2008, the 2005-2007 reduction may indicate the culling of obsolete aircraft and their replacement with more advanced systems. In addition, as the ROCAF has introduced bombers while the PLAAF has reduced its bomber holdings, the ROCAF bomber force has increased relative to the PLAAF's bomber force. These relative numbers indicate a shift in the aerial balance in the favor of the ROCAF.

Of course, a comparison of aircraft numbers alone only tells part of the story. How the ROCAF's relatively improving fighter and bomber force would perform against improving PLAA and PLAAF long-range SAMs as well as sea-based PLAN SAMs is a standing question.

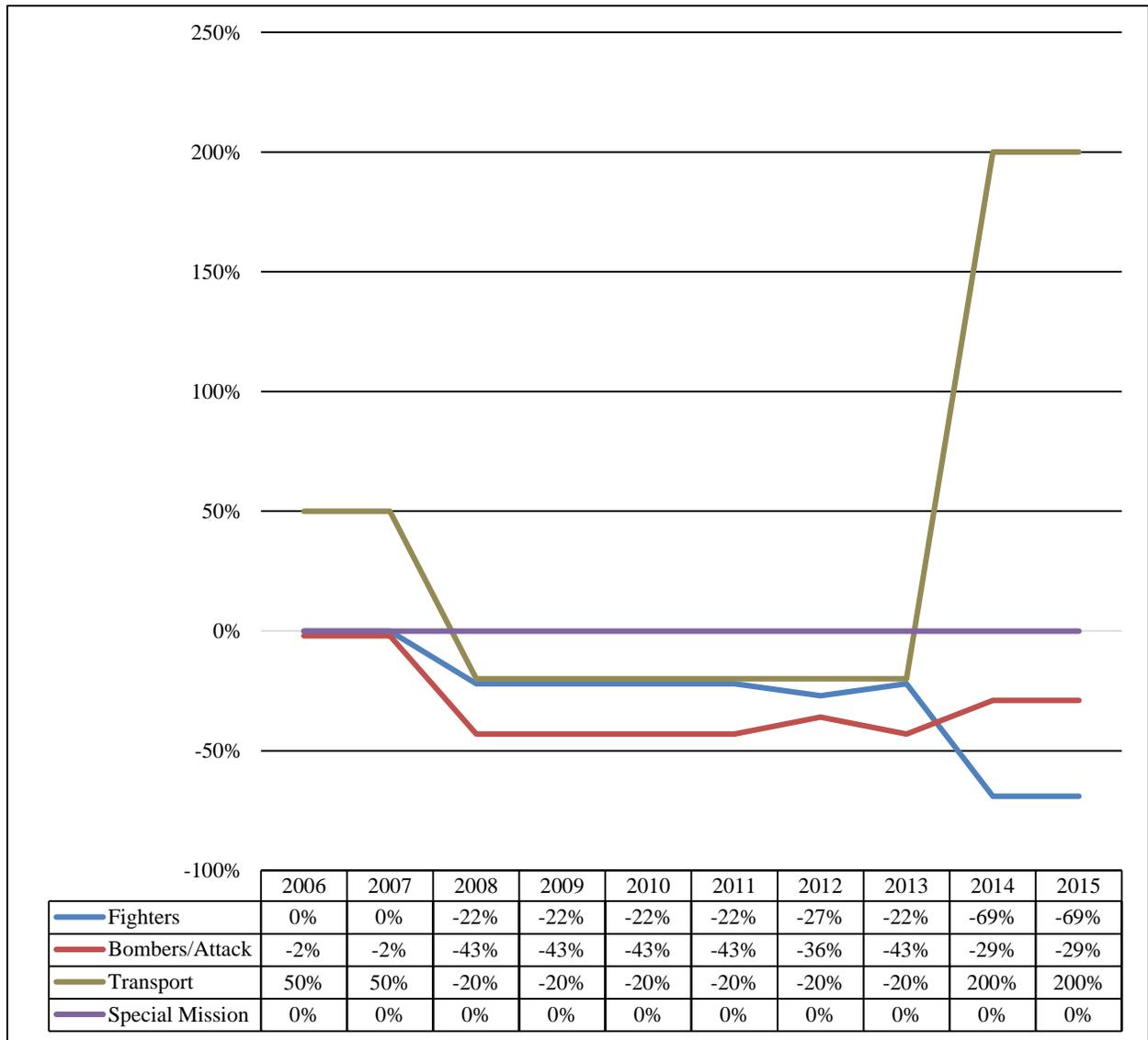
As **Figure 14.17** illustrates, much would depend upon whether the ROC's air defense systems would provide the ROCAF with a relatively greater advantage than the PLA's air defense systems would provide the PLAAF. The air balance would also be shaped – perhaps critically – by the use of PLA SAF's SRBMs and the ROC's cruise missile forces, as well as by both sides' electronic warfare and cyber warfare forces.

It is clear, however, that the quantitative trends indicate that the ROCAF is gaining ground at the expense of the PLAAF. As far as relative numbers determine the outcome of deterrence and combat, the ROCAF has seen a relative shift in its favor.

Finally, **Figure 14.19** shows range of both China's surface-to-air missiles and ballistic missiles. As the DoD noted in its 2015 report,⁶⁶⁰

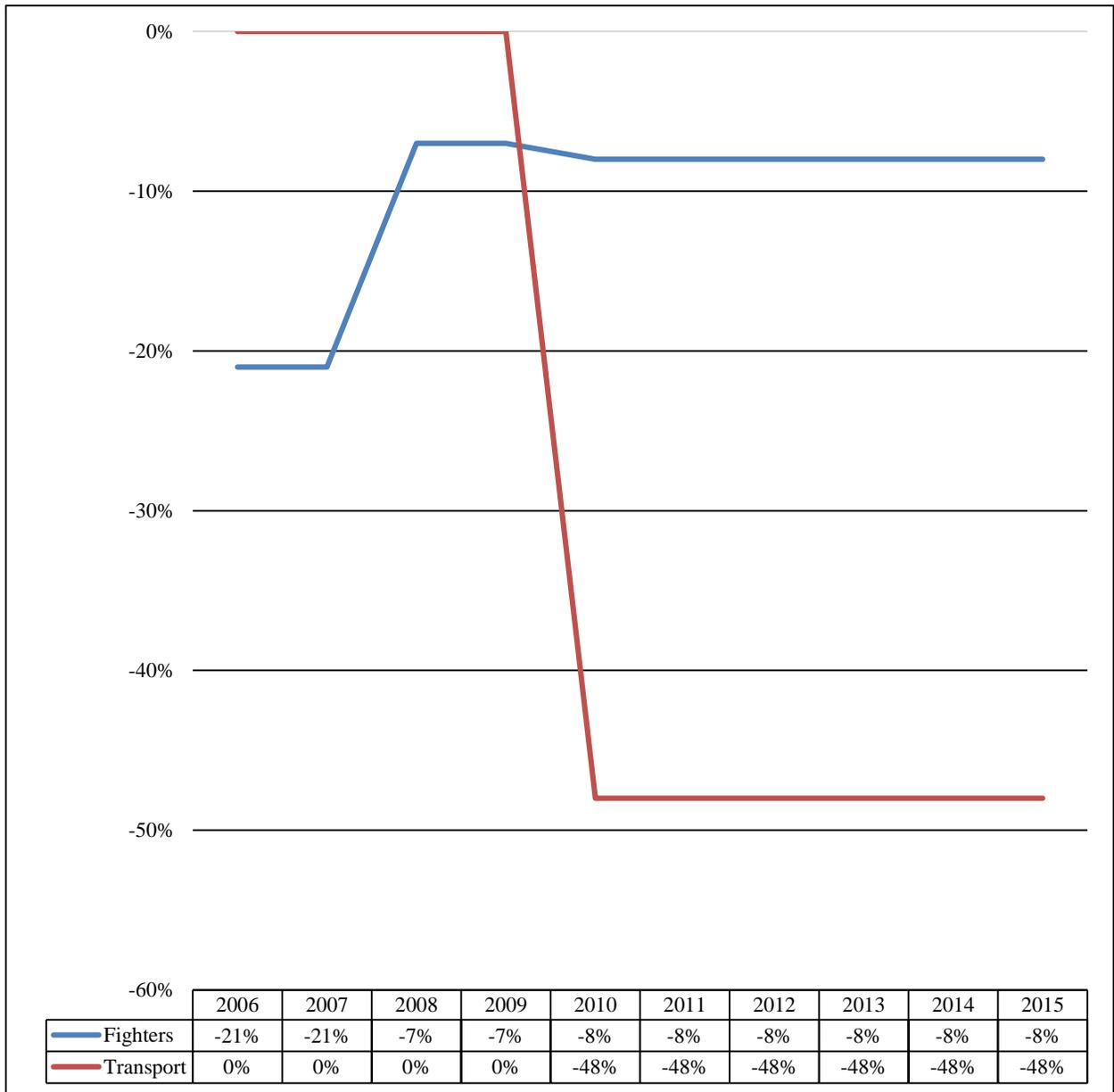
China could use missile attacks and precision strikes against air defense systems, including air bases, radar sites, missiles, space assets, and communications facilities to degrade Taiwan's defenses, neutralize Taiwan's leadership, or break the Taiwan people's resolve.

Figure 14.16: 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 2009-2015*.

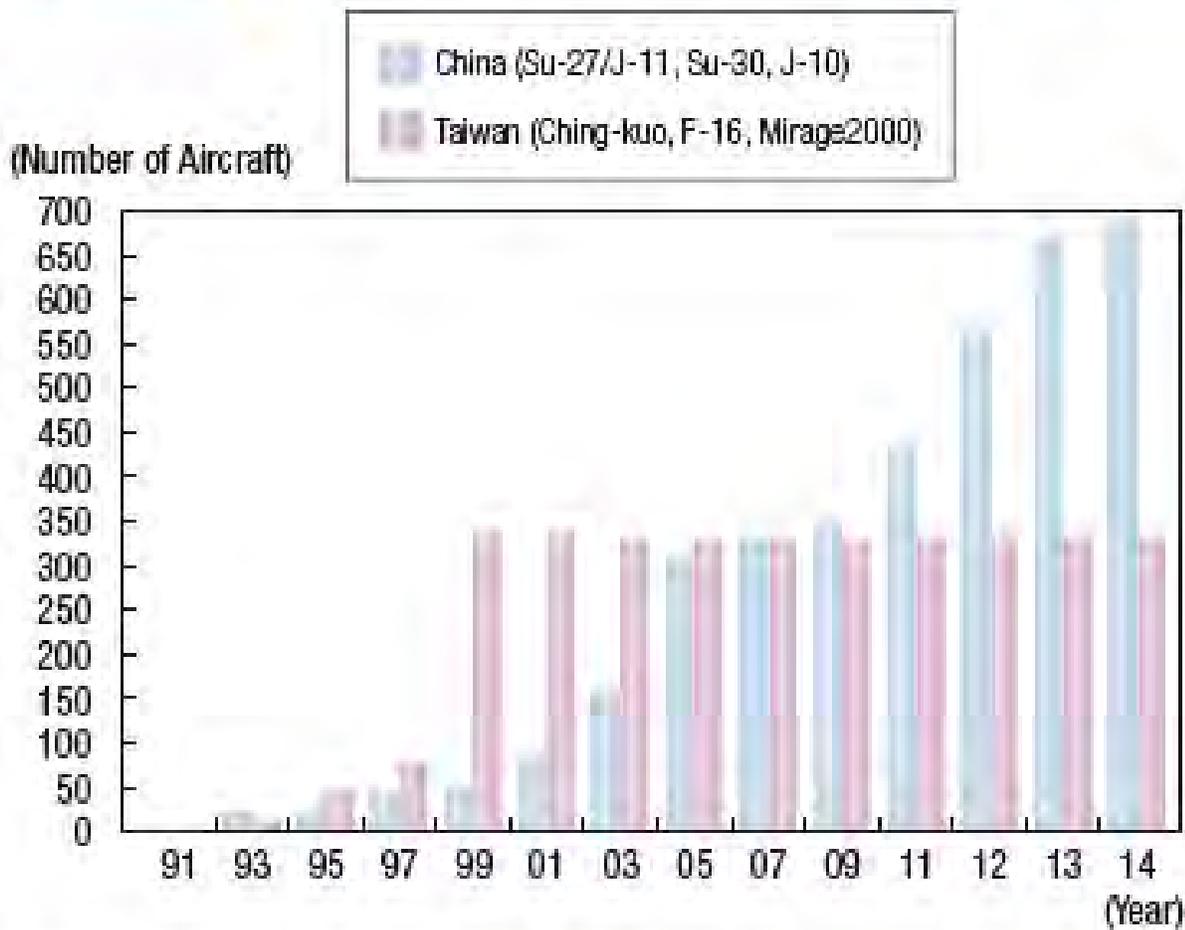
**Figure 14.17: Changes in ROCAF Force Numbers, since 2005
(percentage increase)**



Source: DoD, *Military Power of the People's Republic of China 2005-2008*; *Military and Security Developments Involving the People's Republic of China 2009-2015*.

Figure 14.18: Japanese Ministry of Defense Summary of the Trends in the Balance of Modern PRC-ROC Fighter Aircraft

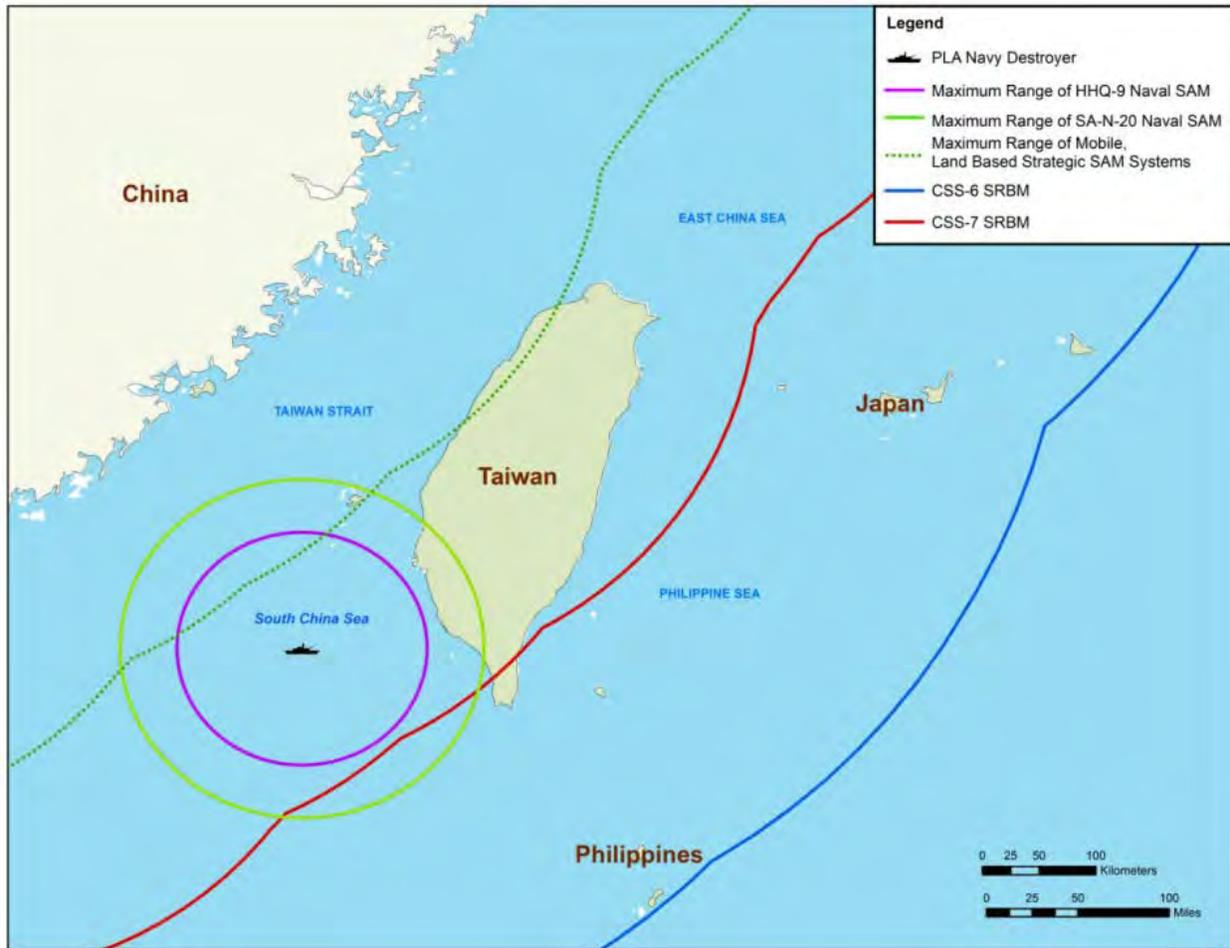
Fig. I-1-3-8 Changes in Modern Fighter Aircraft of China and Taiwan



Source: Military Balance (of respective years)

Source: Japanese Ministry of Defense, *Defense of Japan*, 2014.

Figure 14.19: 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 2014*, April 2014, 87.

The Ground Force Balance

The ground force balance is difficult to extrapolate from force numbers, however, because Taiwan's island geography, as well as the necessity of amphibious operations for either side to conduct large-scale offensive 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, combat in all other domains will influence the conduct and success of land operations. Furthermore, these effects will be persistent: the necessity of logistics means that an amphibious operation is *always* vulnerable to logistics interdiction in *all* domains, regardless of the progress made by land forces on the offensive.

The US DoD makes this clear in its 2015 report,⁶⁶¹

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 14.20 and 14.21 provide comparative data on the Personnel and equipment strengths on both sides of the Taiwan Strait. As **Figure 14.20** 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 also making similar changes, and this increase in Personnel levels indicates 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, mean that the increase may merely represent different DoD accounting practices.

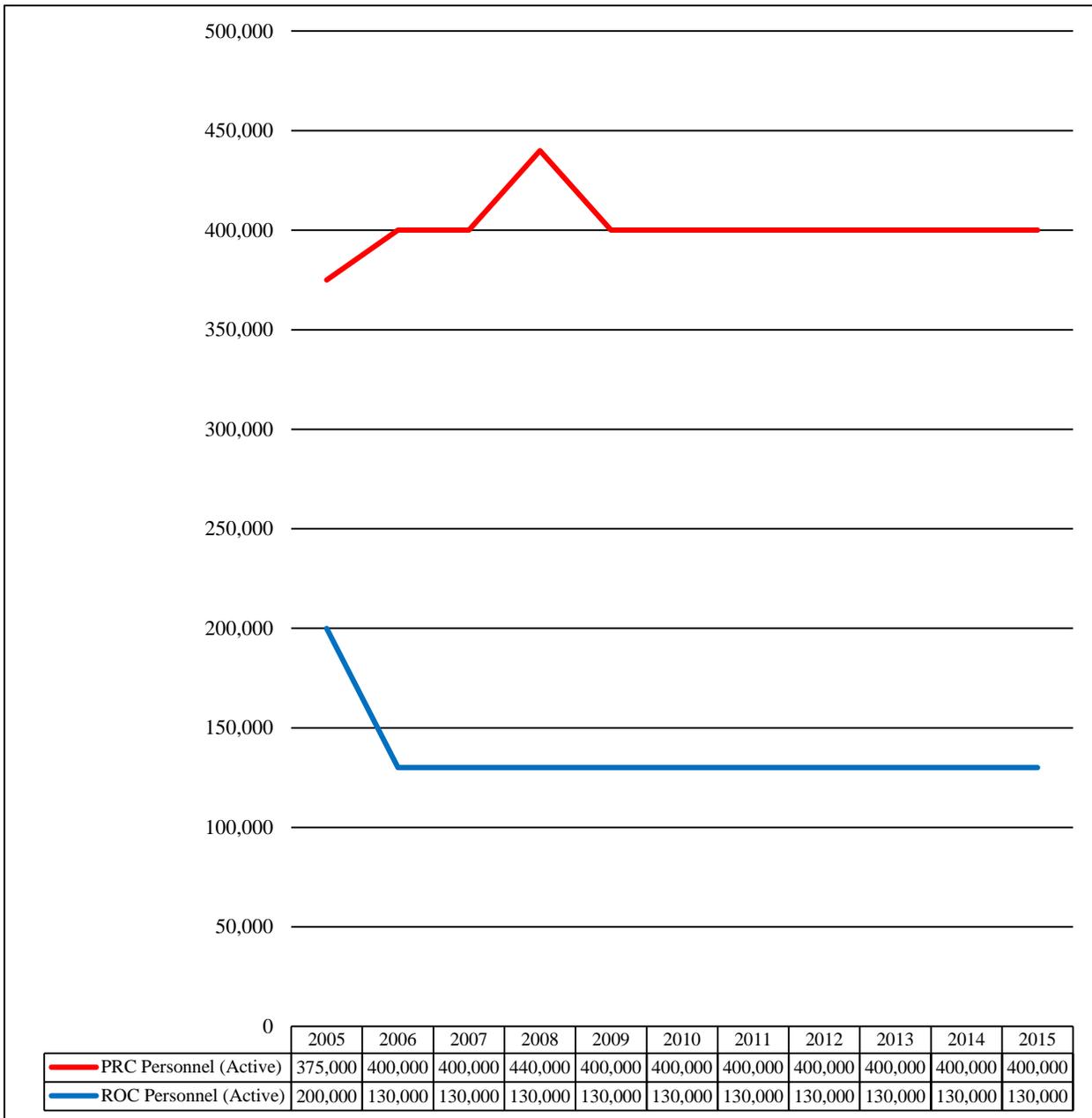
Figure 14.22 shows the comparative trends in MBT and artillery holdings. As the Figure indicates, the ROC has engaged in a significant reduction of both MBTs and artillery systems. The PLAA has also decreased its artillery holdings, but at the same time it has deployed additional tanks to the Taiwan Strait region – though in 2015, both of these deployments decreased over 2012 levels (but not relative to 2005 levels). These absolute trends indicate that the ground force balance has shifted in the PLAA's favor, as the PLAA has seen a relative increase in Personnel and tanks compared to the ROC.

While the absolute trends in tanks lend themselves to easy comparison, the absolute trends in artillery are more difficult – both forces are reducing their artillery system numbers. **Figure 13.22** illustrates the relative trend in artillery force numbers and shows that the balance in artillery forces has shifted in the PLAA's favor – there are more PLAA artillery pieces per ROC artillery piece in 2015 than in 2005.

This trend in the PLAA's favor is only strengthened if the PLAA's rebound in artillery numbers is caused by the introduction of modern artillery pieces; such an action would reinforce the PLAA's relative combat advantage over ROC artillery.

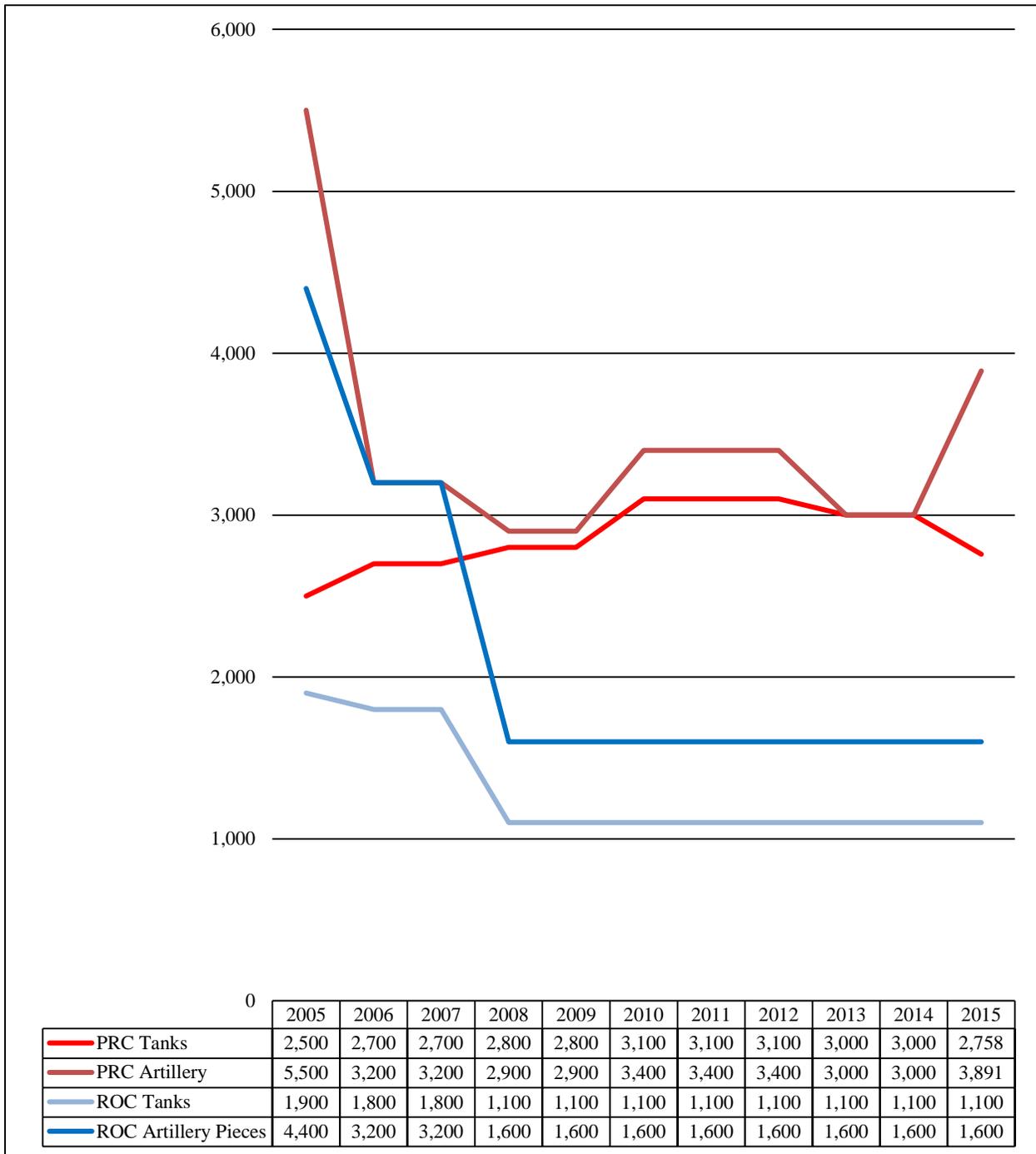
Finally, **Figure 14.23** provides the DoD's 2015 assessment of PRC forces arrayed near Taiwan, in graphical format.

Figure 14.20: 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 2009-2015*.

Figure 14.21: 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 2009-2015*.

Figure 14.22: 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 2009-2015*.

Figure 14.23: PRC Force Deployment near Taiwan - Part One



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2015*, April 2015.

Figure 14.23: PRC Force Deployment near Taiwan – Part Two



Source: DoD, *Military and Security Developments Involving the People's Republic of China 2015*, April 2015.

CHAPTER 15: 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, and as a competitor in military strength. Accordingly, the US continues to modify its force posture in Asia in reaction to China's actions just as China is reacting to the US – as well as other regional powers.

Moreover, 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 some extent its view of the US as a strategic competitor and potential future threat.

The Broader Context of China's Security and Strategic Interests

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 an ally and then 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. Vietnam is seeking to maintain its independence. 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 comes from Iran and the Arab Gulf states through the Indian Ocean. 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 and so far increased energy exports from Russia have been the only major new source of energy that bypasses these chokepoints.
- China has a strategic interest in pushing 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 the 20th century provides a grim warning of the cost of doing so. The cost of the search for empire, to preserve colonies, and 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.

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. 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 more costly 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 Oceana 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 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.

Rivalry in Southeast Asia: A Case Study

The tensions that now affect China’s dealings with Southeast Asia 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 planning for Chinese “worst cases” that may 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 seapower 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. The shift in US energy import

dependence described in Chapter I, and US budget debates, have so far prevented the US from translating its declared strategy into developing stable force plans. Similarly, China faces its own problems in terms of the reaction of other states in Asia, demographic problems, and the ability to sustain 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:⁶⁶²

- 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.

The 2013 Chinese defense white paper did, however, implicitly criticize the US's increasing presence in the Asia-Pacific and highlighted what it saw as an aggressive shift in the US strategy force posture:⁶⁶³

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.

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.⁶⁶⁴

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.

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. China sees US strategy to rebalance to Asia not only as a response to China's emergence as a military power, but to the rapid growth of the Asia-Pacific's economic strength. 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".⁶⁶⁵

The Chinese Defense White Paper View of the Challenges in Asia

Its 2015 defense white paper put the challenges it sees in the South China Sea and the rest of Asia in the following broad content, although it only indirectly highlighted the role of the U.S.,⁶⁶⁶

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

Important as China's rivalry with the U.S. may be in military terms, China's grand strategic interests in the Southeast Pacific and Indian Ocean Region center on its energy imports from the Gulf and future need for new energy supplies. China recognizes this, and made it clear in its 2015 defense white paper that its dependence on the security of the flow of overseas energy and resources -- and specifically the petroleum from the Gulf to China -- was a key security consideration.

Figure 15.1 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,⁶⁶⁷

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.⁹ 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.

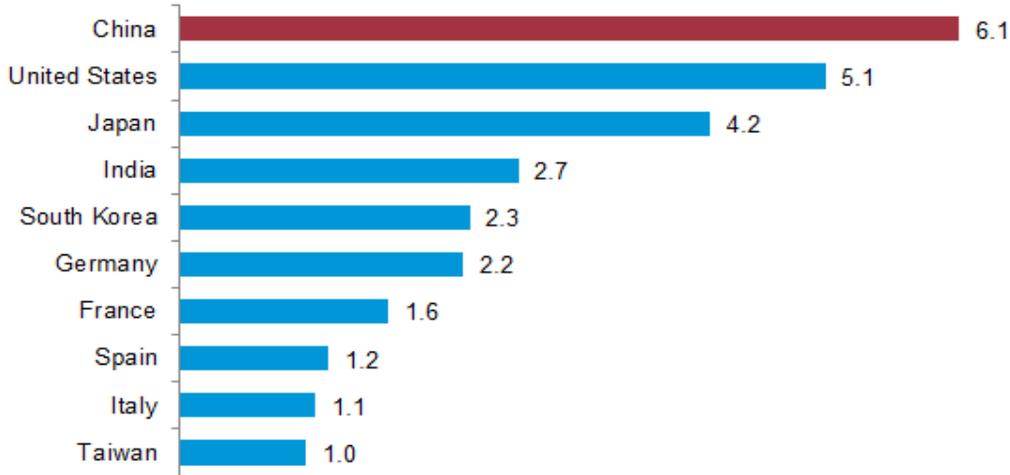
...As China's oil demand continues to outstrip production at home and the country continues building its strategic petroleum reserves, oil imports have increased dramatically over the past decade, reaching record highs set in 2014. To ensure adequate oil supply and mitigate geopolitical uncertainties, 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.³¹ 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 2015.³² 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 15.1: China's Energy Import Dependence

Top ten annual net oil importers, 2014

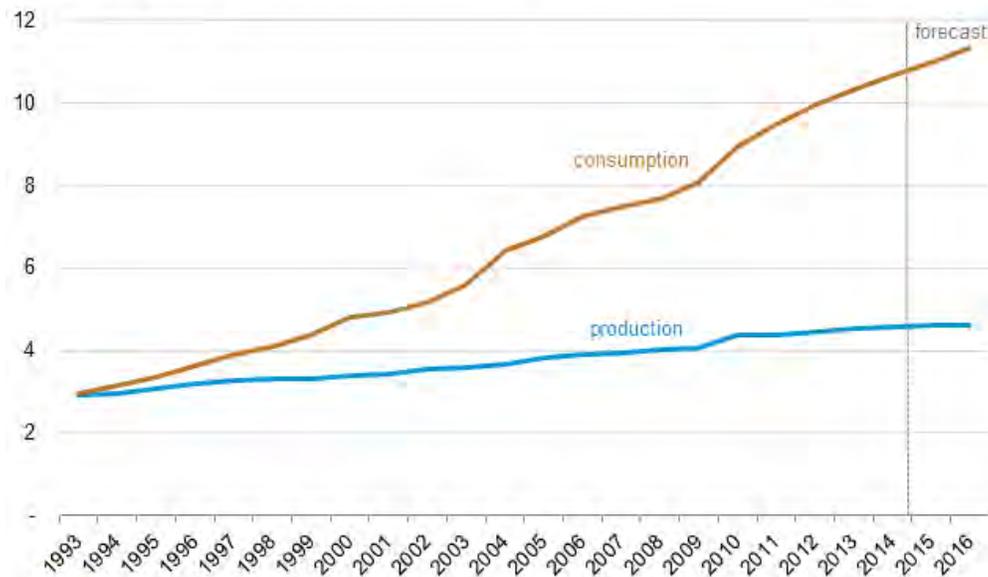
million barrels per day



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, accessed August 16, 2015.

Gulf Energy Exports are China's Main Strategic Interest

At present, and probably for the foreseeable future, however, the security of Gulf oil and gas exports to China will be by far the more important strategic interest.

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.

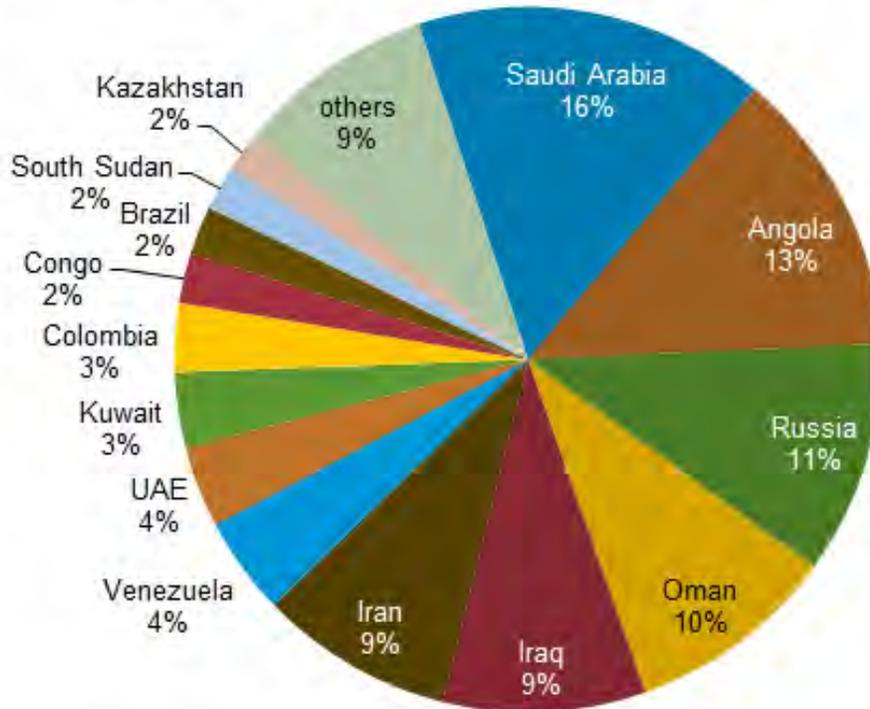
Historically, Iran was China's third-largest source of crude imports until 2012, when Russia surpassed it. Following U.S. and European sanctions on Iranian crude oil sales resulting from disagreements on Iran's nuclear program, China reduced its average annual oil import levels from Iran to maintain 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 15.2: 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, accessed August 16, 2015.

China's Real World Strategic Interests in the East 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 involved for which there is little or no material evidence. In the case of the South China Sea, the EIA estimates that,⁶⁶⁸

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 reports that,

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 estimates that,⁶⁶⁹

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 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 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:⁶⁷⁰

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.⁹ 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.¹⁰

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.¹¹ 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.¹² 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.¹³ 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

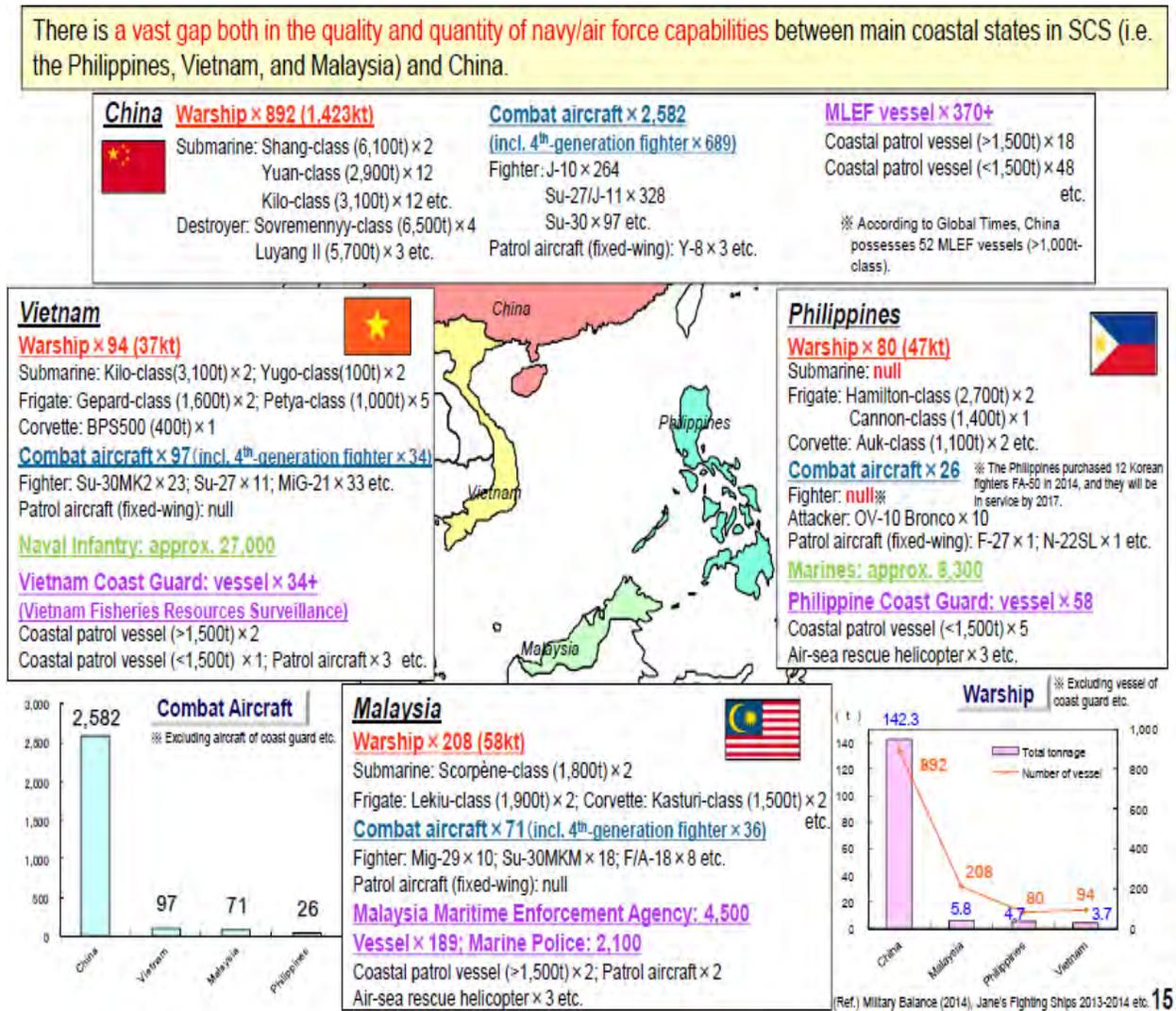
The modernization and development of China's military forces plays a critical role in all of the areas where China is emerging as a major military power, and the changes in China's strategic and land forces are critical in other areas.

In the Case of the East and South China Seas, however, is 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, it is also 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 15.3**. 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 15.3: 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

This situation helps to explain why China is creating the kind of power projection forces 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:⁶⁷¹

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:⁶⁷²

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 content 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.⁶⁷³

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 in Chapter IX, the DoD report on *Military and Security Developments Involving the People's Republic of China* for 2015 described the current structure and trends in the PLAN as follows.⁶⁷⁴

The PLA Navy places a high priority on the modernization of its submarine force and currently possesses 5 nuclear attack submarines (SSN), 4 nuclear ballistic missile submarines (SSBN), and 53 diesel attack submarines (SS/SSP). By 2020, this force will likely grow to between 69 and 78 submarines. In addition to the twelve KILO SS acquired from Russia in the 1990s and 2000s, China has built 13 SONG SS (Type 039) and 13 YUAN air independent-powered (AIP) attack submarines (SSP – Type 039A) with a total of 20 YUAN SSP planned for production. China continues to improve its SSN force, and four additional SHANG SSN (Type 093) will eventually join the two already in service. The SHANG SSN will replace the aging HAN SSN (Type 091).

Over the next decade, China may construct a new Type 095 nuclear powered, guided-missile attack submarine (SSBN), which not only would improve the PLA Navy's anti-surface warfare capability, but might also provide it with a more clandestine, land-attack option. Finally, China continues to produce the JIN SSBN (Type 094) with associated CSS-NX-14 (JL-2) submarine-launched ballistic missile (SLBM) that has an estimated range of 7,400 km. This capability represents China's first credible, sea-based nuclear deterrent. China will likely conduct its first SSBN nuclear deterrence patrol sometime in 2015. Four JIN-class SSBNs are currently 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.

Since 2008, the PLA Navy has continued a robust surface combatant construction program of various classes of ships, including guided missile destroyers (DDGs) and guided missile frigates (FFGs). 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. It has a multipurpose vertical launch system capable of launching anti-ship cruise missiles (ASCMs), land-attack cruise missiles (LACMs), surface-to-air missiles (SAMs), and antisubmarine missiles.

China will also likely begin construction of a larger Type 055 "destroyer" in 2015, a vessel better characterized as a guided-missile cruiser (CG) than a DDG. China has continued to produce the JIANGKAI II FFG (Type

054A), with 17 ships currently in the fleet and 5 in various stages of construction. These new DDGs and FFGs 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.

Augmenting the PLA Navy's littoral warfare capabilities, especially in the South China Sea and East China Sea, is a new class of small combatant. More than 20 JIANGDAO-class corvettes (FFL) (Type 056) are in service and an additional 11 were launched in 2014. China may build more than 60 of this class, ultimately replacing older PLA Navy patrol vessels, including the 60 HOUBEI-class wave-piercing catamaran missile patrol boats (PTG) (Type 022) built for operations in China's "near seas."

The PLA Navy continues to emphasize anti-surface warfare (ASUW) as its primary focus, including modernizing its advanced ASCMs and associated over-the-horizon targeting (OTH-T) systems. Older Chinese surface combatants carry variants of the YJ-8A ASCM (65nm), while newer surface combatants such as the LUYANG II DDG are fitted with the YJ-62 (120nm). The LUYANG III DDG and Type 055 CG will be fitted with a variant of China's newest ASCM, the YJ-18 (290nm), which is a significant step forward in China's surface ASUW capability.

Eight of China's twelve KILO SS are equipped with the SS-N-27 ASCM (120nm), a system China acquired from Russia. China's newest indigenous submarine-launched ASCM, the YJ-18 and its variants, represents a dramatic improvement over the SS-N-27, and will be fielded on SONG, YUAN, and SHANG submarines. China's previously produced sub-launched ASCM, the YJ-82, is a version of the C-801, which has a much shorter range. The PLA Navy recognizes that long-range ASCMs require a robust, over-the-horizon targeting capability to realize their full potential, and China has, therefore, invested heavily in reconnaissance, surveillance, command, control, and communications systems at the strategic, campaign, and tactical levels to provide high-fidelity targeting information to surface and subsurface launch platforms.

China's amphibious ship force has remained relatively constant in recent years following what was a robust modernization program in the early 2000s. Since 2005, China has built three large YUZHAO (Type 071) class amphibious transport docks, which provide a considerably greater and more flexible capability for "far seas" operations than the older landing ships. These investments signal China's development of an expeditionary and over-the-horizon amphibious assault capability as well as inherent humanitarian assistance/disaster relief and counter-piracy capabilities.

The YUZHAO can carry up to four of the new air cushion landing craft YUYI LCUA, as well as four or more helicopters, armored vehicles, and forces 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. Additional 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 2014, the PLA Navy's first aircraft carrier, LIAONING, returned to Dalian and conducted an extensive maintenance period, the first since entering service in September 2012. Following four months of maintenance, LIAONING returned to its homeport at Yuchi and continued flight integration training throughout 2014. The air wing is not expected to embark the carrier until 2015 or later. China also continues to pursue an indigenous aircraft carrier program and could build multiple aircraft carriers over the next 15 years.

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 restricts 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. Although it possesses a full suite of weapons and combat systems, LIAONING will likely 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. While 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,⁶⁷⁵

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 2014 Japanese white paper provides a summary description of the PLAN that reinforces these analyses:⁶⁷⁶

The naval forces consist of three fleets—the North Sea, East Sea, and South Sea Fleets. The Chinese Navy has approximately 890 ships (including approximately 60 submarines), with a total displacement of approximately 1.42 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 introduced Kilo-class submarines from Russia and is actively constructing new types of domestic submarines in order to enhance its submarine force. Additionally, the Navy is increasing surface combatant ships with improved air defense and anti-ship attack capabilities, large landing ships, and supply ships. Also, it commissioned a large hospital ship in October 2008.

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, however, 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.⁶⁷⁷

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."⁶⁷⁸

The paper also stated that,⁶⁷⁹

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 to project serious amounts of 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.

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.

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.

Expanding PLAFF Strike and Power Projection Capabilities

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.⁶⁸⁰ 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.

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:⁶⁸¹

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 2014 Japanese defense white paper summarized the modernization of Chinese air forces as follows:⁶⁸²

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.

As Chapter 11 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 which will give the PLA a stand-off offensive air capability to use against distant targets.⁶⁸³ However, 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.⁶⁸⁴

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

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 2015 DoD report on Chinese military power described China's A2/AD capabilities:⁶⁸⁵

As China modernizes its military and prepares for various contingencies, it continues to develop capabilities that serve to specifically 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 Chinese capabilities as anti-access/area-denial (A2/AD), though China does not specifically refer to them using this term.

China's military modernization plan includes the development of capabilities to attack, at very long ranges, adversary forces that might deploy or operate within the western Pacific 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.⁶⁸⁶ 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, 2011:⁶⁸⁷

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.⁶⁸⁸

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.⁶⁸⁹

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:⁶⁹⁰

These important advances owe to the implementation of a multi-pronged strategy across the sector’s largest defence-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 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.⁶⁹¹

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.⁶⁹²

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:⁶⁹³

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.

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 2013.⁶⁹⁴ 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.⁶⁹⁵

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 should not be confused with modern Chinese strategy, Chinese military thought clearly draws on several key quotes in the *Art of War* in shaping its approach to modern strategy:⁶⁹⁶

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 also, however, 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:⁶⁹⁷

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 year 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:⁶⁹⁸

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 15.4**.

Figure 15.4: 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:⁶⁹⁹

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 will depend 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:⁷⁰⁰

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."⁴⁸ 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 15th 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.⁷⁰¹

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.⁷⁰² 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.⁷⁰³

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:⁷⁰⁴

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 15.5**, 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.”⁷⁰⁵ 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 10th 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.”⁷⁰⁶ 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 2012,⁷⁰⁷

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 one CSIS briefing pointed out, it appeared that China had been increasing its sovereignty claims over territory and waters within and beyond the nine-dash lines:⁷⁰⁸

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.

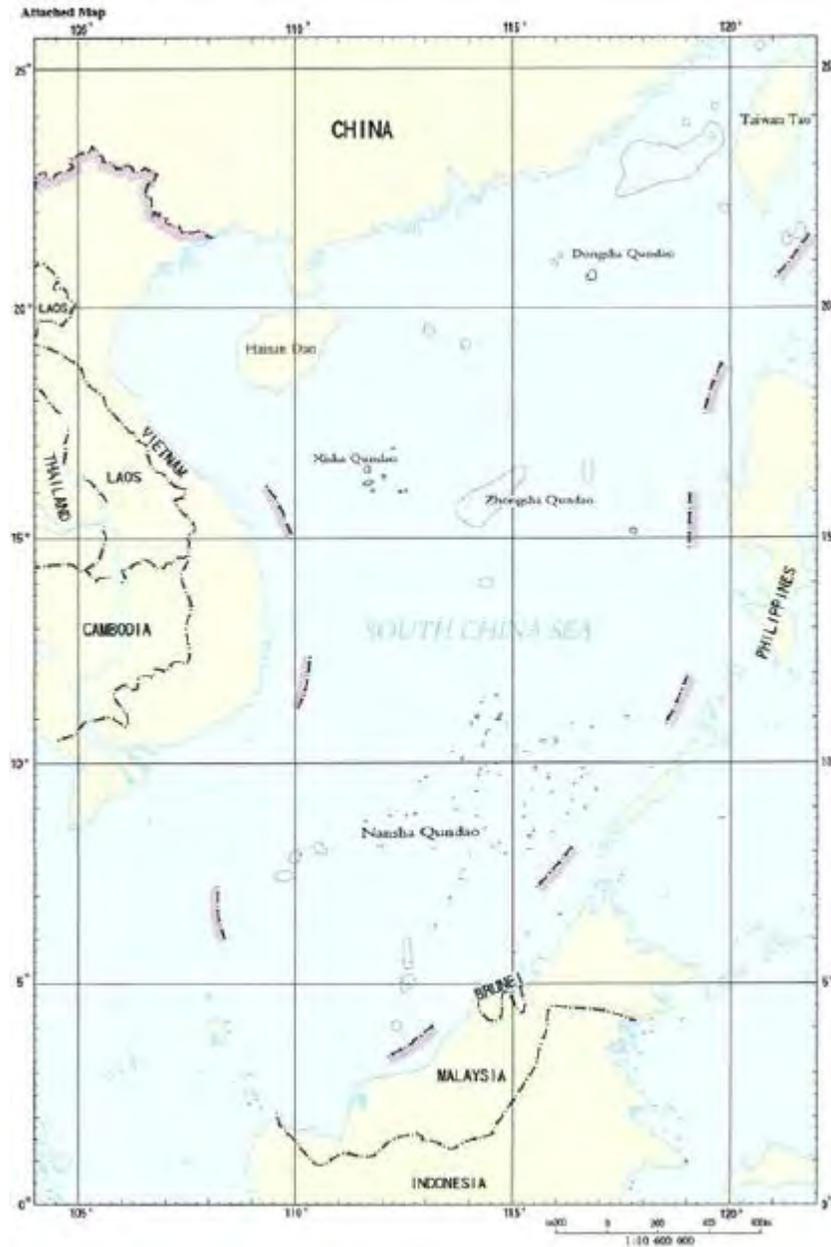
Vietnam-China relations also became more tense when the China National Offshore Oil Corporation (CNOOC) placed an oil rig south of the disputed Paracel Islands in early May 2014. Over 80 ships were dispatched by China to support and protect the rig; warships were allegedly part of this group of vessels. 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.⁷⁰⁹

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 to the South China Sea, three rigs closer to the Chinese coast and one just outside the Vietnamese EEZ.⁷¹⁰ 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.⁷¹¹ 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.^{712,713}

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.”⁷¹⁴

Figure 15.5: 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.

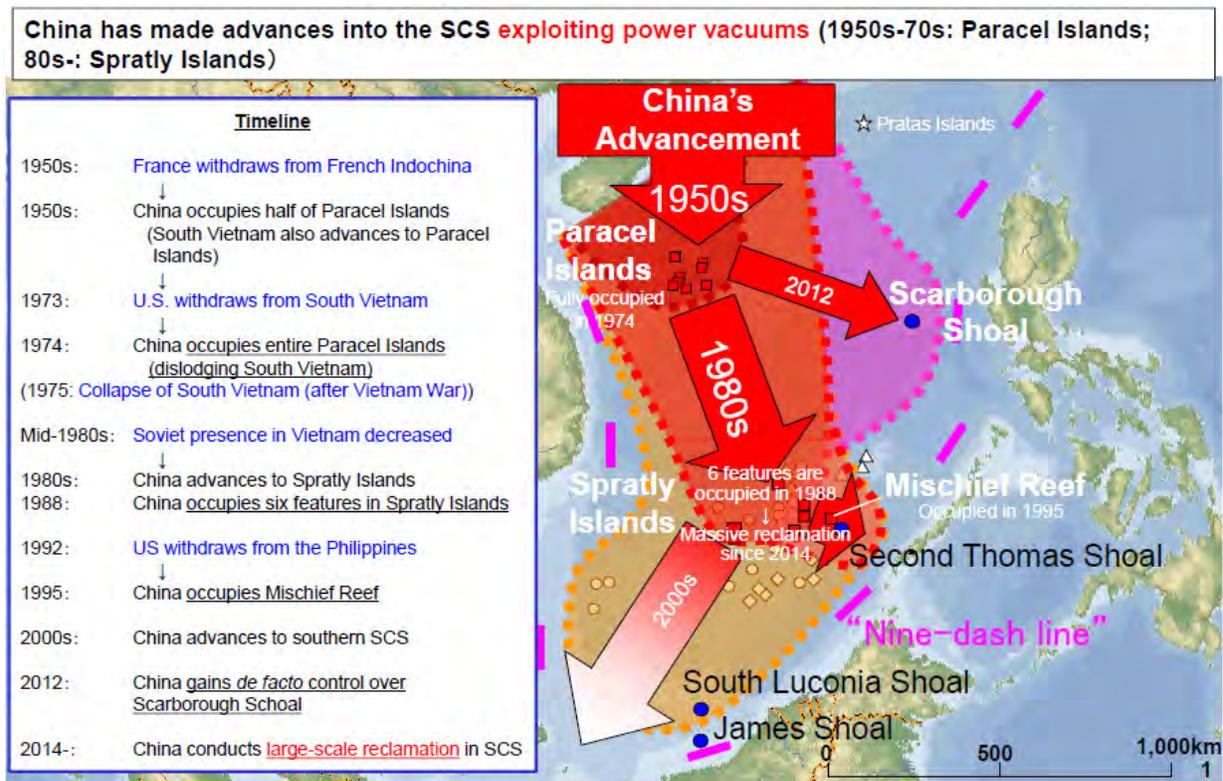
2015 Land Reclamation Operations and Increasing Tensions in the South China Sea

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.

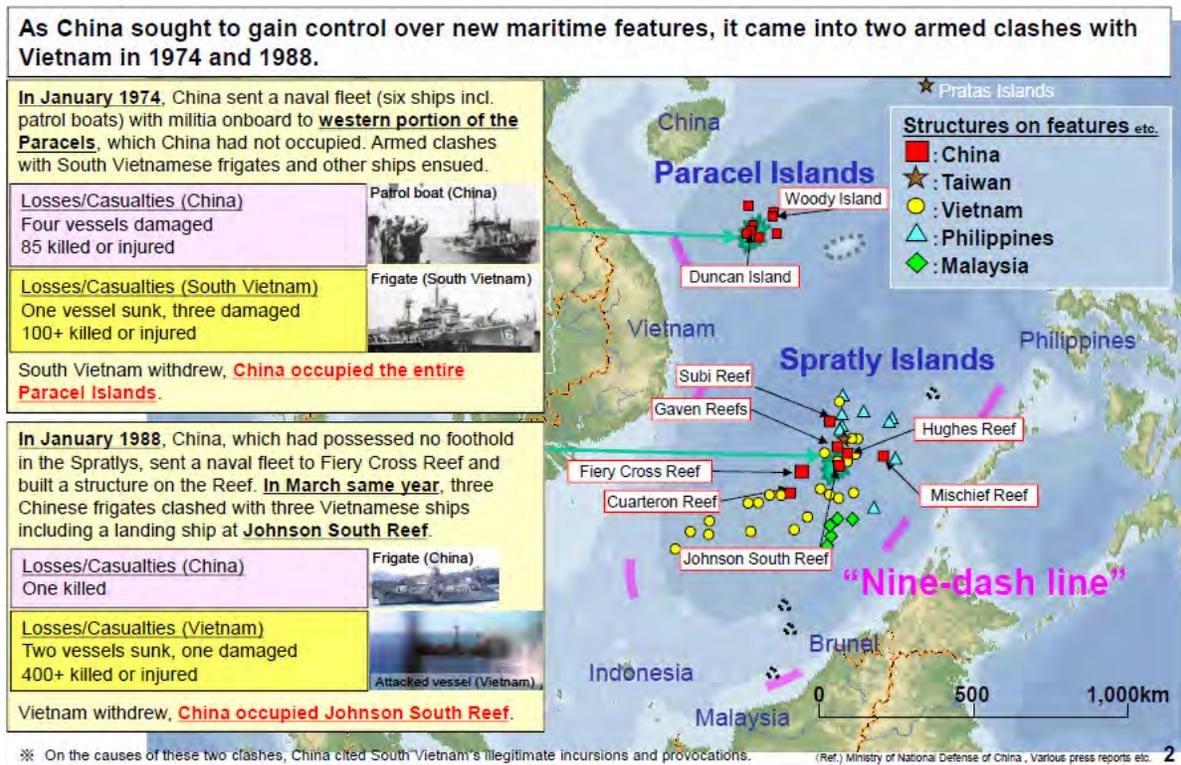
The results have been a complex mix of actions and confrontations that are difficult to summarize. In July 2015, however, the Japanese Ministry of Defense published a briefing on China’s activities in the South China Sea with an historical context and developments in China’s land reclamation activities that is shown in **Figure 15.6** through **Figure 15.11**, and provides a quick overview of the actions and issues involved.

Figure 15.6: Historical Context of China’s Advances into the South China Sea



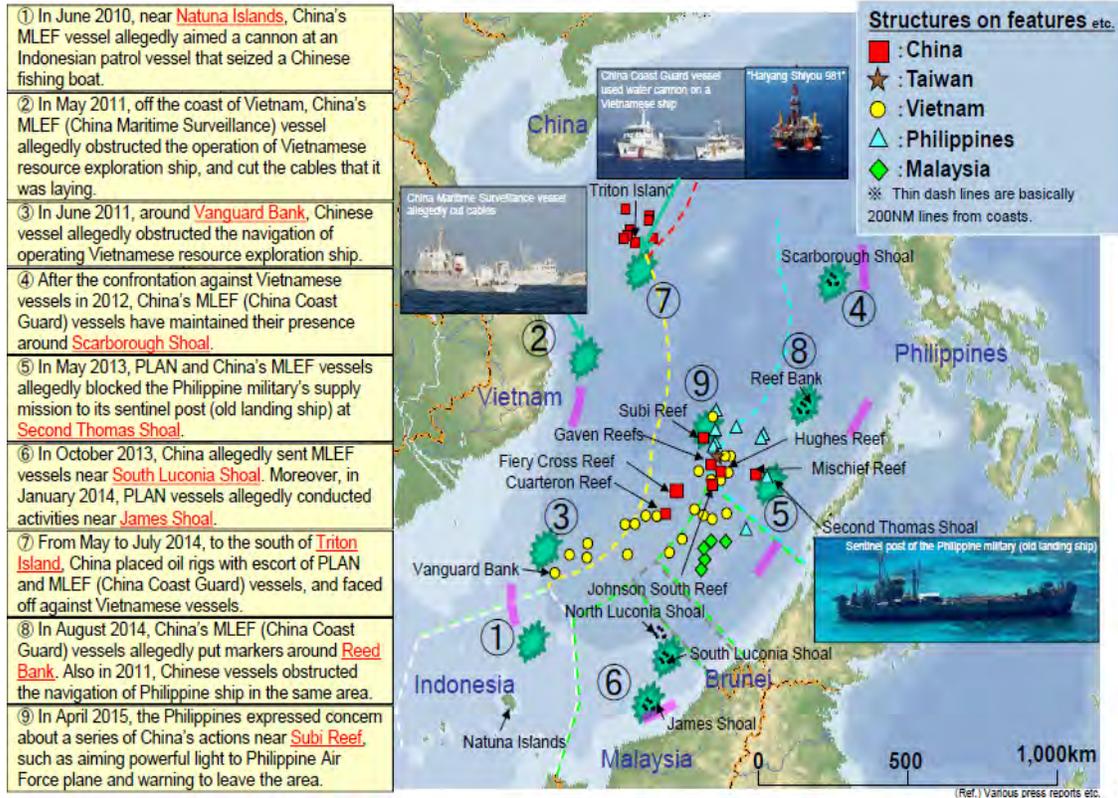
Source: Japanese Ministry of Defense, *China’s Activities in the South China Sea*, July 28, 2015.

Figure 15.7: South China Sea Conflicts Between China and Vietnam



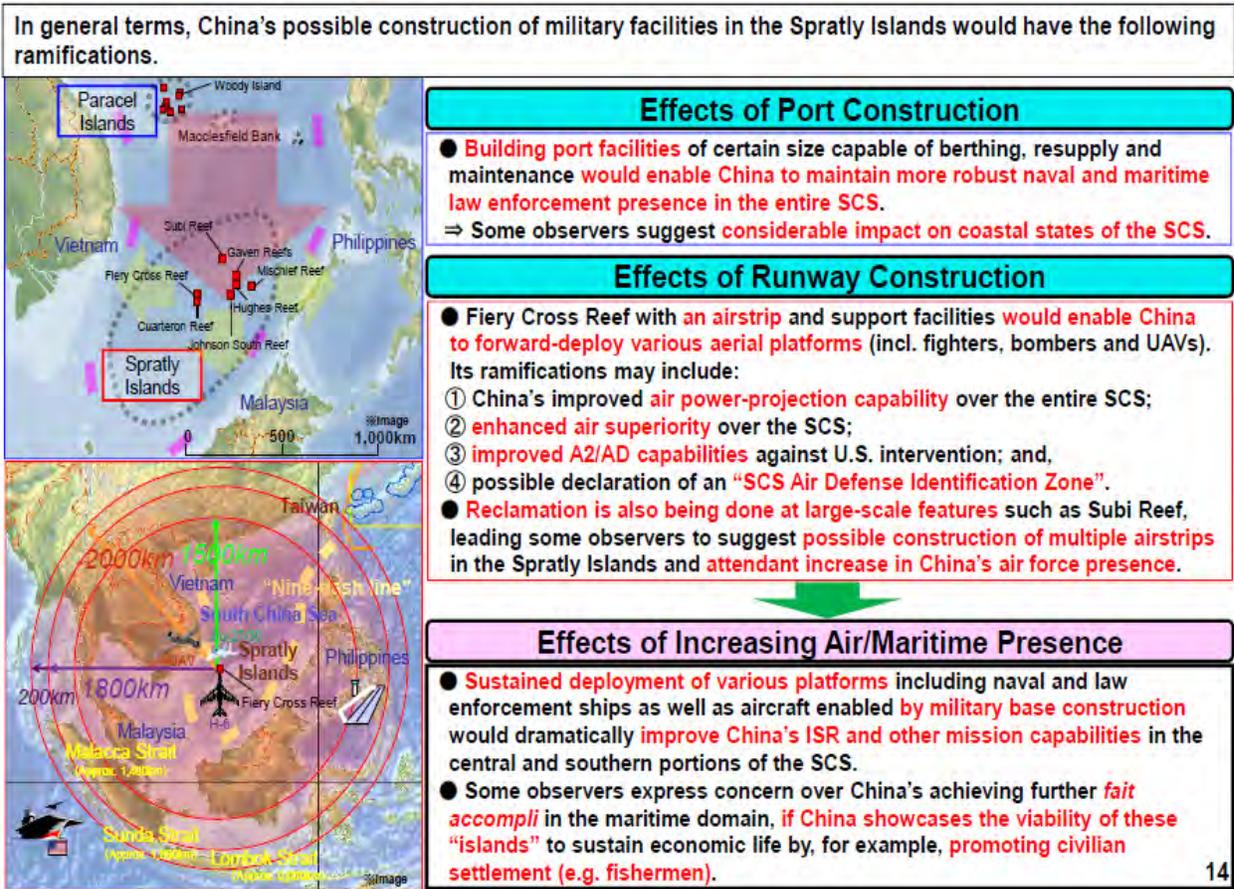
Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

Figure 15.8: Chinese Activities in South China Sea since 2010



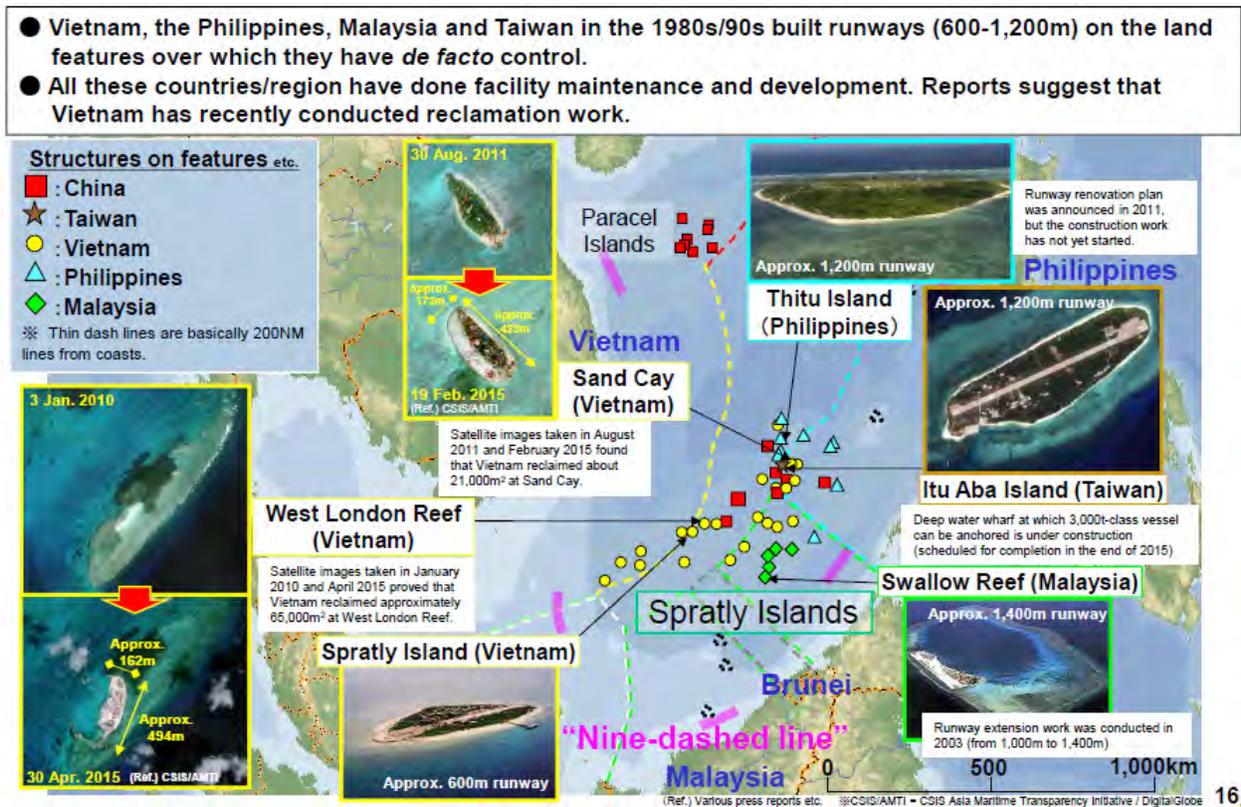
Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

Figure 15.10: China's Increasing Presence after Spratly's Militarization



Source: Japanese Ministry of Defense, *China's Activities in the South China Sea*, July 28, 2015.

Figure 15.11: 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.

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 2010,⁷¹⁵

...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.⁷¹⁶

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 15.12 to Figure 15.16** depict these disputes and maritime, island, and air claims in map form.

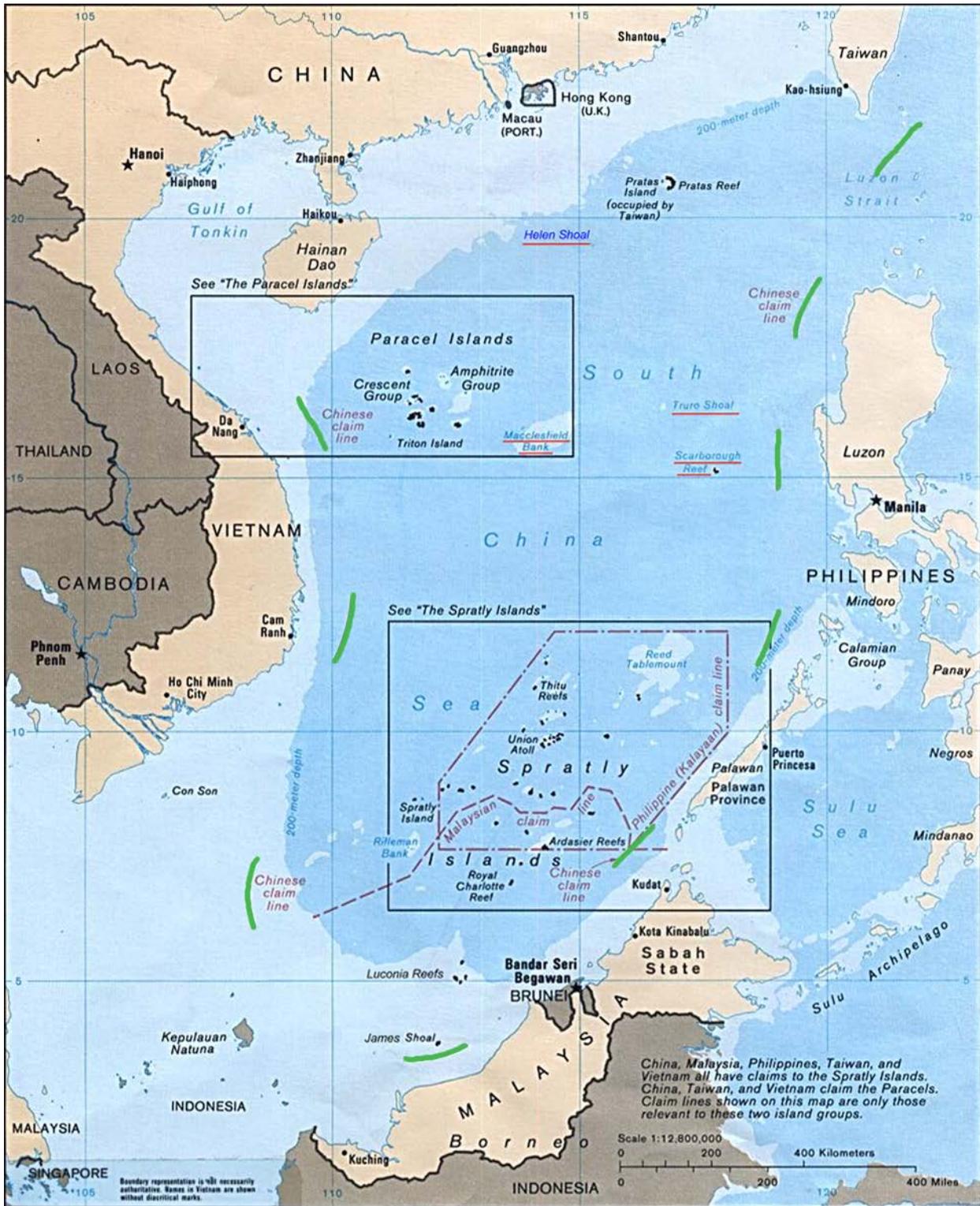
In 1982, Chinese Admiral Liu Huaqing, the mastermind of China’s modern naval strategy and the former PLAN commander, said it would be necessary for China to control the first island chain by 2010 and the second island chain by 2020. Further, the PLAN should be ready to challenge US dominance over the Indian Ocean and Western Pacific in 2040.⁷¹⁷ As one US military analyst noted in 2011,⁷¹⁸

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.⁷¹⁹

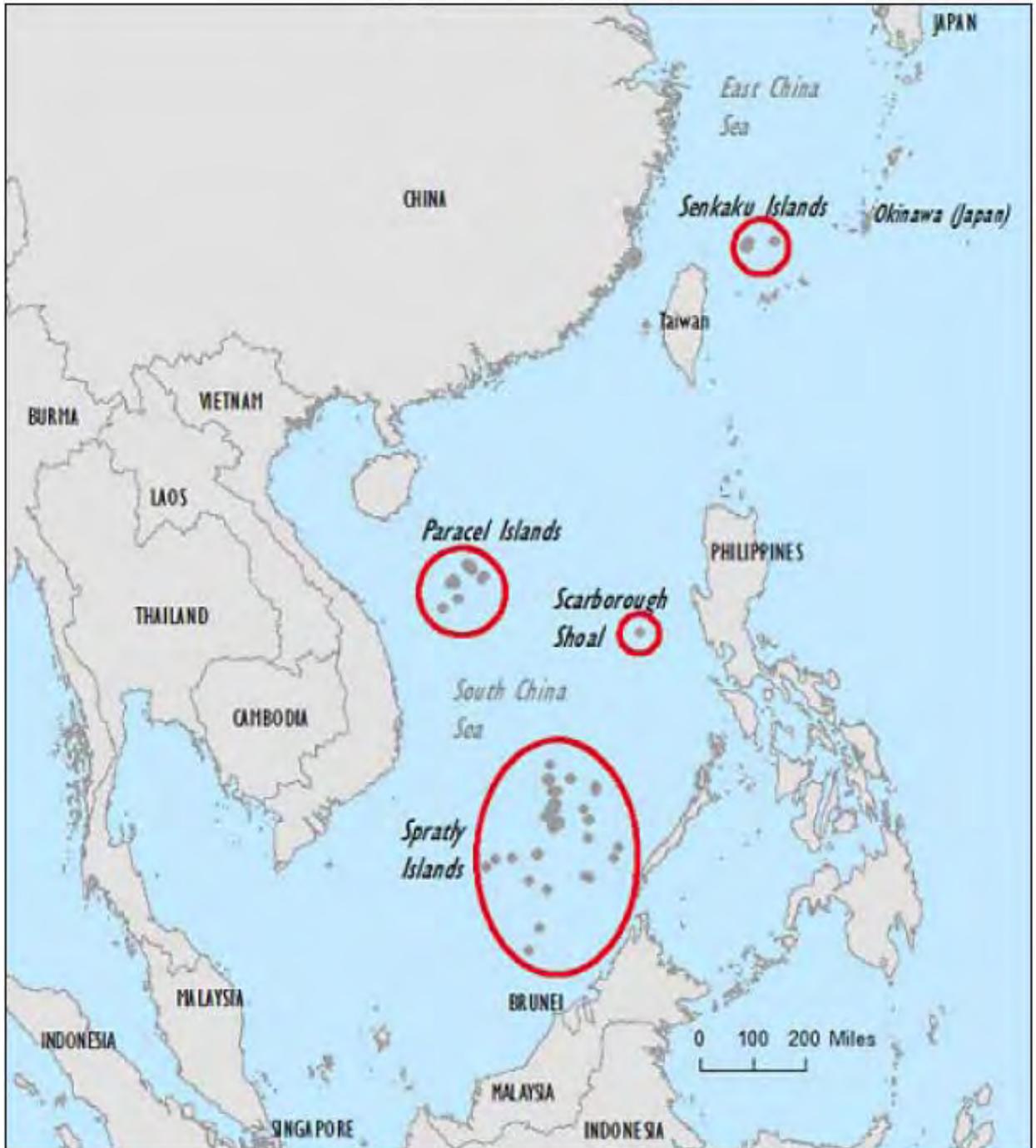
Figure 15.12: Chinese Maritime Claims and the Nine Dash Line



Source: Adapted from Wikipedia, May 11, 2013, http://upload.wikimedia.org/wikipedia/commons/c/ce/9_dotted_line.png.

Figure 15.13: Chinese Claims and the Nine Dash Line: Key Island Groups involved in Disputes

Island groups involved in principal 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, July 5, 2013, 9.

Figure 15.14: Chinese Claims and the Nine Dashed Line: EEZs Overlapping the Zone Enclosed by Map of Nine Dashed Line

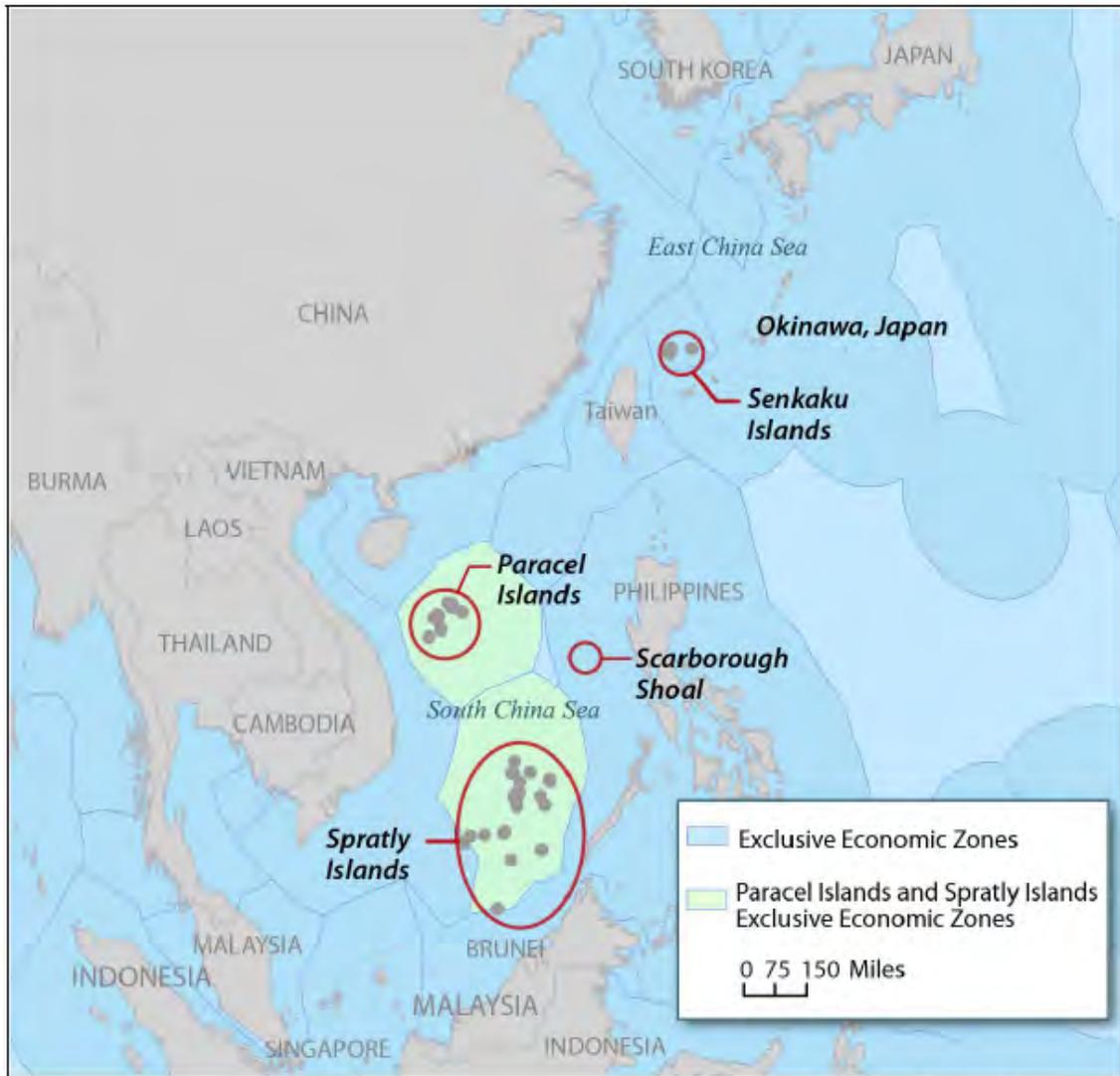


Source: Source: Eurasia Review, September 10, 2012.

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 15.15: 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/vmcddata/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, July 5, 2013, 25.

Figure 15.16: 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, July 5, 2013, 6.

The Successor to the Nine Dash Line?

In June 2014, China issued the new map of China shown in **Figure 15.17**, which 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 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.⁷²⁰

Figure 15.17: China's New Map of Greater China: June 2014



Source: Source: Xinhua, May 28, 2014.

CHAPTER 16: 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 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. reaction 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.

China’s actions must be viewed from its fear that outside forces are preventing its emergence as a major regional and world power. Just as some Chinese policymakers and analysts see nationalism as a key element of regime control and stability, some Chinese policymakers – like some of their Western counterparts – see power more in military and classic geo-political terms rather than as determined by China’s steady rise in prominence in the global economy and “geo-economics.”

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 21st Century Defense* that the U.S. Department of Defense issued on January 3, 2012.⁷²¹ 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. forces from NATO and Europe to the continental US and the Pacific, with a new focus on strategic partnerships with other states in Asia.

“Rebalancing” in 2012

The U.S. announced this rebalancing before any major adjustments were made to implement it in its future year defense plans (FYDP), programs, and budgets. The text of *Sustaining US Global Leadership: Priorities for 21st Century Defense* emphasized the importance of the Asia-Pacific region to U.S. strategic interests. Besides a force *rebalance*, the document stressed the U.S. commitment to regional allies, focused more on the Koreans than China and gave equal priority to both Asia and the Middle East:⁷²²

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.*

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 did not discuss a major change in US forces, acknowledged the constraints on US military resources, but continued focusing on the need for US and Chinese cooperation and dialogue:⁷²³

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 21st 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 21st 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...⁷²⁴

“Rebalancing” in 2013

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 were driven by China's steady emergence as a major regional military power and the growing tensions in the East and South China Seas, but focused on U.S. strategic partnerships and regional security cooperation:⁷²⁵

...[T]he world is undergoing a time of historic transformation, and Asia is at the epicenter of that change. The 21st 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 21st 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 21st 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 1st and 3rd Marine Expeditionary Force and the Army's 25th Infantry Division are all returning to their home stations in the Pacific theater. The United States Army is also designating 1st 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 21st 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

Secretary Hagel provided 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, and again emphasized the need for cooperation over competition:

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.⁷²⁶

“Rebalancing” in 2015

Some of the key 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, 2015:⁷²⁷

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 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 the same time, these policy statements relating to the U.S. 'rebalancing to Asia' took place at a time of rising pressures on the U.S. federal budget and defense spending were still rising.

From 2012 onwards, the US made cuts in planned defense spending, force plans, military readiness and exercise activities. Every year through the FY2015 budget cycle, it faced new uncertainties over its future defense plans because of Sequestration and a Budget Control Act which Congress passed on August 3, 2011 – some seven months after the Department of Defense announced its new strategic guidance.

At one point, the US Air Force planned to allocate 60% of its overseas-based forces to the region.⁷²⁸ 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 airborne refueler.

The US also faced consistent challenges in deciding how to adapt its land forces to its new strategy. An analysis by the Congressional Research Service noted that major uncertainties existed in the future posture of the US Army:

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 101st Airborne Division at Ft. Campbell, KY, in upcoming exercises. The U.S. Army Pacific is reportedly working with the 101st 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.⁷²⁹

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 outlined the continued importance of ground forces to the future of global stability. The 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.⁷³⁰

Shifts from FY2013 to FY2016

The U.S. steadily reduced its future defense spending in every budget submission to Congress from FY2013 to FY2016, although it remained by far the single largest nation in military spending. At the same time, US force planners faced steadily rising threats from non-state actors, such as the Islamic State from late 2013 onwards, and increasingly tense relations with Russia.

Total U.S. defense spending reached a recent peak of \$691 billion in FY2010, and then dropped to \$560 billion in FY2015 – a drop of some 19%. Much of this drop did, however, come 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 \$496 billion in FY2015, a cut of 6.1%.⁷³¹

These budget pressures appeared to ease by the time the President presented his FY2016 defense budget request to Congress in February 2015. The President proposed an end to such cuts in his FY2016 budget proposal to Congress, and would have gradually raised total spending from \$585 billion in FY2016 to \$597 billion in FY2020, and baseline spending from \$534 billion in FY2016 to \$570 billion in FY2020 – a rise of nearly seven percent.

By that time, however, the U.S. had to react to events in Ukraine and a steadily deteriorating situation in the Middle East. The background papers explaining the President’s FY2016 defense budget submission to the U.S. Congress no longer focused on “rebalancing to Asia.” Instead, the main document supporting the budget request made it clear that the U.S. would flexibly rebalance a shrinking force posture on a *global* rather than *Asian* basis.⁷³²

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. Taking the prudent steps outlined in the QDR will improve the Department's ability to meet national security needs. Key force structure decisions in this QDR include:

- 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. Under the Quadrennial Defense Review (QDR), the Department will rebalance within the Army, across the Active, Guard, and Reserve components.
- The active component of the Army will reduce its planned post-war end strength from the 490,000 soldiers proposed in the budget for FY 2015 to 450,000 personnel by the end of FY 2018. The Army National Guard will reduce its planned force structure from 350,200 in FY 2015 to 335,000 soldiers by the end of FY 2017. If the Department returns to the funding levels in the Budget Control Act of 2011, the Army will be forced to downsize to 420,000 Active Component soldiers and 315,000 Reserve Component soldiers. These drawdowns would be detrimental to meeting the defense strategy outlined in the QDR.
- Providing stability in shipbuilding to affordably deliver warfighting requirements. The FY 2016 budget includes construction of 48 ships across the Future Years Defense Program (FYDP), including the steady production of destroyers and submarines; construction of ten ships of each type is funded through FY 2020. The Department of the Navy will build 14 Littoral Combat Ships (LCS) in the FYDP, the last 5 of which will be of the modified LCS configuration. The modified configuration program begins in FY 2019 with no gap from earlier LCS production; it provides improvements in ship lethality and survivability, delivering enhanced naval combat performance at an affordable price.
- The FYDP shipbuilding construction program also includes one aircraft carrier; one LHA replacement; one Landing Ship, Dock replacement (LX(R)); five T-ATF(X) fleet ocean tugs; one afloat forward staging base platform; and four T-AO(X) fleet oilers. The FY 2016 budget also funds the overhaul/life extension of the *USS GEORGE WASHINGTON* (CVN-73), its Carrier Air Wing, and associated force structure. If the Department returns to sequester-level funding, the Navy will be forced to retire this carrier and air wing, and it will be unable to procure approximately 9 ships and 35 aircraft over the FYDP. These cuts would jeopardize the Navy's modernization and recapitalization plans, threatening both readiness and the industrial base.
- Maintaining the role of the Marine Corps as a vital crisis response force, protecting its most important modernization priorities and ensuring readiness but reducing from 184,100 end strength in FY 2015 to a planned end strength of 182,000 active Marines by the end of FY 2017. If sequester-level cuts return, the Marines would continue their drawdown to an end strength of 175,000 by 2019, which would be detrimental to meeting the defense strategy outlined in the QDR.
- 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. 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. A return to sequester-level funding would necessitate additional force structure reductions plus cuts to flying hours and weapon sustainment that would delay readiness recovery.
- Achieving the right balance between the Active Component (AC) and the Reserve Component (RC) is critical to the Department's overall efforts to size and shape the future joint force. The RC provides

capabilities and capacity that complement those of the AC and bolster the ability of the joint force to execute the national defense strategy. As the Department reshapes the joint force, it will continue to rely on the RC to maintain those complementary capabilities and capacity.

As the joint force rebalances to remain modern, capable, and ready — while reducing end strength—the Department will take the following additional steps that are consistent with the President’s Budget submission to protect key capability areas:

- *Air/Sea.* The Department will increase 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, survivable persistent surveillance, resilient architectures, and undersea warfare capabilities.
- *Nuclear Deterrence.* The DoD will continue to invest in modernizing the triad’s essential nuclear delivery systems, command and control, and, in collaboration with the Department of Energy, nuclear weapons and supporting infrastructure.
- *Space.* The DoD will move toward less complex, more affordable, more resilient systems and system architectures and pursue a multi-layered approach to deter attacks on space systems.
- *Missile Defense.* The DoD will make targeted investments in defensive interceptors, discrimination capabilities, and sensors.
- *Cyber.* The Department will continue to invest in new and expanded cyber capabilities and forces to operate and defend DoD’s networks, enhance its ability to conduct cyberspace operations, support military operations worldwide; and to counter cyber-attacks against the U.S.
- *Precision Strike.* The DoD will procure advanced air-to-surface missiles 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).* The DoD will rebalance investments toward 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, and other operations.
- *Counter-Terror and Special Operations.* The DoD will slightly increase Special Operations Forces growth to an end strength of 69,900 personnel, protecting DoD’s ability to sustain persistent, networked, distributed operations to defeat al Qaeda and other terrorist networks, counter other emerging transnational threats, counter weapons of mass destruction, build the capacity of U.S. partners, and support conventional operations.

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. remained 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 are almost certainly broadly correct in their broad estimates.

SIPRI estimated that U.S. defense spending was \$464.7 billion in 2004 and \$684.8 billion in 2013. In contrast, Chinese defense spending was \$40 billion in 2004 and \$167.7 billion in 2013; Russian spending was \$40.9 billion in 2004 and \$81 billion in 2013. U.S. allies also funded major defense efforts: Britain spent \$57.7 billion in 2004 and \$57.7 billion in 2013, France spent \$65.6 billion in 2004 and \$63.7 billion in 2013, Germany spent \$47.7 billion in 2004 and \$49.3 billion in 2013, and Italy spent \$44 billion in 2004 and \$35.4 billion in 2013.⁷³³

The IISS estimate total U.S. defense spending as \$581.0 billion in 2014 versus \$129.4 billion for China, \$80.8 billion for Saudi Arabia, \$70.0 billion for Russia, \$61.8 billion for Britain, \$53.1 billion for France, \$47.7 billion for Japan, \$45.2 billion for India, \$43.9 billion for Germany, \$34.4 billion for South Korea, \$24.3 billion for Italy, \$23.2 billion for Israel, \$22.5 billion for Australia, and \$18.9 billion for Iraq.⁷³⁴

US Force Strength in the Pacific: The US Pacific Command (PACOM)

In spite of the uncertainties in its 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.⁷³⁵

In May 2015, PACOM reported that it had some 360,000 personnel, or about one-fifth of the total U.S. military strength.⁷³⁶

- U.S. Pacific Fleet consisted of approximately 200 ships (to include five aircraft carrier strike groups), nearly 600 aircraft, and 140,000 Sailors and civilians.
- Marine Corps Forces, Pacific possessed about two-thirds of U.S. Marine Corps combat strength, including two Marine Expeditionary Forces and about 85,000 personnel and 640 aircraft assigned.
- U.S. Pacific Air Forces were comprised of approximately 29,000 airmen and more than 300 aircraft.
- U.S. Army Pacific had more than 60,000 personnel assigned. Its 1st Corps had some 50,000 men and included the 7th Infantry Division, the 593rd Expeditionary Sustainment Command, the 25th Infantry Division, I Corps Forward in Japan and U.S. Army Alaska, with two combat brigades in Fort Wainwright and in Anchorage.
- Component command personnel numbers included more than 1,200 Special Operations personnel. Department of Defense Civilians employees in the Pacific Command AOR numbered about 38,000.

These U.S. forces had serious limits, and the U.S. is 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:

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.⁷³⁷

The 2015 PACOM Posture Statement

Adm. Samuel J. Locklear III provided additional data on U.S. perceptions of the threat, U.S. strategic partnerships, and the U.S. view of China in his 2015 PACPN Posture Statement:

Security Environment

The Indo-Asia-Pacific remains one of the most dynamic regions on earth. It is vital to U.S. economic and security interests, and activities in the region will shape much of our nation's future. The region encompasses 52% of the earth's surface and is composed of 83% water and 17% land. Over half of the people on the planet reside on that 17% of land, and by the middle of the century, the Indo-Asia-Pacific will potentially contain 70% of the world's population. This high population density coupled with destabilizing factors such as natural disasters, climate change, ideological radicalism, and population migration will continue to put immense pressure on regional governments.

Contained in the thirty-six nations in USPACOM's area of responsibility are the world's two largest economies after the U.S. (China and Japan), and five smallest economies. The region also contains the world's most populous nation (China), the largest democracy (India), the largest Muslim-majority (Indonesia), and the smallest republic (Nauru). It contains seven of the ten largest standing militaries, five nuclear nations, and five of the U.S.'s seven mutual defense treaty alliances. The socioeconomic diversity and population density throughout the USPACOM area of responsibility (AOR) create strategic long-term challenges. These challenges include: political instability, social inequality, poverty, increased sensitivity to climate change and natural disasters, risk of pandemic disease, and epidemic drug use and distribution.

In addition to these challenges, the U.S. must continue to deter North Korean provocation, ensure access to air and sea lanes, encourage peaceful resolution of territorial and maritime disputes in the East and South China Seas, respond to natural disasters and theater health issues, check the flow of violent extremists from the Middle East to violent extremist organizations (VEOs) in the Indo-Asia-Pacific, address transnational crimes, monitor an increasingly active Russia, and constructively engage a rising China. Despite all of the challenges, the theater possesses opportunities for the U.S., its allies, and its partners. In order to capitalize on these opportunities, foster the region's economic potential, and provide the security and stability necessary to protect areas of common interest, USPACOM remains engaged.

The Indo-Asia-Pacific requires stable political institutions to effectively govern and prosper. Overall, but with notable exceptions, the countries of the Indo-Asia-Pacific region are more politically stable than in previous years. The general health of democratic institutions across the region is evidenced by several critical leadership transitions which occurred last year. Successful, peaceful participatory elections occurred in India and Indonesia. Sri Lanka achieved a peaceful transition of power following its January election. Fiji took a major step toward moving past its 2006 military coup by holding elections last September. Citizens in many countries were able to peacefully protest without fear of oppressive action. While these activities are reassuring, challenges remain. For example, Thailand's military coup removed a democratically elected administration, and interim leaders have yet to restore a democratic government.

North Korea: North Korea remains the most dangerous and unpredictable security challenge.

The regime continues its aggressive attitude while advancing its nuclear capability and ballistic missile programs. While the international community continues to urge North Korea to live up to its international obligations and return to authentic credible negotiations under the Six-Party Talks framework, North Korea

has unfortunately shown no willingness to seriously discuss its denuclearization commitments and obligations, and additional nuclear tests remain possible. It is expected that North Korea will continue to showcase ballistic missile development (to include mobile intercontinental ballistic missiles and intermediate range Musudan missiles) and conduct launches in direct violation of several United Nations Security Council Resolutions (such as the short-range ballistic missile launches in March 2015). North Korea already announced its intent to conduct “annual and regular” drills to advance this prohibited capability.

Additionally, North Korea demonstrated the will to employ cyber techniques to impose costly damage to civilian companies, as was demonstrated in the high-profile attack on Sony Pictures Entertainment. North Korean cyber actors continue to conduct cyber actions against South Korean military and civilian networks. USPACOM remains concerned about the destructive nature of this state sponsored cyber-attack targeting a commercial entity and its employees in the United States. These actions demonstrate North Korea’s disregard for international norms. North Korea’s actions are beyond the bounds of acceptable state behavior in cyberspace.

Territorial and Maritime Issues: Territorial and maritime issues in the East and South China Seas, if not handled properly, may negatively impact stability in the regional and the security environment. The claimants’ use of maritime law enforcement vessels to enforce their claims has largely kept these issues out of the military sphere, despite a steady increase in military air and sea patrols. While no country appears to desire military conflict, an escalation due to a tactical miscalculation cannot be ruled out.

In the East China Sea, Japan and China both claim sovereignty over the Senkaku Islands. While the United States does not take a position on ultimate sovereignty over the islands, it has long recognized Japanese administration of them. China’s behavior in the area has resulted in close encounters at sea, aggressive Chinese air intercepts of Japanese reconnaissance flights, inflammatory strategic messaging, and the no-notice declaration of a Chinese Air Defense Identification Zone in the East China Sea.

The South China Sea issues are complex. Six claimants (China, Vietnam, Malaysia, Brunei, Taiwan, and the Philippines) have overlapping claims in the South China Sea. As the South China Sea claimants’ populations and economies continue to grow, access to the oil, gas, minerals, and fisheries within the South China Sea becomes more important. Claimants appear to be asserting their claims through increased maritime patrols, outpost and facility construction, and land reclamation.

China has the broadest claim with its self-proclaimed “Nine-Dash line” that covers almost the entire South China Sea. China’s lack of clarity with regard to its South China Sea claims, and China’s attempts to unilaterally enforce its ambiguous claims, has created uncertainty in the region. Any use of the nine-dash line by China to claim maritime rights not based on claimed land features would not align with international law. The international community would welcome China to clarify or adjust its nine-dash line claim and bring it into accordance with the international law of the sea, as reflected in the Law of the Sea Convention.

To achieve its long-term goals in the region, China is executing a strategy that includes expanding outposts in contested areas through land reclamation on South China Sea features, taking actions to prevent other nations from establishing / maintaining outposts, exploring for natural resources in disputed waters, and increasing its naval and air forces’ presence through exercises and patrols. China’s aggressive land reclamation and construction projects at eight South China Sea military outposts include new buildings, more capable berthing space for ships, and presumably an airfield on the Fiery Cross Reef (China’s largest reclamation project).

Although land reclamation cannot, for example, change a submerged feature into a natural island that generates any legal entitlements to maritime zones, the completion of these projects will give China the ability for greater presence, increase dwell time for military and coast guard assets, and expand the areas covered by surveillance and area-denial systems. Examples of activities supporting China’s long-term strategy include attempts to block resupply missions to the small Philippine garrison at Second Thomas Shoal and exclude Philippine and other fishermen from the disputed Scarborough Reef. Last year, China also moved a China National Offshore Oil Corporation drilling platform into Vietnam’s claimed Exclusive Economic Zone resulting in a tense standoff between Vietnamese and Chinese maritime assets substantially increasing the possibility of miscalculation between the two countries.

The U.S. does not take a position on issues of sovereignty with respect to territorial claims in the East and South China Sea, but we do insist that all maritime claims must be derived from land features in accordance with international law as reflected in the Law of the Sea Convention. The U.S. also continues to emphasize the

importance that maritime and territorial disagreements be resolved peacefully in accordance with international law and opposes the use of intimidation, coercion, or force to assert claims. An example of such an attempt at peaceful resolution is the Philippines' arbitration against China under the Law of the Sea Convention that is being heard by a tribunal in The Hague. Of note, China has refused to participate in this arbitration to date.

Natural Disasters: The Indo-Asia-Pacific accounted for over 40% (1,690 incidences) of the world's reported natural disasters during the period between 2004 and 2013, and, because of the region's coastal population density, these disasters were particularly deadly, claiming more than 700,000 lives. The Pacific Rim's tectonic plate structure produces its well-known Ring of Fire, which regularly triggers earthquakes, volcanoes, and tsunamis. Weather extremes and anomalies continue to plague the region. Understanding the scope and severity of long-term climate change, unexpected climate shocks, and climate variability events such as El Nino are shared global challenges.

In addition to seismic and climate challenges, areas of large populations, dense living conditions, and poor sanitary conditions in the region create optimal conditions for the rapid spread of human- or animal-borne diseases. To address these challenges, USPACOM focuses on pre-crisis preparedness with training and exercises. For example, many of the lessons learned and preparedness measures implemented after Typhoon Haiyan (Operation Damayan, November 2013) resulted in less damage and loss of life when Typhoon Hagupit passed over the Philippines last December. U.S. forces regularly train with allies and partners on humanitarian assistance and disaster relief operations and stand ready to respond in support of interagency partners to a natural disaster or the frequent vectors of disease that plague the region. Regional information sharing and rapid response to health crises are improving, but the danger remains high. USPACOM will continue to focus on improving pre-crisis preparedness and working with allies and partners in the region to ensure an effective response when an event occurs.

Violent Extremism: The ongoing conflict in Syria and Iraq attracts foreign fighters from countries throughout the Indo-Asia-Pacific. Current assessments indicate approximately 1,300 foreign personnel fighting alongside the self-proclaimed Islamic State of Iraq and the Levant are from the Indo-Asia-Pacific. A small number of these combat-experienced fighters who return home could enhance the capability of regional extremist networks within the most densely populated areas of the world. In South Asia, partner nations maintain pressure on extremist networks but face a persistent threat from transnational groups that continue adapting to shifting geopolitical factors, competition among global extremist groups, and counterterrorism actions by the U.S. and its regional allies. Al-Qa'ida's increased rhetoric focused on South Asia and the announcement of a new affiliate, "Al-Qa'ida in the Indian Subcontinent," suggest Al-Qa'ida will focus resources on uniting established terrorist groups to engage in jihad in South Asia. Lashkare Tayyiba and other Pakistan-based groups continue fighting in Afghanistan, but they will likely shift some of their operational focus to the Indian Subcontinent in the next one to three years as Coalition forces drawdown. In Southeast Asia, regional partners maintain persistent pressure on extremist networks; however, competing security priorities in the region, coupled with the sensationalism of developments in the Middle East, have pressurized counter-terrorism attention. Extremist groups are increasingly interconnected and the region remains a potential safe haven, facilitation hub, and area of operations for extremists.

Proliferation Issues: Rapidly developing technology manufacturing sectors in the Indo-Asia-Pacific region have in many states outpaced the concurrent development of those states' effective export controls: The region includes some of the busiest maritime and air ports in the world with shipments of proliferation concern likely passing through these ports almost daily. These shipments include dual-use items—commercial items controlled by the nuclear, ballistic missile, and chemical/biological weapons control regimes, others covered by associated catch all controls—manufactured in or re-exported from states with spotty export control enforcement. Iran built its robust nuclear infrastructure and advanced its ballistic missile systems with materials that passed through the USPACOM AOR; North Korea continues to procure for its nuclear and ballistic missile programs—and proliferate conventional arms for revenue generation—using a network of individuals and entities throughout the region. PACOM engages regional partners in capacity-building activities designed to improve export controls and interdiction capabilities in the region. In August 2014 PACOM hosted personnel from 31 nations as part of the Proliferation Security Initiative (PSI) Exercise Fortune Guard, which marked the beginning of a six-year series of exercises that various "expert" nations in the region will host. (New Zealand, Australia, Singapore, Japan, South Korea and the United States) Exercises such as Fortune Guard provide nations a forum to demonstrate the intention to act and share the best tactics against proliferators, emphasizing a whole-of-government approach to confront this complex challenge.

Transnational Crime: There is a growing trend for regional human and drug trafficking organizations to operate as global enterprises. In addition to the devastating impact widespread drug use has on a society, the revenue generated from these illicit activities fund terrorists and Violent Extremist Organizations. Methamphetamine and amphetamine-type stimulants continue to be the primary drug threat in the USPACOM AOR. The majority of Methamphetamine available in the United States comes from Mexico, primarily across the South West Border Region, and an estimated 90% of the precursor chemicals used to produce Mexican Methamphetamine comes from China. Further, the annual volume of Methamphetamine seizures made along the United States South West Border Region has exceeded Cocaine seizures in the past three years.

Nearly 21 million victims of human trafficking are estimated worldwide and nearly two-thirds are from Asia, with India, China, Indonesia, Bangladesh, and Thailand among the countries with the highest number of victims. Women and children – especially those from the lowest socioeconomic sectors – are the most vulnerable demographics. Roughly a quarter end up in the commercial sex trade, while others are forced into difficult and dangerous positions in factories, farms, or as child soldiers. Still others are bound to families as domestic servants. Human trafficking victims often suffer physical and emotional abuse and social stigmatization while being denied their basic human rights and fundamental freedoms. While awareness is rising, much remains to be done to combat this particularly heinous crime. USPACOM forces build partnership capacity and share intelligence in order to combat these transnational threats.

Russian Intent: Russia is reasserting itself politically and militarily in the Pacific. In the USPACOM AOR, Russian Navy and Long Range Aviation operational tempo have recently increased significantly, but not above Cold War levels. Though challenged by maintenance and logistical issues, Russian Navy cruisers, destroyers and frigates have increased their operations and reach. The Russian Pacific Fleet sent ships to support operations in the Middle East and Europe, while Russian ships from the Baltic and Black Sea Fleets deployed into the Asia-Pacific. Russian BEAR bombers and reconnaissance aircraft regularly fly missions in the Sea of Japan and continue operations as far east as Alaska and the west coast of the continental U.S. The anticipated fielding later this year of Russia's newest class of nuclear ballistic missile submarine (Borei-class SSBN) and upgrades to Russia's land-based ballistic missiles will modernize Moscow's nuclear capability in the Asia-Pacific. Russian ballistic missile and attack submarines remain active in our region. Russia aims to demonstrate military capabilities commensurate with its Pacific interests: ensuring Russian sovereignty, sovereign rights, and jurisdiction in the Asia-Pacific, strengthening its sphere of influence, and projecting a credible deterrent force.

Chinese Military Modernization and Strategic Intent: Recent statements by senior PRC leaders, such as PRC President Xi Jinping, suggest that the PRC may be attempting to advance a vision for an alternative security architecture in Asia that affords Beijing increased influence in the region and diminishes the role of the United States. This Chinese view was highlighted in Shanghai last summer at the Conference on Interaction and Confidence Building Measures in Asia. At the conference, President Xi Jinping called on all of Asia to support the development of a new security order centered on China. The proposed new order also requires a curtailment of alliance-strengthening diplomacy, of which the "U.S. Rebalance to Asia" is noted as the greatest offender. China is proposing an alternative strategy to regional security issues where the U.S. plays, at best, a deferential role.

China is engaged in a comprehensive military modernization program to transform its forces into a high-tech military capable of conducting complex operations. Many of China's initiatives are intended to develop capabilities to deter or counter third-party intervention in regional contingencies. These anti-access/area denial (A2AD) capabilities are focused on controlling access and freedom of operations in vast portions of the air and maritime domains, as well as space and cyberspace. These include a series of sophisticated and increasingly long-range antiship cruise missiles, ballistic missiles, air-to-air and air-to-ground missiles, and kinetic and nonkinetic counter-space systems. China is also making significant advances in electronic warfare capabilities, which are contributing to the A2AD challenge.

China continues an aggressive ship building program to produce and field advanced frigates, destroyers, and the first in-class cruiser-sized warship. Chinese shipyards are also producing newer, more capable submarines as they inactivate older submarines, resulting in a fleet that is not growing substantially in number but is significantly more capable. Advances in China's strategic capabilities remain significant. China now has three operational JIN-class ballistic missile submarines (Type 094), and up to five more may enter service by the end of the decade. The JIN-class submarine carries the JL-2 submarine launched ballistic missile with a range

capable of reaching the U.S. and will give China its first credible sea-based nuclear deterrent. Nuclear deterrence patrols will likely commence this year. Lastly, we expect China to soon begin constructing an indigenous aircraft carrier.

China is using computer network exploitation capabilities to support intelligence collection to advance its defense and high-tech industries. Through a sophisticated cyber program, China is generating insights on U.S. security policies, defense networks, logistics, and military capabilities.

As the Chinese military modernizes its capabilities and expands its presence in Asia, U.S. forces are drawn into closer and more frequent contact and the risk of an accident or miscalculation increases. This places a premium on efforts to increase mutual understanding and trust in order to reduce risk. The Chinese Navy is more frequently operating in the Indian Ocean, expanding the area and duration of operations and exercises in the Western and Central Pacific Ocean, and periodically venturing into other non-traditional areas, as exemplified by recent port visits to Europe. The complexity of the regional and global security environment, as well as China's military advancements, necessitates a continuous dialogue between the U.S. and Chinese militaries to expand practical cooperation where national interests converge and discuss areas where goals diverge, especially during periods of friction.

Allies and Partners

The U.S.' five treaty allies in the Indo-Asia-Pacific are: Australia, Japan, Republic of Korea,

Philippines, and Thailand. In addition to U.S. treaty alliances, the U.S. continues to strengthen existing partnerships and build new relationships to advance common interests and address shared concerns. U.S. allies and key partners in the theater play a fundamental role in addressing the security challenges. Strengthening and modernizing alliances and partnerships is a top USPACOM priority.

Australia: Australia continues to be a close, steadfast, and effective ally in the Indo-Asia-

Pacific. The alliance anchors peace and stability in the region, and Australia has taken a leading role in addressing regional security and capacity-building issues, including lead roles in Humanitarian Assistance and Disaster Relief events. Australia is also a key contributor to global security, including counter-ISIL efforts in Iraq and the Resolute Support mission in Afghanistan. With the ongoing implementation of the Force Posture Initiatives, which provide expanded opportunities for bilateral and multilateral engagement, the Marine Rotational Force- Darwin successfully completed its third rotation while increasing its presence from 250 to 1,177 U.S. Marines. The U.S. Air Force is increasing its rotation of aircraft to Australia. In addition to the Force Posture Initiatives, the U.S. and Australia are identifying additional opportunities to increase collaboration in counter-terrorism, space, cyber, and integrated air missile defense and regional capacity building. Australia is procuring a number of high-tech platforms that will increase interoperability such as the F-35 Lightning II, P-8 Poseidon, C-17 Globemaster III, and EA-18G Growler aircraft as well as Global Hawk UAVs and MH-60R helicopters. To ensure greater synchronization and integration, the Australian Government provides a General Officer and a Senior Executive to USPACOM, as well as another General Officer to U.S. Army Pacific, as tangible examples of a mutual commitment to the alliance.

Japan: The U.S.-Japan alliance remains strong and productive through both countries' shared commitment to a full range of military capabilities with expanding responsibility for training, exercises, interoperability, and bilateral planning. Japan's 2013 National Security Strategy and the 1 July 2014 cabinet decision on collective self-defense are positive developments and indicators of Japan's ability and willingness to assume a greater role in the regional security architecture. The Abe administration will submit implementing legislation to the National Diet during its spring session, and debate is expected to conclude in summer 2015. The US-Japan Guidelines for Defense Cooperation are being revised, and that process will conclude with public presentation of the Guidelines in the near future. We are hopeful that Japan's upcoming legislative changes support new and expanded forms of cooperation.

U.S. Forces Japan continues to build its close relationship with the Japanese Joint Staff to enhance interoperability and information sharing through realistic training, exercises, and bilateral planning. USPACOM will continue to maintain a robust military presence in Japan to meet future security challenges and encourage greater trilateral military engagements with the Republic of Korea (ROK) and Australia.

Efforts continue toward improving US-Japan-ROK trilateral coordination in response to North Korean provocative behavior. The December 2014 signature of the US-Japan-ROK Trilateral Information Sharing

Arrangement is a positive first step toward greater information sharing on North Korean missile and nuclear threats.

As Japan increases its defense spending, it is procuring a number of high-tech platforms that will increase interoperability such as the F-35 Lightning II aircraft, MV-22 Ospreys, and the Global Hawk UAV, as well as upgrading existing AEGIS destroyers with the latest BMD capability and constructing two additional AEGIS destroyers (for a total of eight BMD capable platforms). Each North Korean ballistic missile provocation validates the investment of the AN/TPY-2 radars in Japan to provide ISR against missile threats. Last year's addition of the second radar in Japan and forward deploying two additional BMD capable ships will enhance our ability to defend our ally and the region, as well as provide early warning of missile threats to the U.S. homeland. Lastly, Japan continues to make significant infrastructure investments in country that complement the realignment of U.S. Marines from Okinawa to Guam including expanding the airfield and associated facilities at Marine Corps Air Station Iwakuni and construction of the Futenma Replacement Facility. It is important that these initiatives remain on track.

Philippines: The U.S.-Philippine alliance remains a positive source of strength and regional stability. Building upon the 1951 Mutual Defense Treaty, the Enhanced Defense Cooperation Agreement (EDCA) between the U.S. and the Government of the Philippines was signed last April. Through enhanced U.S. rotational presence, the EDCA provides expanded opportunities to conduct theater security cooperation activities and supports the Armed Forces of the Philippines (AFP) as it shifts focus from internal security to external defense. Full EDCA implementation awaits the outcome of a case before the Philippine Supreme Court, where deliberations could last into this summer.

After more than a decade, the Joint Special Operations Task Force created to counter Violent Extremist Organizations in the Philippines will stand down and the AFP will sustain that mission. Training and advising objectives that were set to address organizations such as the Abu Sayyaf Group and Jemaah Islamiyah have been met. Although the Task Force is standing down, a small USPACOM footprint will remain embedded in the Philippines to continue working with the AFP leadership and planning staffs. The AFP has demonstrated an increased capacity and capability to handle domestic threats inside their country, but USPACOM will remain committed to supporting and advising the AFP at the operational level.

Competing claims in the South China Sea continue to be a source of friction and instability. China continues large-scale land reclamation around disputed features. Furthermore, periodic resupply and troop rotations to the small Philippine outpost at Second Thomas Shoal (also known as Ayungin Shoal) are well-known points of contention with the Chinese government.

Republic of Korea: The U.S.-Republic of Korea (ROK) alliance remains strong and vital, and enduring for over six decades. Our militaries integrate complementary capabilities and enhance the relationship with honest and frank dialogue. During the most recent annual discussions, the U.S. and ROK made arrangements to delay wartime operational control transfer and adopt a conditions-based approach, rather than a calendar-based deadline. The U.S. and ROK intend to modernize the alliance to better inform the development or acquisition of Alliance capabilities required to address future threats from North Korea.

USPACOM will continue to work with the ROK to address the North Korean threat. North Korea continues to be a challenge due to provocations and uncertainty, which are viewed as a threat to peace and stability in the region. The ability to rapidly respond to aggression with combined U.S.-ROK-Japan capabilities is the best way to ensure deterrence and maintain regional stability. Trilateral cooperation will improve each participant's understanding of the mutual challenges and shared opportunities that exist in and around the Korean Peninsula.

Thailand: As Thailand is the oldest U.S. treaty partner (182 years), the U.S. values its friendship with the people of Thailand. The Thai military's decision to suspend its constitution and assume control of the civilian government has impacted that relationship. Military engagements and exercises have been appropriately adjusted in a whole of government response to the coup, pending a return to a democratically-elected government. USPACOM will continue to demonstrate commitment to the U.S.' ally while reinforcing democratic values and ideals. The annual COBRA GOLD exercise co-sponsored with the Royal Thai Armed Forces is an important multi-lateral warfighting training event. This year's exercise was significantly limited in scope and scale in response to the Thai coup, and heavily focused on humanitarian assistance activities.

India: Last year, India held the largest election in its history. With new leadership in place, India is energizing the U.S.-India strategic partnership. Prime Minister Modi has focused India's foreign policy on building strong

regional cohesion in South Asia. India's two decade-long "Look East Policy" has resulted in growing partnerships with Southeast Asian countries.

The U.S. military remains heavily engaged with New Delhi's military, having conducted 69 major exercises in the past five years. The Indian Navy continues its strong participation in multilateral exercises including INDRA with Russia, MALABAR with the U.S. and Japan, and RIMPAC with 23 navies from across the Indo-Asia-Pacific. India's participation in these exercises signals their commitment as a regional security provider. Additionally, over the past three years the U.S. has been India's largest defense trading partner. Through military modernization, robust defense trade (C-17s, C-130Js, and P-8Is, among other items), and a growing network of defense partnerships, India is asserting its role as an important regional actor determined to protect common interests and ensure free access to economically vital sea lanes, although with respect to military activities, India still asserts a security interest in its EEZ that does not conform to the law of the sea.

Indonesia: Indonesia is a capable security partner in Southeast Asia, and is increasingly focused on its role as a regional power, which USPACOM continues to support as a main pillar of mil-mil engagement. Presidential elections last July demonstrated a commitment to democratic principles, and the August opening of Indonesia's new Peace and Security Center to train regional partners on peacekeeping operations reinforces its position as a leader in security assistance. A growing area of cooperation with Indonesia is defense trade, which includes the sale of AH-64E Apache helicopters and initial delivery of F-16 Fighting Falcon aircraft. Indonesia remains concerned about maintaining security and stability in the South China Sea. While their Chief of Defense has articulated a zero-war policy in the South China Sea, there are signs they are increasingly concerned over China's so-called nine dash line overlapping with part of their claimed EEZ. While Indonesia continues a foreign policy rooted in the Non Aligned Movement, USPACOM has seen significant gains in security cooperation activities. Indonesia will continue to balance its partnership with the U.S. with other nations such as Russia and China, but security cooperation with the U.S. remains a top priority.

New Zealand: New Zealand is a respected voice in international politics and a recognized leader in Oceania that shares common security concerns with the U.S., such as terrorism, transnational crime, and maritime security. Military-to-military relations and defense engagements with New Zealand continue to improve, and the U.S. and New Zealand executed the second series of annual bilateral defense dialogues last year. New Zealand's establishment of a Consulate General in Honolulu has also provided additional opportunities for USPACOM and New Zealand to engage on issues of mutual interest. This new Consulate General addition to Hawaii is timely as the U.S. celebrates the 100th Anniversary of ANZAC with New Zealand and the Australians this year.

Oceania: Maintaining our close partnerships in Oceania is important to national security. The Compacts of Free Association with the Federated States of Micronesia, the Republic of the Marshall Islands, and the Republic of Palau are important agreements that guide the relationships. The U.S. defense obligations to these nations are reflected in our defense planning and preparation. In return, these compact agreements provide assured access to the three Compact Nations and their associated 5.5 million square kilometers of Pacific in a contingency situation. They also give the U.S. authority to grant or deny access to another nation's military forces, which allows the maintenance of a clear strategic line of communication across the Pacific. The U.S.'s continued commitment to defend the Compact Nations and to partner with other Pacific island countries sends a strong message throughout the region and reinforces its commitment to the Pacific Rebalance.

Fiji currently has its first democratically elected government since its military coup in 2006. In 2015, Fiji will re-enter into regional forums (e.g., Pacific Island Forum) and have new opportunities for engagement with the U.S. Several other countries (Papua New Guinea, the Solomon Islands, and Vanuatu) may face government reorganizations over the next year. These events may set back specific projects but will not likely impact stability or affect overall U.S. engagement.

Climate change will continue to be an important issue across the Oceania region. This year's forecasted El Nino event will likely result in drought and increased tropical cyclone activity. The Republic of Marshall Islands will almost certainly face water shortage resulting in requests for aid or disaster declarations under a subsidiary agreement to the Amended Compact of Free Association. Fiji, Kiribati, the Federated States of Micronesia, Papua New Guinea, Samoa, and Tonga will likely face similar situations. The December 2014 United Nations Climate Change Conference addressed the impact of rising sea levels - a keen interest to Pacific Island Nations.

Singapore: Singapore continues its important role in regional security initiatives. Singapore's role as a 'Major Security Cooperation Partner' is underscored by longstanding support of U.S. naval forces. For example, USS Freedom completed a ten month deployment in 2013, and USS Fort Worth is currently on a 16 month deployment. These forward forces contribute to naval readiness and partner capacity building and enable rapid response to many crises, including Operation Damayan in the Philippines and Air Asia recovery efforts. Additionally, Singapore's Changi Naval Base remains a key enabler to providing critical support to the USS Fort Worth and other forward operating forces.

U.S. – China: In light of an increasingly complex regional and global security environment, including advances in China's military capabilities and its expanding military operations and missions, the overall U.S. approach to China calls for a continuous 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 dialogue. As a key element, the U.S.'s military engagement with China, within the guidelines of the 2000 NDAA, benefits the region, improves transparency, and reduces risk of unintended incidents, contributing to overall regional stability. The U.S. military has increased the depth of engagement with China in recent years and executed over 50 bilateral and numerous multilateral engagements last year. While these engagements are critical to improving transparency and reducing risk, the U.S. military must continue to take a pragmatic approach as the U.S. attempts to help integrate China into the existing security architecture. China's military investments, including A2AD capabilities, focused on the ability to control access and deny freedom of operations in vast portions of the air, maritime, space, and cyberspace domains raise concerns.

The U.S. will need more transparency and understanding of Chinese intentions in order to minimize friction and avoid miscalculation or conflict in the future. Absent greater transparency from China, its ambiguous dashed-line claim, military modernization efforts and aggressive land reclamation in the South China Sea have significant implications for regional stability and the current security architecture.

Over the past year, the U.S. and China have agreed to mechanisms such as the Confidence Building Measures (CBMs) on Notification of Major Military Activities and Rules of Behavior (RoB) for Safety of Air and Maritime Encounters, designed to underscore and reinforce existing international law and standards while improving transparency, building trust, and reducing risk of unintended incidents. The surface-to-surface encounters annex of the RoB CBM was signed last year and the air-to-air annex is scheduled to be completed by the end of this year. These new Rules of Behavior are non-binding and capture existing legal rules and standards. Additionally, the U.S. and China continue to use the Military Maritime Consultative Agreement meetings to discuss safety in the maritime domain and avoid crises. As China continues to grow its military capacity and capability and operate further from its territory, these mechanisms become more important.

Both militaries have had success addressing areas of common interest, such as counter piracy, military medicine, and HA/DR. Some of the most successful engagements were focused on military medical cooperation and shared health concerns. For example, the USPACOM surgeon hosted Chinese counterparts in Hawaii and Washington, DC, which resulted in concrete opportunities for continued military medical cooperation focused on Disaster Response, Pandemic and Emerging Infectious Diseases, and Soldier Care. In January 2015, the PLA hosted the USPACOM Surgeon and component surgeons for a highly successful reciprocal visit. Demonstrating China's increasing ability to operate beyond the Western Pacific and a successful engagement on an area of common concern, last December, U.S. and Chinese ships conducted counter piracy exercises in the Gulf of Aden and off the Horn of Africa. China's participation in international efforts to address these problems and to operate and exercise with the U.S. and its allies and partners in a manner consistent with international law and standards is welcomed.⁷³⁸

While Chinese contingency planning must consider these developments as potential threats to China, it is important to note that they also 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 with draw 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.

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 5th 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 5th Fleet in in 1995. In January 2014, the 5th Fleet had the following task forces:⁷³⁹

- 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.

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.⁷⁴⁰ The USAF had six air wings deployed in or near the IOR and two groups:⁷⁴¹

- 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.⁷⁴²

Actual U.S. Force Shifts in Asia

It's still unclear how these 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 tis 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.⁷⁴³ 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 US also faced consistent challenges in deciding how to adapt its land forces to its new strategy. A 2012 analysis by the Congressional Research Service noted that the following uncertainties existed in the future posture of the US Army:⁷⁴⁴

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 101st Airborne Division at Ft. Campbell, KY, in upcoming exercises. The U.S. Army Pacific is reportedly working with the 101st 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.

These uncertainties remain. In May of 2013, Chief of Staff of the Army General Odierno, Commandant of the Marine Corps General James F. Amos, and Special Operations Commander Admiral McRaven outlined the continued importance of ground forces to the future of global stability. The White Paper titled, “Winning the Clash of Wills: Strategic Landpower and the Inherently Human Nature of Conflict,” also touches on the role of landpower 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.⁷⁴⁵

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 Air Sea Battle or JAM-GC

The increases in Chinese long-range naval, air, and missile capability have, however, 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):⁷⁴⁶

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:⁷⁴⁷

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

The fact that the U.S. and other Asian powers are all 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 ranges from low level clashes between China and its neighbors to conflicts involving China and the US. As Bonnie S. Glaser of CSIS noted in 2012,⁷⁴⁸

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,⁷⁴⁹

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 Activity has stated that the maritime and EEZ disputes now focus on four key areas:⁷⁵⁰

- The **Senkaku Islands** in the ECS, which are claimed by China, Taiwan, and Japan, and administered by Japan.
- 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, and Taiwan, and the Philippines; and,
- The **Paracel Islands** in the SCS, which are claimed by China and Vietnam, and occupied by China.

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 -- provides an illustrative timeline of such incidents between Asian powers in the South and East China Seas.⁷⁵¹

- "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. Tre 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.⁷⁵²
- 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.⁷⁵³
- 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.³⁰
- May 1, 2014: CNOOC moves oil rig Haiyang Shiyou 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.⁷⁵⁴
- 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.⁷⁵⁵

Ronald O'Rourke of the Congressional Research Service summarized the EEZ issues affecting many of the incidents as follows:⁷⁵⁶

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.⁷⁵⁷ 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.”⁷⁵⁸
 - 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.⁷⁵⁹
- *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*⁷⁶⁰
 - 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*⁷⁶¹
 - 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.⁷⁶²
- *Taiwan Affairs Office spokesperson, Ma Xiaoguang*
 - January 15, 2014 - “People across the Taiwan Strait should bear responsibility for China’s sovereignty and territorial integrity.”⁷⁶³
- *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.”⁷⁶⁴
 - 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.”⁷⁶⁵
- *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.”⁷⁶⁶
- *Vice Foreign Minister Fu Ying*
 - October 22, 2012 – The Vice Foreign Minister took question from Japanese journalists at a press conference in Japan⁷⁶⁷

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.

- 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.—Foreign Ministry Spokesperson Lu Kang
 - 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.”⁷⁶⁸
- *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.”⁷⁶⁹

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.⁷⁷⁰
- 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.⁷⁷¹
- *Foreign Ministry spokesperson, Qin Gang*⁷⁷²
 - 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.”⁷⁷³
- *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.”⁷⁷⁴

- *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.”⁷⁷⁵
- *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.”⁷⁷⁶
 - 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.”⁷⁷⁷

US and Chinese “Incidents”

These tensions have reinforced China’s generally negative view of 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.”⁷⁷⁸

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. O’Rourke notes that,⁷⁷⁹

“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*, *Victorious* as they 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; and

- 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.

These incidents 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);
- SS George Washington (July-November 2010);
- U-2 Intercept (June 2011);
- INS [Indian Naval Ship] Airavat (July 2011);
- INS [Indian Naval Ship] Shivalik (June 2012);
- USNS Impeccable (July 2013)

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."⁷⁸⁰
- *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."⁷⁸¹
- *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.⁷⁸²

- 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."⁷⁸³

- *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."⁷⁸⁴

- *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.⁷⁸⁵

- *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."⁷⁸⁶

- *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."⁷⁸⁷

- *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".⁷⁸⁸

- *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.”⁷⁸⁹
- 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.”⁷⁹⁰
- 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.”⁷⁹¹

- 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.”⁷⁹²

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 2014 Japanese defense white paper addressed the impact of Chinese sovereignty disputes in the East China Sea as follows:⁷⁹³

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 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.⁷⁹⁴

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."⁷⁹⁵

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.⁷⁹⁶ 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.⁷⁹⁷

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.⁷⁹⁸ The building of this *fait accompli* is effectively the bit-by-bit strengthening, also called "salami slicing," of *de facto* claims of sovereignty.⁷⁹⁹

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.⁸⁰⁰

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.⁸⁰¹ 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.⁸⁰² 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 has 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.⁸⁰³

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 16.1 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 16.1 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"> ○ 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. ○ 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.” ○ When a foreign country that is in a close relationship with Japan comes under an armed attack and ○ If such a situation has the potential to significantly affect the security of Japan ⇒ 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. 	<ul style="list-style-type: none"> ○ 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. 	<ul style="list-style-type: none"> ○ 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. 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) 2. To remove obstructive attempts against its missions 	<ul style="list-style-type: none"> ○ 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.
Legislative Policies etc.	<ul style="list-style-type: none"> ○ The Diet: Legal source is needed. The approval, either prior or ex post facto, of the Diet should be required. ○ 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.) ○ In the case that Japan would pass through the territory of a third country, the consent of that third country should be obtained. 	<ul style="list-style-type: none"> ○ The Diet: Legal source is needed. The approval, either prior or ex post facto, of the Diet should be required. ○ The Government: Proactive contribution should be made. Decisions should be made carefully, based on comprehensive examination on the political significance etc. 	<ul style="list-style-type: none"> ○ Requirements in the Rules of Engagements etc. should be amended in line with U.N. standards. ○ The so-called Five Principles on Japan’s Participation in U.N. PKOs also need to be examined in view of its revision. 	<ul style="list-style-type: none"> ○ It is necessary to enhance the legal system within a scope permitted under international law to enable a seamless response.
<p>The Panel strongly expects that the Government will consider this report earnestly and proceed to take necessary legislative measures.</p>				

Source: Japanese Ministry of Defense, *Defense of Japan 2014*, August 2014.

The situation got worse in 2015. On the 70th 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:⁸⁰⁴

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 neighbours: 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.

The lack of a direct apology is likely to inflame 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.

This statement, along with the revisions to the Japanese constitution, is liable to draw unwelcome pressure on Japan. China immediately criticized Abe for failing to apologize any further. A Xinhua commentary argues:⁸⁰⁵

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 might seek to use anti-Japanese sentiment boost nationalistic fervor and drive a further wedge between Japan and South Korea. This would complicate regional relations for the US due to their close defense ties to both 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 also 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."⁸⁰⁶

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.⁸⁰⁷

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.⁸⁰⁸ 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.⁸⁰⁹

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,⁸¹⁰

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.

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:⁸¹¹

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.²⁷ 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.²⁸ 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 million in 2015 for oil investment.²⁹ Several oil and gas deals have been signed with Russia in the past few years, including two loan-for-oil deals amounting to \$50 million, 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.³⁰ 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.³⁷

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.³⁸

China launched an oil import pipeline with a capacity of 440,000 bbl/d from Myanmar in January 2015.³⁹ 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 2012.⁹⁰ 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 Turkmenengaz, 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 2013.⁹¹

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 2015.⁹² 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 2016.⁹³

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.⁹⁴ 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.⁹⁵ 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.

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.⁸¹²

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 2013.⁸¹³

China has also at least examined options for a pipeline from the Pakistani port at Gwadar to Gilgit-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.

According to some reports, China and Pakistan has discussed possible Chinese operation of the Pakistani port at Gwadar – a major facility near Iran and relatively near to the Strait of Hormuz that China has helped modernize.⁸¹⁴ A Pakistani analyst – Ghulam Ali, has noted 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.⁸¹⁵ 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.

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 keep pushing them towards competition.

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Note: US (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 “US 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 US government disclosed in April 2010 that as of September 30, 2009, the total US stockpile had 5,113 warheads. On March 1st, 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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