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NATO and Ukraine: Reshaping NATO to Meet the Russian and Chinese Challenge

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There is no way to predict whether Russia will actually take military action against Ukraine, what kind of actions it will take, and how serious the military results will be at the time of this writing. What is already clear, however, is that the U.S. and NATO are not prepared for a serious military challenge from Russia. It is equally clear that the U.S. blundered badly under the Trump administration by focusing on burden-sharing rather than developing an effective mix of U.S. forces and a coherent effort to correct the many shortfalls in European forces. Furthermore, it is clear that NATO is not making any serious real-world effort to improve its capabilities.

The U.S. did provide some $2.7 billion in military aid to Ukraine following the Russian seizure of the Crimea and the Russian military intervention in Eastern Ukraine in 2014. The U.S. did make some improvements in the forces it deployed to Europe. NATO European states also made limited improvements, and various NATO countries took action to improve the speed with which U.S. and European forces could deploy forward in a crisis.

The Russian buildup has also led the U.S. to respond by accelerating improvements, albeit limited, to its own forces. Several NATO European countries have also rushed aid and deployed small military elements forward.

Nevertheless, it is all too clear from this analysis on the size of current European forces by country as well as from any analysis of the current military balance between NATO and Russia why the U.S. has threatened to use sanctions against Russia as a substitute for military capability. Regardless of how the current crisis develops, NATO will now need to make far more effective efforts to improve its forces, make them interoperable, and deal with the challenges posed by the lack of any real integration and by emerging and disruptive technologies (EDTs).

In fairness to NATO as an organization and to the advice coming from many U.S. and allied military experts, they all focus on the need for added military forces, for a new strategy, for more effective and interoperable forces, and for modernization on an interoperable level that can adopt to a wide range of new technologies and tactical concepts.

As the following analysis shows, however, the steps toward these objectives fell far short of creating an effective mix of forces and deterrent capabilities in NATO's forward areas near Russia. Most European states continued at failing to properly improve and modernize their forces, and they ignored the growing warnings that NATO still faced a Russian challenge.

The U.S. failed to exercise effective leadership in building up NATO's capabilities after the initial Russian invasion of eastern Ukraine and seizure of the Crimea. Worse, the U.S. wasted nearly half a decade under the Trump administration by focusing on NATO-wide spending quotas like member country defense spending as percent of GNP and by ignoring the need for effective and fully interoperable national military forces.

In fact, if one looks at individual NATO European country's order of battle, at the continued aging of many key categories of weapons, the lack of focus on interoperability and sustainability, and the lack of coordinated efforts at modernization, the overall capability of NATO country forces continued to deteriorate in spite of the emphasis on burden-sharing.

The U.S. failed to lead effectively at the Presidential level. It failed to effectively rebuild its forward deployed forces and power projection capabilities. Worse, the Trump administration effectively turned U.S. policy toward NATO into a mathematically absurd form of burden-sharing bullying. It pushed America's European allies to spend more without addressing their many differences, the very different key deficiencies in most member country's forces, and their very different shortfalls in modernization and interoperability.

Today, the crisis in Ukraine makes it all too clear that the U.S. and NATO need to take a very different approach to creating an effective strategy and to NATO's force planning and modernization on a country-by-country level. Regardless of how Russia's present pressure on Ukraine works out, it is clear that Russia is likely to be hostile as long as President Putin is in power.

Moreover, the risk of Russia cooperating with China in putting strategic pressure on the West (and on the world) is increasingly serious. At least on this point, there is no practical prospect that history will end in some form of beneficent "globalism," rather there is all too high a prospect of global strategic competition at every level from economic power to the capability to wage thermonuclear warfare.

The attached analysis addresses these issues in summary form. It quantifies key trends and problems in existing NATO forces by region and country to the degree that is possible with unclassified data. It highlights the range of new emerging and disruptive technologies (EDTs) that NATO recognizes will be a problem members must now address. It also highlights the need for far more transparency in analyzing NATO's real-world capabilities and the balance between NATO and Russian forces.

This analysis makes it clear that the U.S. must remain the center of the Atlantic alliance and that any rebalancing of U.S. forces to Asia must take this into account. It makes it clear that most European powers have left important gaps in their military efforts, and they have not created effective plans to modernize and strengthen their contributions to the NATO alliance. It also makes it clear that there is no European alternative to safely deterring Russia and to meeting its military threats that can significantly reduce European dependence on the U.S. – and there are no meaningful ways the European Union can substitute for NATO.

Focusing on the Right Strategic Priorities for NATO

If the Ukraine crisis ends in anything other than a major conflict, the U.S. and its NATO allies must now take a far more serious look at how they are shaping the future defense of Europe, the Atlantic, and the Mediterranean if NATO is to hold together; create an effective structure of deterrence and defense; and ensure that the West, other democracies, and other major powers can compete with both Russia and China. In doing so, the U.S. and all of its strategic partners in NATO must focus on correcting the major shortfalls in the military and deterrent capabilities of each member state, instead of fixating on NATO-wide concepts or common funding efforts.

This is not simply a matter of setting broad priorities and issuing new strategies. Military reality is not an exercise in writing more vague generic statements of good intentions. The Russian threat to Ukraine has made it all too clear that the U.S. and its allies must create and *actually implement* meaningful force plans instead of issuing more strategic rhetoric.

NATO must work together to assess the role each country should play in creating a more effective alliance rather than referring to NATO-wide generalities. Member countries must develop credible

force plans, programs, and priorities that reflect the radically different capabilities of given NATO countries, and they must find solutions to their radically different funding needs and capabilities by developing a suitable mix of very different national defense budgets.

In doing so, the U.S. must fully recognize its own blunders in focusing on burden-sharing. The U.S. needs to fully consult with its NATO and other strategic partners. The U.S. needs to make it clear that there is no case for some "European" solution to Western security, and it must avoid any future cases like the casual way in which the U.S. engaged Australia and the UK in a closer alliance by suddenly substituting U.S. nuclear submarines for French conventional submarines. As is the case in the Middle East and the rest of the world, the U.S. cannot afford to constantly raise new series of doubts about the ability to rely on the U.S. as a strategic partner.

The U.S. also needs to revitalize its focus on NATO and Europe. China's emergence as a major strategic challenge is all too real, but Europe and Russia are just as critical to an effective U.S. strategic posture as are China and Asia. The recent U.S. focus on the Chinese threat is all too necessary, but so is the U.S. focus on NATO, Russia, and the rest of the world. The U.S. must treat all its strategic patterns as real partners, and the U.S. needs to recognize that its strategic force plans must continue to be global – not swing from region to region.

At the same time, Europe needs to be far more realistic about its strategic dependence on U.S. forces and the major shortfall in most European forces. European members of NATO need to do far more to improve the modernization, interoperability, sustainability, and deployment capabilities of many of its member states. They need to recognize there is no credible European alternative to NATO and an Atlantic alliance, and they should focus on nation-by-nation force improvements, rather than burden-sharing and arbitrary spending levels.

As the following summary analysis of current national forces shows, NATO not only must deal with many individual sets of national military weaknesses, it must address a wide range of "emerging and disruptive" technologies that are steadily reshaping military forces, tactics, and capabilities.[1]

Once again, it must be stressed that this cannot be done by announcing new NATO strategies in broad terms or setting common goals for the entire alliance. It also cannot be done by repeatedly issuing equally vacuous national defense white papers that do not commit countries to specific actions, plan, programs, and budgets or that do not honestly address the problems in current national forces.

Both the U.S. and European nations need to properly assess national defense spending levels in terms of actual country's individual military requirements and spending capability. NATO-wide quotes are pointless. At the same time. Such efforts need to be driven by net assessments of the relative size of Russian and Belarusian military forces, modernization, and spending, and they need end the present emphasis on burden-sharing by arbitrary percentage of GDP and equipment spending.

The following data on Russian, U.S., and NATO European military spending alone make it clear that the U.S., all other member countries, and NATO as an organization need to use such net assessments of their present and future capability to deter and defend against Russia, determine what actions member countries should actually do to improve their forces, and set individual national goals for given forces on modernization at a time when there is an ongoing revolution in military affairs that will last for at least the next few decades. They also need to plan collectively

to deal with the ongoing emergence of China as a far larger and more effective military superpower than Russia – and in doing so to create a stable balance of deterrence in dealing with both Russia and China.

The U.S. Needs to Refocus on Force Planning – Not Burden-sharing – and Make Its Continuing Commitment to NATO Clear

These changes can only actually occur if the U.S. fully recognizes its own failures to lead effectively and if it revitalizes its approach to the NATO alliance. The Biden administration has already refocused U.S. strategy on some of these goals, rejected the burden-sharing bullying of the Trump administration, and shifted back toward the bipartisan focus on U.S. strategic needs that shaped the policies of both Republican and Democratic administrations since the end of World War II.

At the same time, the Biden administration has not yet defined any detailed approach to shaping an effective U.S. force posture for the future or a strategy that goes beyond generalities and describes clear plans, programs, and budgets for America's future capabilities in supporting NATO. Europeans still have reason to be concerned about America's failures.

The U.S. defeat in Afghanistan in August 2021 and the growing U.S. emphasis on the rising threat from China have raised legitimate European concerns over the reliance on the United States. President Macron may be one of the only senior leaders openly calling for a much stronger and EU-based approach to European defense, but in fairness every political leader in Europe still has reasons to be concerned.

For more than a decade there have been series of reports that the U.S. is rebalancing its forces to Asia in ways that reduce its presence outside of Asia and that it is retreating from its strategic commitments to Europe and the Middle East, although such reports have not described real-world trends in U.S. deployments and capabilities that alter the U.S. commitment to NATO.

This became all too clear in February 2022, in the midst of the Ukraine crisis. The Biden administration issued a new Indo-Pacific strategy at the White House level that was just as vacuous in terms of details as every similar document since the Obama administration, and – with a somewhat astounding lack of any perception of the irony involved – it issued a declassified summary of an equally vacuous top secret strategy document in what seems to have been an effort to show the Biden document should have bipartisan support.[2]

More substantively, President Trump's emphasis on "burden-sharing," and on raising European military spending, came close to strategic bullying. So did his threat to cut U.S. forces in Germany, his failures to confront Russia, and his focus on China. Although the U.S. actually increased some aspects of its commitments to NATO during his administration, his words and actions did undermine European confidence in the United States.

Europe Also Needs to Refocus on Force Planning and Improve National Contributions to NATO in Key Areas, Not Seek European Options

At the same time, the U.S. has also maintained good reason to be concerned about the defense efforts of most European powers, and there is a need for the U.S. to pressure given NATO European states to increase the key aspects of their defense efforts that really matter. As the country-by-country analysis later in this report also shows, many European states have fallen short

in maintaining and modernizing their military forces in spite of Russia's hardening position and the signals sent by the Russian seizure of the Crimea and the invasion of Eastern Ukraine.

A majority of the current European members of NATO have been slow – and often faltering – in adapting to the changes in NATO since the fall of the former Soviet Union (FSU) and in reacting to the rise of a more aggressive and threatening Russia – and this is true of many European states that did increase their defense spending and that met NATO's burden-sharing quotas.

The following review of region-by-region and country-by country European forces as well as their capabilities to deter and defend shows all too clearly how ridiculous the positive rhetoric that has praised higher spending percentages actually appears. This is particularly true in the case of the former Warsaw Pact states, although it is broadly true that pressures to increase percentages of spending did not lead to meaningful improvements in the military capabilities of most European states.

For all of the recent U.S. emphasis on burden-sharing and its claims about the resulting rises in defense spending as a percent of GDP, the following summary analysis of individual country's military efforts shows how little progress has actually taken place. Moreover, a more detailed review of the force structures and defense plans of individual member countries that examined the largely classified data on their individual shortfalls in interoperability and standardization, progress in joint all domain warfare capability, and their response to emerging and disruptive technologies (EDTs) would show that the overall level of European cooperation in creating effective deterrent and defense capabilities has continued to decline relative to Russia since its initial invasion of Ukraine in 2014.

The European Option Fallacy

Moreover, the same data make it brutally clear that calls for some form of European defense autonomy linked to the European Union (EU) that have been issued by leaders, such as President Emmanuel Macron of France, are just as absurd as Trump's emphasis on burden-sharing bullying. Macron stated in a news conference with then German Chancellor Merkel in June 2021 that, "We have succeeded in instilling the idea that European defense, and strategic defense autonomy, can be an alternative project to the trans-Atlantic organization, but very much a solid component of this."[3]

President Macron has since raised the same theme on several occasions and repeatedly called for "strategic autonomy." U.S. and French military relations also deteriorated sharply in September 2021 because of Australia's decision to buy eight nuclear submarines from the U.S. instead of 12 French conventional ones without consulting France – a decision that highlighted the problems in U.S. efforts to "rebalance to Asia" where the U.S. does not fully inform and consult with its European allies and where other tensions have existed over France's (Macron's) efforts to create a "third way" to deal with an emerging Chinese superpower.

At the same time, when it comes to the substance of the issue, the new strategic partnership between the U.S., Australia, and Britain illustrates the fact that cooperation between the U.S. and Europe can play a critical role in strengthening the West's ability to compete with China. For all of the tensions involved, an actual Australian purchase of nuclear submarines would also give Australia a better and more lasting capability to deter China in the Pacific waters near China than France's troubled conventional submarine program.

President Macron's failure to obtain any real gains from his own dialogue with President Putin over Ukraine is another case in point. France's effort would have been pointless if the U.S. had not taken the lead in pressuring Russia. Moreover, President Macron's efforts to actively promote a "third way" in the Pacific that emphasizes trade and cooperation with China seems to be decoupled from the realities of dealing with an emerging authoritarian Chinese superpower that later sections of this report show is becoming an all too real and growing threat. (Although the U.S. failure to join the trade pact that it created in Asia to check China is scarcely a better example.)

At the same time, it is important to note that other European leaders have shown the continued benefits of Transatlantic cooperation. This was true even in the case of Germany. Since 1990, Germany has remained the most uncertain major European power and has become the equivalent of the new "sick man" of Europe in failing to properly maintain and modernize some of the most critical military forces in NATO.

Even so, former Chancellor Merkel emphasized NATO over a "European solution" at the same press conference with Macron, stating that she was glad that President Biden had shifted away from President Trump's focus on burden-sharing and on reducing the U.S. commitment to Europe, and that instead President Biden was rebuilding a "climate of cooperation." She noted that, [4]

> It is very clear from the G7 and NATO talks that the United States sees itself as both a Pacific and an Atlantic nation and, given the strength of China, is naturally challenged to be much stronger in the Pacific than perhaps it was 20 years ago… And that means for us Europeans that we have to take on certain tasks and responsibilities for ourselves… but I see the absolute necessity—and I think this is also expected of the United States of America—that we act coherently.

NATO Needs to Be Fixed, Not Broken

Put simply, the U.S. needs to recognize that NATO needs to be fixed – rather than broken – and Europe needs to recognize that there are no real European alternatives to Atlantic deterrence and defense. It shows that the U.S. and each of its NATO European allies need to focus on making the alliance more effective. They need to cooperate far more in shaping NATO's real-world strategy and on actual levels of meaningful modernization and cooperation. Moreover, they need to focus on nation-by-nation improvements in the common capability to deter, defend, and cooperate, rather than on burden-sharing, setting arbitrary spending goals, and substituting good intentions for action.

NATO needs new realities, not more rhetoric. Every nation in the alliance needs to do more to actually implement the strategic and force modernization goals set out in NATO's 2030 plan and to deal with what NATO calls "emerging and disruptive technologies."[5] The plan shows that the creation of a well-balanced, integrated, and interoperable mix of national forces for NATO should be a common U.S., European, and Canadian objective.

At the same time, the summary analysis of individual member country's forces in this analysis shows that such efforts need to address the military strengths and weaknesses of each member state in very different ways. The NATO alliance needs a far more nuanced country-by-country approach to force planning based on a real net assessment, plans, and budgets. Moreover, the conclusion to this analysis shows that NATO needs to actively review the changing capabilities of the world's three superpowers and to consult on the rising threat from China, rather than just focusing on Russia, terrorism, and the out of area threats near Europe.

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Why a Transatlantic Approach Is the Only Real-World Choice

There are two decisive reasons why a European option cannot replace the present Atlantic alliance. The first lies in the limits of the European Union (EU) and its membership. The second – and far more decisive reason is the defense resources. The EU may be able to add more rhetoric to European defense cooperation, but it seems highly unlikely that it can add more substance. And, when it comes to resources, the U.S. has both a wide range of military assets that Europe cannot credibly duplicate as well as a massive superiority in the capability to fund both power projection and forward deployed capabilities.

What an EU-Based Approach to European Defense Cooperation Really Means

Any approach to security based on the EU states alone would present major issues raised by the different membership structures listed in **Figure One**. It would raise key questions regarding the role of Britain as a result of "Brexit," and it would exclude the U.S. and Canada. It would also potentially exclude the European and Atlantic members as well as candidate members of NATO that are not members of the EU: Albania, Iceland, Turkey, Bosnia and Herzegovina, Georgia, and Ukraine.

At best, an EU-centric approach to security would create something of a bureaucratic nightmare in coordinating NATO and EU force planning; modernization efforts; interoperability programs; sustainability and force deployment efforts; and a host of other practical aspects of defense planning, programming, and budgeting (PPB). And here, "at best" is more likely to really mean "mediocre" or "bad."

The EU may be useful in civil "institution building," but it has no collective capability to address strategy, force planning, and the creation of effective military capabilities in ways that compete with Russia. The EU has no real history of military planning or command. It – at most – has served as a discussion group, and Western security needs a functional military alliance, not more words and meetings.

The rhetoric of cooperation is all too easy. Real success, however, lies in actual funding of the right programs, the proper coordination and implementation of such efforts, systematic and coherent modernization over time, funding toward sustainability and readiness as well as modernization and procurement, and the creation of effective real-world capabilities to deter and fight. NATO already faces a 30-member country challenge in going from rhetoric to reality. Operating in parallel with the EU is likely to double that challenge and leave all too many existing major gaps in creating coordinated European efforts.

While it would be desirable to include all of the EU states in such an effort from a purely military viewpoint, this also could create major new problems in dealing with Russia since it would again expand the West's security zone at the expense of Russia.

As **Figure One** shows, an EU-based approach to European defense cooperation would add three key European states to such common efforts: Sweden, Finland, and Austria – as well as Malta and Cyprus.

The net effect of an EU-based approach could also decouple European defense from NATO's major sea powers and its two key nuclear powers: the U.S. and Britain. These are also key powers that take the lead in acquiring long-range precision strike capabilities, missile defense,

multilayered land and sea-based air and rocket defense, advanced anti-submarine warfare, advances in artificial intelligence and all-domain warfare, and advances in some aspects of counterterrorism – all which play a key role in power projection and forward defense.

To the extent to which the EU becomes independent in any practical way would do more than exclude the U.S. from such an effort in terms of planning the land and air defense of mainland Europe. It would effectively exclude any major capability to operate in the Atlantic, and it would at the very least partly decouple European Mediterranean powers from the U.S., Britain, and Turkey.

Figure One: Members of NATO, the European Union, and European Economic Area

NATO (30 Members): Albania, Belgium, Bulgaria, Canada, Croatia, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Iceland, Italy, Latvia, Lithuania, Luxembourg, Montenegro, Netherlands, North Macedonia, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Turkey, United Kingdom, United States. (Three other states are seeking to join NATO: Bosnia and Herzegovina, Georgia, and Ukraine.)

European Union (27 Members): Austria, Belgium, Bulgaria, Croatia, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain and Sweden.

European Economic Union: Includes all EU countries and also Iceland, Liechtenstein and Norway. It allows them to be part of the EU's single market. Switzerland is not an EU or EEA member but is part of the single market. Swiss nationals have the same rights to live and work in the UK as other EEA nationals

Examining the Real-world Balance of U.S., European, and Russian Military Expenditures

The moment one examines the total military resources and military spending that shape European and Atlantic security – and the current limits to the forces of many NATO European countries – it becomes clear that there is no real European option for defense autonomy. Any effort to create a European military structure that excludes the U.S., Britain, Canada, and other non-EU states excludes a massive amount of the funds currently available for Western security.

A European approach to Europe's security also would exclude the U.S. military capabilities that provide the vast majority of the West's key power projection forces and capabilities, forward deployable warfighting capabilities, naval warfare capabilities, space as well as command and control capabilities, ability to deploy new EDTs, and many needed advances in tactics and joint all-domain war fighting capabilities.

The United States may now be focusing more of its defense resources and forces on Asia, but it is important to understand the relative size of U.S. resources compared with those of NATO Europe. The latest NATO report on military spending puts U.S. spending in 2021 at $811.1 billion, which is 69% of total NATO member countries' defense spending of $1,174.2 million as measured by NATO standards.[6]

Only a moderate portion of this U.S. spending goes directly to U.S. forces dedicated solely to NATO. The U.S. no longer reports a figure for what it actually spends on NATO, but it is still

almost certainly close to something approaching 40% of U.S. spending if the figure includes naval, extended deterrence and power projection capabilities rather than simply forward deployed land and air forces. Here, it is also important to note that a U.S. focus on China would not commit U.S. power projection forces based in continental U.S. (CONUS) unless there was a general war involving both China and Russia at the same time, and such a war would still not commit all U.S. power projection forces to Asia under any conditions.

EU spending also should not be confused with that of all non-U.S. members of NATO. The portion of total NATO military spending that is spent outside the EU also would be $112.4 billion higher if Canada ($26.5 billion), the U.K. ($72.8 billion), and Turkey ($13.1 billion) were added to the U.S. total. Decreasing the European effort to the EU alone would reduce the total of $363.1 billion that NATO reports for all European and Canadian spending to only $250.7 billion, and this would reduce total European spending from $336.6 billion to $224.2 billion – only 19% of the NATO total of $1,174.2 billion.[7]

Arguably, an EU approach to European defense might pick up some gains in funding by including spending by Austria ($3.08 billion on defense in FY2021), Finland ($5.23 billion), and Sweden ($71.2 billion), but the gains would be marginal relative to decoupling from U.S. spending. Both Sweden and Finland are also now heavily dependent on cooperation with the United States. Formal ties to the EU present the problem that these "non-aligned" countries would have to overtly participate in a working alliance. This would require some agreement as to what obligations its members have to a common defense, and they would then cease to be neutral. Non-aligned neutrals that join an alliance are an oxymoron.

Focusing on Burden-sharing Bullying Is Not the Answer

At the same time, it is equally clear that the Trump administration's focus on burden-sharing and increasing defense spending by the European states has never offered a practical solution. The NATO data in **Figure Two** compare levels of NATO country's military efforts as a percent of GDP and spending on procurement in 2014 to levels in 2021. If one only looks at military spending as a percent of GDP, these figures show that pressing countries to spend more has produced some additional financial resources, although the impact has been limited except in percentage terms for Romania, the Slovak Republic, Hungary, the Czech Republic, the Baltic states, and the smaller and more marginal military powers.

In retrospect, it is amazing that the U.S. could waste so much high-level political effort on trying to push European countries to spend 2% of their GDP on defense without focusing on their current force postures and what they were actually buying. The same is true in calling for 20% of defense spending to go to equipment and procurement without analyzing the extent to which such purchases actually improved the ability of NATO to meet key threats and deter key conflicts.

It is a given nation's military forces and actual capability to defend and deter, not its total spending, that counts. These are not determined by achieving percentages of GDP, they are determined by the quality and quantity of the military forces that NATO countries actually have; their strengths and weaknesses; and their ability to be effective by cooperating, by setting the right common priorities for improvement and change, and by focusing on a common strategy and key issues like interoperability.

Once again. it must be stressed that the country-by-country analysis of force levels that follows may well indicate that the net real-world effect of the U.S. emphasis on burden-sharing may have

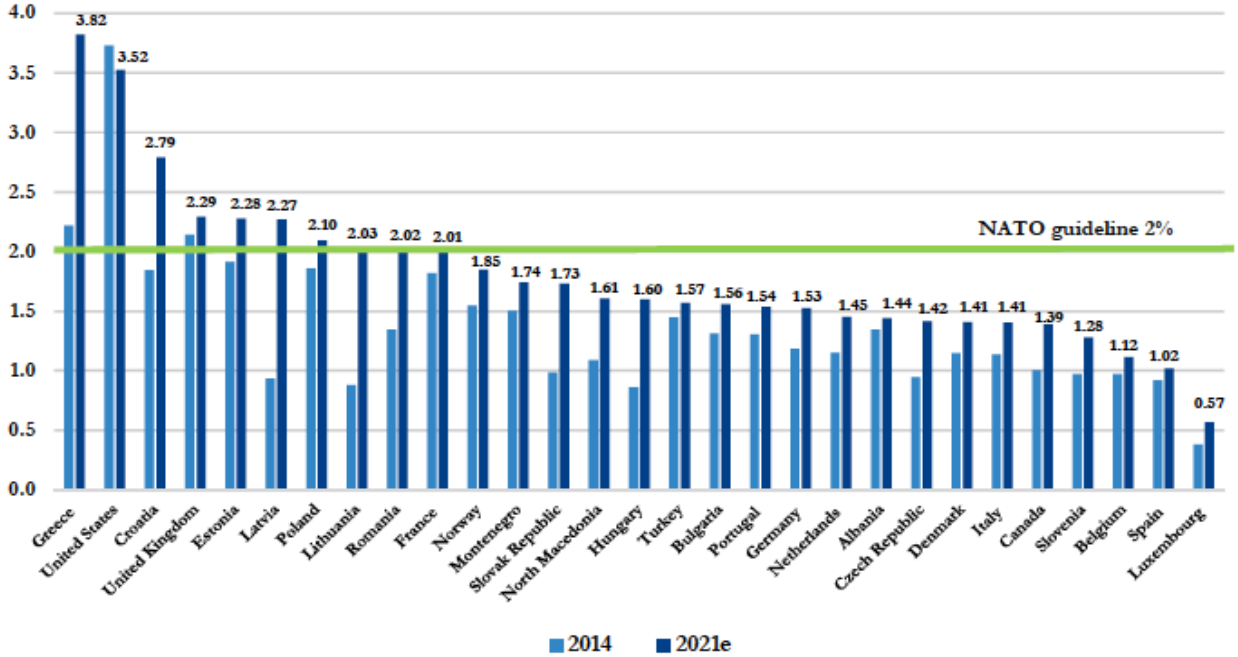
been negative. It warns that even when spending was indicated to be significant, far too much of the added money was spent in the wrong areas.

Moreover, the way the U.S. pushed its allies to spend often did more political damage than spending money in the wrong areas was worth. The Trump administration not only turned burden-sharing into something approaching strategic bullying, it threatened to cut U.S. forces with no regard to the impact on European security. U.S. pressure did not affect the underspending by powers like Belgium, Germany, Spain, Canada, Italy, or the Netherlands, and any quick review of the force strengths and equipment holdings of most powers that spend more show that these countries still made force cuts and fell significantly behind in force modernization.

In the case of U.S. threats to cut American forces in Germany, the United States acted like the kind of spoiled child who threatens to take his ball and go home if the other children will not play the game his way. This is scarcely, however, a case for creating a separate European approach to defense. It instead makes a European approach to creating a purely European defense effort the equivalent of making the remaining children attempt to continue playing the game without the ball.

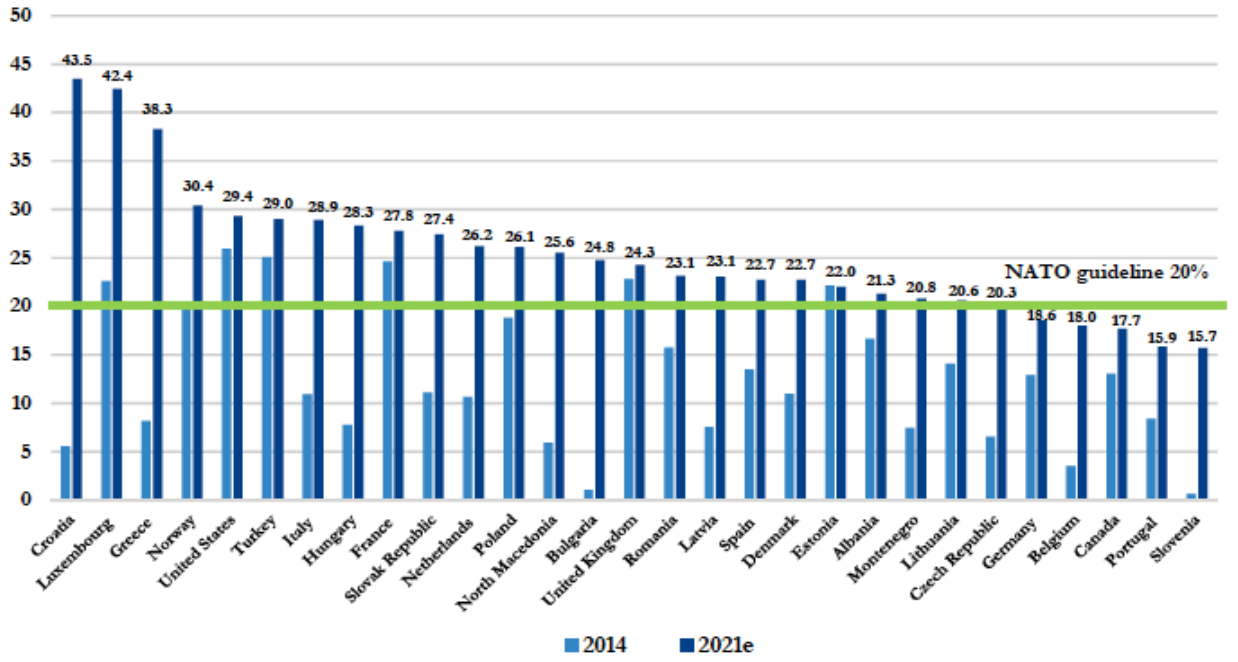
Figure Two: The Rise in NATO Country Defense Spending Efforts 2014 versus 2021

Defense expenditure as a share of GDP (%) (based on 2015 prices and exchange rates)



Note: Figures for 2021 are estimates.

Equipment expenditure as a share of defense expenditure (%) (based on 2015 prices and exchange rates)



Source: *NATO, Defence Expenditure of NATO Countries (2014-2021)*, COMMUNIQUE PR/CP(2021)094, June 11, 2021.

Putting NATO Spending in Context: NATO Europe Alone Outspends Russia, But It Is Not Enough

These issues become even clearer when one examines the data in **Figure Three** that show total NATO and Russian military spending in a net assessment context. **Figure Three** compares NATO's reported spending levels in **Figure Two** with estimates of Russian military spending by two leading think tanks – the International Institute for Strategic Studies (IISS) and the Stockholm International Peace Research Institute (SIPRI).

While these estimates for Russia in **Figure Three** are unclassified, experts indicate on a background basis that they come close to the official intelligence estimates of the United States and United Kingdom. And, if the data in **Figure Three** are even approximately correct, they show that NATO Europe has been vastly outspending Russia since 1990. NATO Europe alone spent four to five times what Russia is spending. If one then adds in spending by U.S. and Canada, NATO would have spent over 15 times what Russia spent.

Similarly, **Figure Four** shows a broader and more official analysis of the trends in global defense spending issued by the U.S. Congressional Research Service. Once again, it is clear that a combination of European and U.S. military spending has historically exceeded official estimates of Russian spending. Moreover, if one considers the spending of America's strategic partners in Asia – which are lumped together in the "Rest of the World" category, it is clear that the U.S., Europe, and other Western strategic partners can deal with both Russia and China – particularly given the probability of some future conflict that involves Russia and China posing a common threat of total war at the same time.

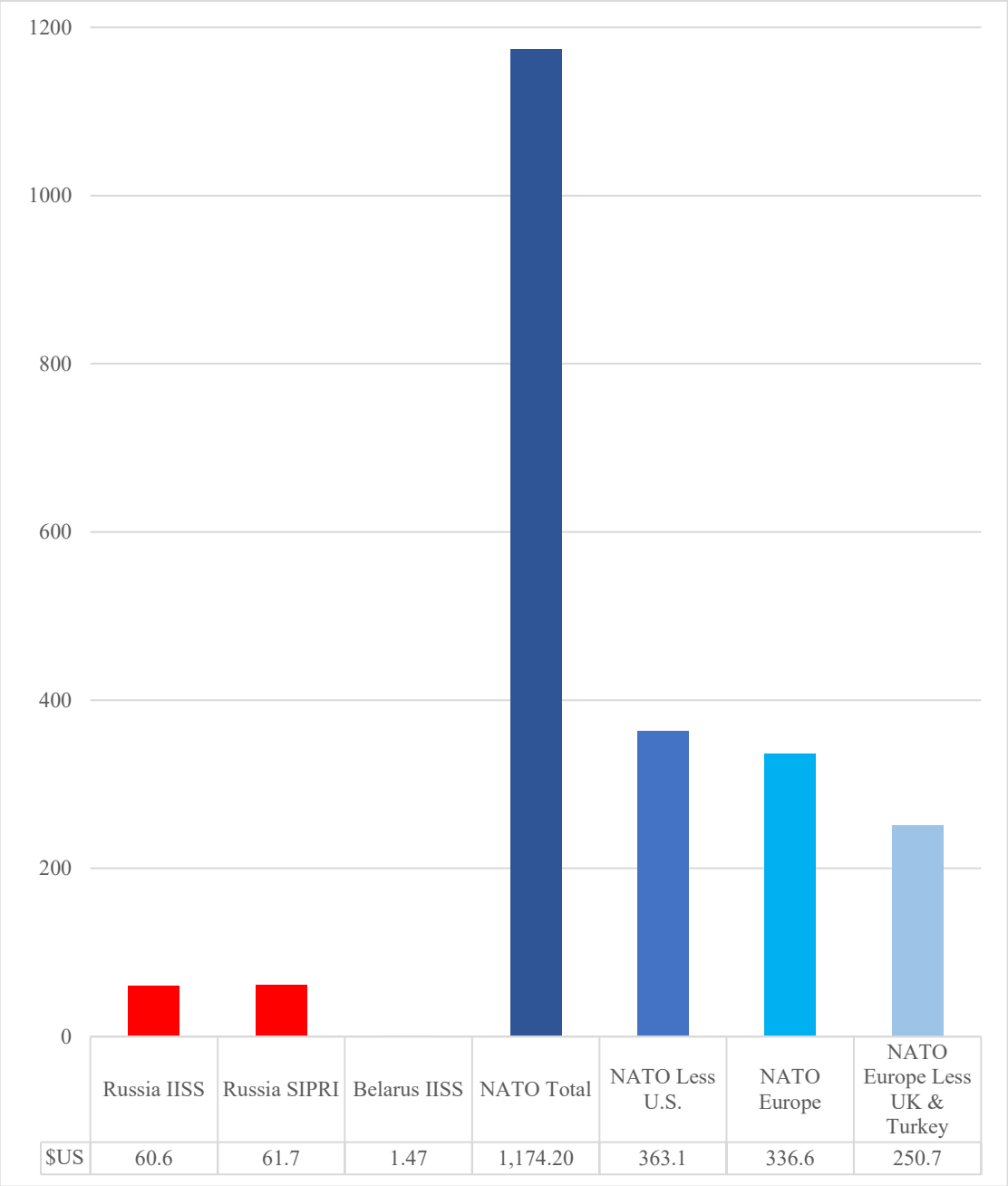
These data also make the past exercise in burden-sharing even more of a farce. It is striking that no one, who was giving priority to increasing national spending to meet an arbitrary quota over increasing actual military capabilities in key areas during the peak of the Trump administration's emphasis on burden-sharing, ever seemed to produce any formal net assessments of how NATO spending – and European spending in particular – compared to the military spending of Russia and Belarus, Russia's only close military ally.

There are uncertainties there. NATO's division of spending into 30 different approaches to buying military capability has been remarkably inefficient. Russia does achieve major advantages in efficiency by being able to develop and buy an integrated force posture.

It is also all too clear that there needs to be a serious effort to validate estimates of Russian military spending and to ensure that they are truly comparable to those for NATO. It is possible that such an effort will find that the official estimates of Russian spending are far too low. There are experts outside the government who feel that different criteria should be used for comparing Russian and NATO spending, and they put Russian spending at $150 billion to $200 billion a year.

Even so, most such estimates would still mean that Europe alone grossly outspends Russia and that total NATO spending – including the U.S. – would be five times higher than even the highest estimate for Russia.[8] It still seems clear that the problem for most countries is not total spending, it is rather how their money is spent.

Figure Three: Russian Military Spending versus NATO Spending in 2020/2021 in $US Current Billions

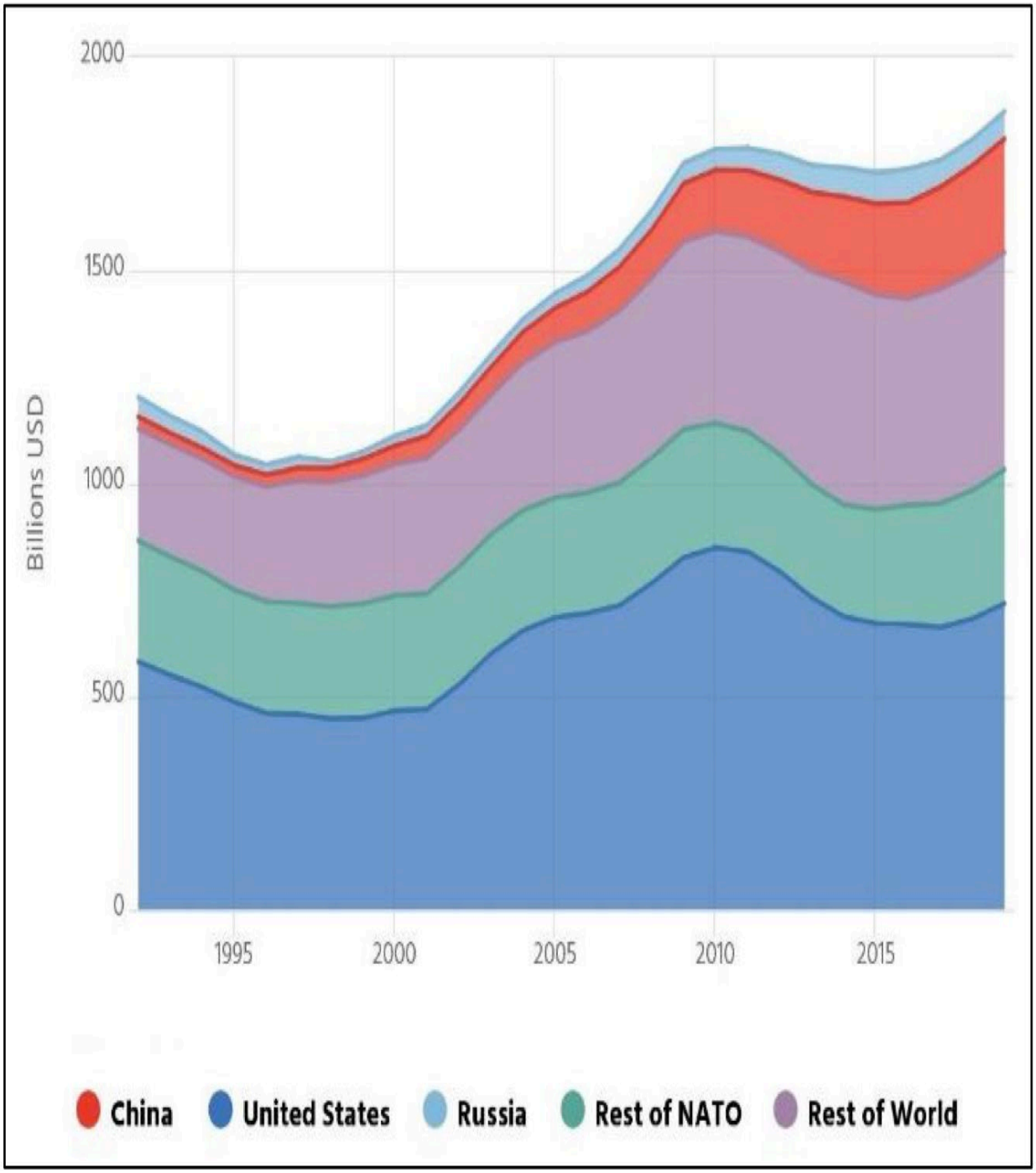


Note: "NATO Less United States" represents NATO Europe and Canada

"NATO Europe Less UK & Turkey" represents NATO Europe without the UK and Turkey

Source: IISS, *Military Balance 2021*; SIPRI, *World military spending rises to almost $2 trillion in 2020*, https://sipri.org/media/press-release/2021/world-military-spending-rises-almost-2-trillion-2020; and NATO, *Defence Expenditure of NATO Countries (2014-2021)*, Communique, June 2021, https://www.nato.int/cps/en/natohq/news_184844.htm.

Figure Four: CRS Estimate of the Trends in Global Military Spending: 1990-2020 (in Constant 2018 US Dollars)



Source: Cailtlin Campbell, China Primer: The People's Liberation Army (PLA), Congressional Research Service, January 5, 2021, https://crsreports.congress.gov/product/pdf/IF/IF11719/4.

Strengthening NATO Versus Dividing Europe and the United States

It is important to recognize that NATO as an organization has managed to do a good job of holding the alliance together at the political and military level. Secretary General Jens Stoltenberg, the NATO International Staff (IS), the NATO Military Committee (MC), and NATO's various level of commands all deserve credit for keeping the alliance alive during four years of the Trump administration's emphasis on European burden-sharing. They also deserve credit for helping the alliance make some progress in improving Atlantic deterrence and defense capabilities.

At the same time, the crisis over Ukraine has shown that NATO faces a growing Russian challenge at a time when the level of U.S. commitment is at least somewhat uncertain and when NATO forces and military capabilities are suffering deeply from the internal divisions and differences between European member states and between their military forces. NATO does need to revitalize its force planning, transform its new strategy from words into actions, set much clearer and more interoperable force goals, and create a more effective structure for both deterrence and defense.

The following summary analysis of forces by NATO subregion and country shows that there are also good reasons to debate the relative levels of NATO European and U.S. effort devoted to the key regions in NATO, to defending the Atlantic and the Mediterranean, to meeting terrorists and extremist threats, and to developing better capabilities for both humanitarian and military out-of-area operations. In each case, hard trade-offs do have to be made between strategic priorities, the allocation of resources, and other domestic political and economic priorities.

It also shows that there are good reasons to debate the extent to which the U.S. may or may not be over-emphasizing deterrence and defense against China. America's European allies have every reason to question the degree of shifts taking place in U.S. forces and modernization plans which will affect their security, just as the U.S. has reason to question the actions that each European states is – or its not – taking to make its forces effective in supporting the levels of deterrence and defense in Europe.

Accordingly, there are six ways the U.S. and Europe should be acting to strengthen the alliance, rather than continuously undermining it.

- Have the U.S. clearly and decisively make its continued commitment to NATO, Europe, and extended deterrence clear.
- Expand upon the *NATO 2030* strategy and work in the NATO 2021 summit in Brussels to develop clear national forces' plans to achieve the goals set in each major proposal; to address the major weaknesses in national military forces and national contributions to NATO, especially in several key European forces; and to issue annual force plans.[9]
- Help NATO develop clear priorities and force plans that address the major changes taking place in military dynamics and in emerging and disruptive technologies (EDTs).
- Provide a classified and unclassified annual net assessment of the security balance and the levels of deterrence and defense capabilities that NATO provides.
- Issue an unclassified annual report on U.S. power projection capabilities that goes beyond force levels to describe the support the U.S. is providing in space; cyber; artificial intelligence (AI); Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); battle management (BM); joint all-domain

operations (JADO); military technology; arms transfers; and key shifts in force structures like long-range precision strike and multilayer missile and air defense. Make it clear that America's global capabilities are of direct benefit to European and all other allies and strategic partners.

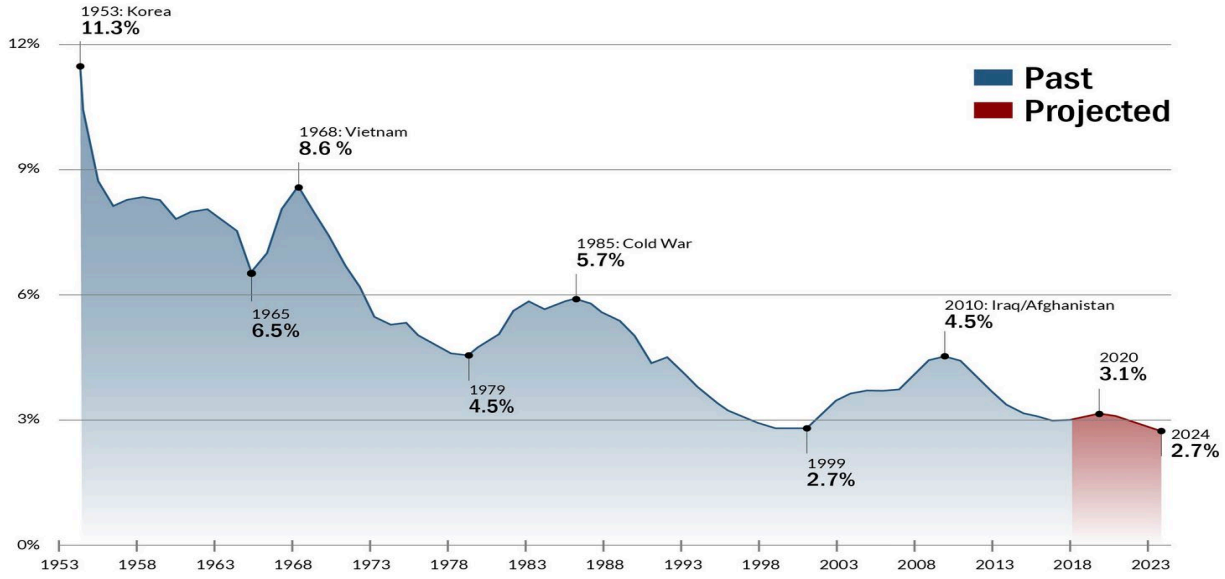
- Focus on the broader Transatlantic need to compete with China and develop a collective approach to persuade it to cooperate and limit the risk of some future conflict.

Have the U.S. Clearly and Decisively Make Its Continued Commitment to NATO, Europe, and Extended Deterrence Clear

While the U.S. does debate whether it can afford to both meet the challenge from China and support a global posture that adequately funds its role in NATO, the trends in U.S. defense spending in **Figure Five** show the U.S. has spent far more on defense as a share of its economy in the past and that "Rebalancing to Asia" should not be a major problem in funding effective forces for NATO – particular given the fact that the U.S. is unlikely to fully engage both China and Russia in a major conventional war at the same time.

If the present estimates of global military spending are even roughly correct, the U.S. can fund an adequate mix of forward deployed, power projection, and deterrent forces, and it can still meet the challenge from China. The challenge the U.S. faces is not some form of economic overstretch. It lies in using its resources effectively to properly modernize U.S. forces, make them more interoperable with NATO European forces, and deal with the impact of the major force cuts it made after the break-up of the former Soviet Union (FSU) in 1991.

Figure Five: The Declining Strain Defense Spending Puts on the U.S. Economy – DoD Estimate of Defense Spending as a Percent of GDP: Korean War to 2024



Source: National Defense Budget Estimates for FY 2019 (Table 6-13); historical and projected GDP from both the FY 2019 and FY 2020 Budget of the United States Government.

U.S. Force Cuts in Europe After the Break-Up of the Former Soviet Union (FSU)

As is the case with most NATO European states, the years in which Russia seemed to be in the process of becoming a friendly democracy led the U.S. to cut its forward deployed forces too sharply – long before the U.S. focused on the rising threat from China.

The 1991-1992 edition of the International Institute of Strategic Studies (IISS) *Military Balance* reports that the U.S. had an active strength in Germany alone of some 222,500 Army and Air Force personnel; some 5,000 main battle tanks; 2,200 armored infantry fighting vehicles; 2,420 artillery weapons; 42 surface to surface missiles; 279 attack helicopters; and 284 combat aircraft – including prepositioned equipment for most of the four divisions and an armored cavalry regiment. The total troop strength for the entire U.S. European Command (USEUCOM) actually deployed in Europe was 283,100 – not counting some 20,000 personnel at sea in the Mediterranean or any part of the U.S. Atlantic Fleet not stationed ashore in Europe.[10]

The IISS estimates that in the period before 2014 – specifically before the Russian invasion of the Crimea and Eastern Ukraine began – U.S. troop numbers dropped from 222,500 to some 40,500. It also estimates that the total troop strength for the entire U.S. European Command (USEUCOM) that was actually deployed in Europe dropped from 283,100 to 66,998.[11] The IISS has since ceased to report figures for major U.S. weapons holdings in Europe, but it is clear that the cuts in air and ground weapons were equally sharp, and prepositioning has been largely eliminated.

It is important to note, however, that most European states in NATO cut their forces by similar or greater amounts, had far lower rates of modernization, cut back sharply on sustainability – although the fact that many East European states joined NATO after the break-up of the Former Soviet Union (FSU) and Warsaw Pact did add some forces – as well as create new burdens for forward defense.

The Russian invasion of Ukraine did, however, largely bring a halt to U.S. reductions in U.S. forces in Europe until President Trump planned new cuts as part of his burden-sharing program. These cuts, however, were limited, and some were halted when the Biden administration came to office. The IISS *Military Balance* for 2021 reports that the U.S. still deployed 37,100 army and air force personnel in Germany as well as a total of 67,150 troops in all of Europe.[12]

Examining Recent U.S. Force Trends in Europe in Detail

The official manpower data issued by the U.S. Department of Defense make the same point. Somewhat ironically – given some European perceptions of the scale of U.S. force cuts – **Figure Six** shows that U.S. deployments to Poland, other East European states, and additions to the permanent training and power projection elements in the flanks in 2021 – *before the Ukraine crisis began* – actually experienced limited increases in total U.S. deployments in Europe over their pre-Trump levels in 2016 – although the net total may have dropped slightly if comparable figures on U.S. Navy and Marine Corps personnel at sea in the Mediterranean and Atlantic near Europe were counted. In any case, they do not reflect any meaningful cuts.

In many ways, President Trump's treatment of burden-sharing and NATO was more noise than substance. U.S. capabilities are not determined by the total forces it has somewhere in Europe, but rather by the total forces it can project into a forward combat zone – both from within Europe and from the United States.

Many aspects of U.S. power projection, cyber, space, IS&W, precision and long-range conventional strike, deployable land-based air defenses, and abilities to support NATO and European allies have also increased steadily during the past decade or have become the subject of new U.S. force development programs.

In fairness to its European critics, the U.S. has done a terrible job of explaining these trends and putting them in context. Its budget submissions, strategy papers, and websites are largely intellectual vacuums and factual deserts when it comes to reporting the details of U.S. commitments to NATO, modernization and power projection programs, and cooperation in force modernization. While most European white papers and defense documents are equally vacuous, they have not sparked the same questioning about reliability and force cuts. If anything, there sometimes seems to be a gentleman's or lady's agreement to avoid any public forms of debate that might lead to mutual embarrassment.

This situation has improved to some extent under President Biden. President Biden and senior members of his national security team have already reiterated the U.S. commitment to NATO. Broad policy statements, however, are not enough, either as a means of reassuring America's allies or of communicating the U.S. commitment in ways that help deter Russia and meet other potential threats.

There are several ways in which the U.S. should make its commitment to Europe and NATO far clearer, none of which present problems in providing unclassified summaries, or in seeking matching efforts by NATO and strategic partners. These include:

- Provide a section in the President's annual defense budget submission to Congress that describes the current U.S. commitment to NATO Europe, Atlantic, the Mediterranean, and joint NATO and other security efforts involving European powers. Highlight recent and planned improvements in U.S. capability and describe U.S. power projection and extended deterrence capabilities as well as dedicated deployments. Make it clear that the U.S. continues to see NATO as a vital national security objective in detail.
- As part of this effort, issue an unclassified annual report on U.S. power projection capabilities that goes beyond force levels to describe the support the U.S. is providing in space; cyber; artificial intelligence (AI); Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); battle management (BM); joint all-domain operations (JADO); military technology; arms transfers; and key shifts in force structures like long-range precision strike and multilayer missile and air defense. Make it clear that America's global capabilities are of direct benefit to European and all other allied and strategic partners.
- Address the challenge posed by the major ongoing changes taking place in military forces and tactics, driven in part by a wide range of emerging and disruptive technologies (EDTs).
- Work with NATO to develop a NATO net assessment of its capabilities and roles in deterring and defending against threats to Europe.
- Actively brief on U.S. efforts to deal with the potential threat from China and make it clear that the U.S. is not focusing on China to the exclusion or expense of Europe.

Figure Six: U.S. Active Duty Forces by Country in September 2008, December 2016, and June 2021

Country	Sep 2008	Dec 2016	Jun 2021
Albania	1	1	13
Austria	10	22	28
Belgium	1,269	842	1,170
Bosnia and Herzegovina	3	2	10
Bulgaria	10	9	22
Croatia	6	3	13
Cyprus	9	11	13
Czechia	6	6	14
Denmark	17	10	17
Estonia	2	6	16
Finland	6	12	200
France	45	57	74
Germany	38,791	34,805	35,486
Greece	403	407	405
Hungary	11	212	84
Iceland	1	0	2
Ireland	1	2	7
Italy	11,808	12,102	12,535
Kosovo	1	378	13
Latvia	1	4	12
Lithuania	4	NA	16
Luxembourg	0	0	7
Macedonia	4	3	13
Malta	4	5	13
Moldova	1	1	9
Montenegro	0	0	8
Netherlands	577	398	433
Norway	76	83	82
Poland	30	59	169
Portugal	785	185	290
Romania	13	667	121
Slovakia	4	3	12
Slovenia	2	2	10
Spain	1,308	3,256	3,256
Sweden	7	8	16
Switzerland	8	14	20
Turkey	1,774	2,234	1,808
United Kingdom	9,042	8,479	9,515
TOTAL	66,040	64,288	65,932

Source: DMDC, "Military and Civilian Personnel by Service/Agency by State/Country (Updated Quarterly)," June 2021, https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports; DMDC, "Military and Civilian Personnel by Service/Agency by State/Country (Updated Quarterly)," December 2016, https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports; and DMDC, "Military and Civilian Personnel by Service/Agency by State/Country (Updated Quarterly)," September 2008, https://dwp.dmdc.osd.mil/dwp/app/dod-data-reports/workforce-reports.

Expand Upon the NATO 2030 Strategy and Work in the NATO 2021 Summit in Brussels to Develop Clear National Forces' Plans to Address the Major Weaknesses in National Military Forces and National Contributions to NATO

There also are equally good reasons for NATO and the EU to work together to create European national force plans that actually address the major weaknesses in national military contributions to NATO. Token force improvement options like creating a 5,000 personnel European rapid-deployment force and the rapidly improvised options that the U.S. and European states have deployed in response to Russian pressure on Ukraine have only limited real world value. Such options do harm other than substitute the illusion of real progress for the reality, but they only do a limited amount of good.

Here, NATO needs to resume the kind of force planning that focuses on actual military effectiveness. During the cold war, NATO went through several major force planning and net assessment exercises, beginning with the NATO force planning effort in the 1960s, the joint approaches to assessing the balance in the late 1960s, the effort to develop the NATO Air Defense Ground Environment System (NADGE), and the planning to deploy the ground launched cruise missile (GLCM) and the Pershing II. The work done as part of the mission to develop the Conventional Armed Forces in Europe (CFE) is another example. This effort involved joint wargaming exercises by the Supreme Headquarters Allied Powers Europe (SHAPE) Technical Center, U.S. Joint Chiefs of Staff and Office of the Secretary of Defense, and British defense research center at West Byfleet.

NATO needs to shape its force planning efforts on a nation-by-nation basis and justify them through supporting net assessments. It needs to give these efforts full public visibility and make it clear how and why member countries are acting to strengthen their military commitments to NATO as well as to modernize and improve interoperability. It is clear from the different national funding efforts summarized in **Figure Two** that countries will report very different levels of capability, and that some countries need to carefully re-examine their current force plans as well as some key aspects of their command and control systems, intelligence efforts, sustainability, training, and other military activities.

The priorities for given improvements need to be worked out at the expert military level and reviewed by NATO's Military Committee and its civilian representatives, but some things are already all too clear.

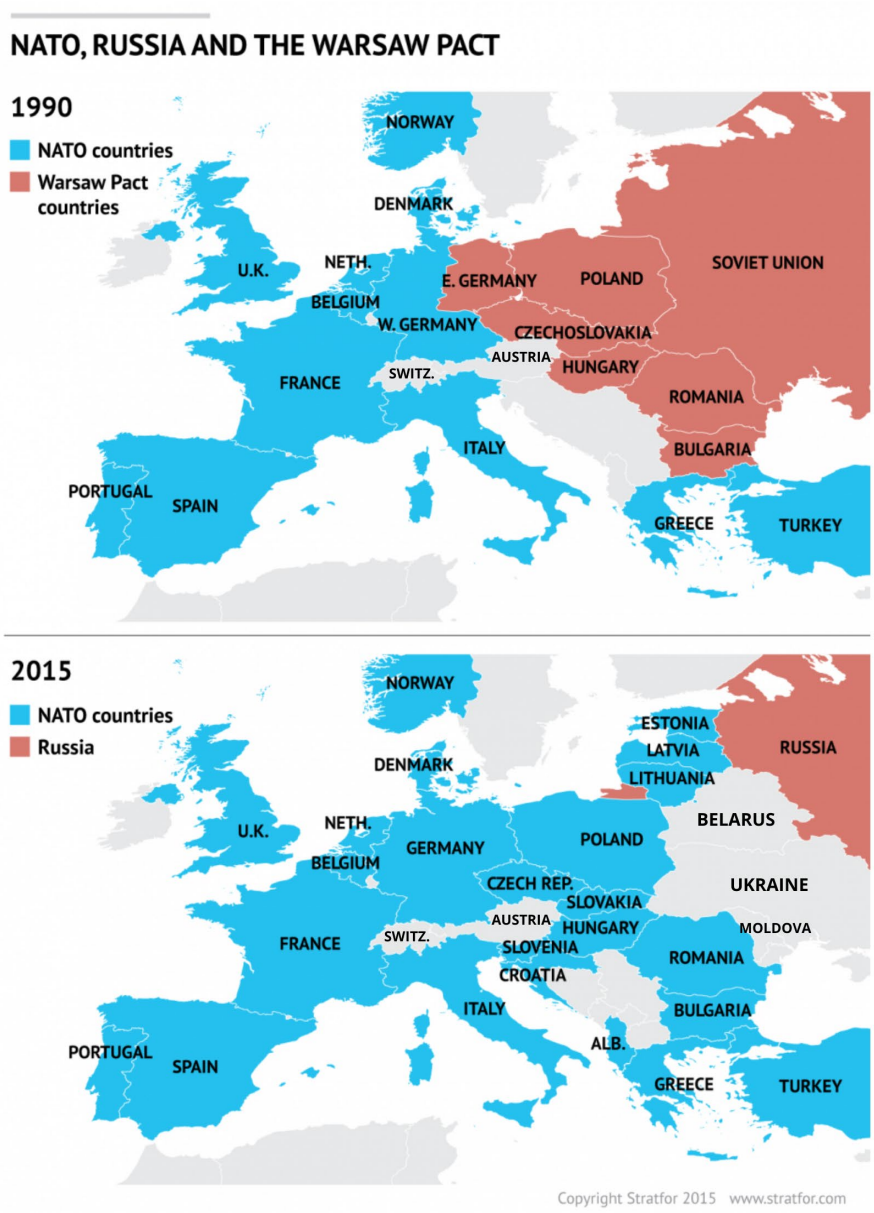
Dealing with the Role and Capability of Post FSU European National Military Forces

It is not easy to summarize the role and capability of the military forces of individual European states. One key set of changes is the shifts caused by the fact that so many Eastern European states are now members of NATO, the uncertain independence of former parts of Russia like Belarus and Ukraine, and the radical shifts in the forward areas where NATO and Russia now confront each other.

NATO's new geography is summarized in **Figure Seven**. It shows how much the membership and geography of NATO has changed since the break-up of the FSU. These changes have added the military forces of most former Warsaw Pact states to NATO, and they have altered the major

regions where NATO must conduct forward defense. At the same time, they have added major problems in terms of new areas of vulnerability, including adding nations that still depend heavily on Soviet and Warsaw Pact weapons and have poor interoperability with other NATO states – increasing the challenge of trying to coordinate 30 different national efforts rather than sixteen.

Figure Seven: NATO Country Comparison Before and After Collapse of the FSU



Note: Two countries have been added to NATO since 2015: Montenegro (2017) and North Macedonia (2020).
Source: Adapted from "NATO, Russia and the Warsaw Pact," 2015, *Rane*, https://stratfor.com/.

Looking at European Trends by Sub-Region and Country

The problems involved, however, go far beyond geography. In many cases, the European states in NATO before the collapse of the FSU have made more serious cuts to their forces and decreased rates of force modernization compared to the U.S.– particularly when one considers U.S. power projection capabilities. The country-by-country force summaries provide basic metrics showing how serious European force cuts have been. They compare country-by county force levels in 1991 – as the FSU and Warsaw Pact were breaking up – with present force levels in 2021.

As noted earlier, these data also show why a European alternative to NATO is impractical. It also makes the real-world level of European dependence on U.S. support all too clear. Such a nation-by-nation review of the personnel strength and major weapons numbers in today's European forces also illustrates the need to focus on improving actual military capability rather than on total spending and spending as percentages of GDP.

At the same time, a review of basic force numbers only tells a limited part of the story. It does not address how different the individual national problems are in force modernization. It does not show the different levels of failures to maintain effective levels of readiness and sustainability, failures to adopt new tactics and technology, critical problems in many key aspects of interoperability, readiness problems like inadequate training and sustainability, and problems in conducting many of the other aspects of modern warfare where European states must depend on U.S. power projection; U.S. national command and control, space, intelligence, targeting, and layered air/missile defense; and the extended deterrence provided by U.S. nuclear and long-range strike assets to deter or defend against any serious Russian threat or attack.

It grossly understates dependence on the U.S. to deal with the rising threat from emerging and disruptive technologies. In many areas, NATO European states could only fight effectively if the U.S. used its national space, cyber, command and control, targeting, and intelligence systems to improvise ways of coordinating given elements of interoperability.

Most NATO European states would now have to fight using forces that do not conduct realistic field exercises and large-scale training. European readiness to deal with gray area warfare – integrating paramilitary and police where required – is very mixed. Defense capabilities against unmanned aerial vehicles (UAVs) and precision-guided conventional or nuclear armed missiles are negligible to limited, and the role to which British and French nuclear forces would provide extended deterrence is unclear.

Much would also depend on the scenario. As the present crisis over Ukraine shows all too clearly, no one can dismiss the possibility of a regional crisis escalating to theater-wide conflict, however, nor can anyone be certain that it would not escalate to nuclear levels. Russia might also try to create barriers that would limit NATO's willingness to respond. Its current focus on long-range conventional and low-yield nuclear precision strikes is one tool it might exploit in such a conflict.

At the same time, political, information, gray area, and cyber warfare; spoiler operations; and intimidation all represent safer alternatives for Russia, and they are ones where risk of escalation and mutually destructive high intensity combat would be limited. If Russia were to carry out an invasion in the forward area, it might well take the form of a gray area or highly political war using limited numbers of "volunteers" or "little green men." Accordingly, NATO not only needs to be assessed in theater terms, but in terms of each major subregion, each country, and the role that non-aligned powers might play.

Keeping European Force Cuts in Perspective

The analysis of European force cuts that follows should also be kept in careful perspective. Serious as these cuts have been, the break-up of the FSU did lead to major cuts in Russian forces that more than match the cuts described in NATO European forces – although the rate of Russian force modernization was broadly higher – Russia had the advantage of a one-country approach to interoperability and force modernization; has created more professional forces than in the past; and had major advantages in missile forces, multi-layered air/missile defenses, internal mobility, and integrated C4ISR and battle management.

- The IISS reports in its 1990-1991 *Military Balance* that the FSU had 3,988,000 actives (2,500,000 conscripts) and 5,602,000 reserves. Its Army had 1,473,000 actives; 61,500 main battle tanks; 87,000 other armored vehicles; and 66,880 artillery weapons. Its Air Force and air defense forces had 5,085 tactical combat aircraft. Its Navy had 242 tactical submarines, 277 principal surface combatants, 395 patrol and coastal combatants, 87 mine warfare vessels, and 77 amphibious ships.
- The IISS reports in its 2021 *Military Balance* that Russia had only 900,000 actives and 2,000,000 reserves. Its Army has 280,000 actives; 2,840 main battle tanks; 13,020 other armored vehicles; and 4,684+ artillery weapons. Its Air Force and air defense forces had 5,085 tactical combat aircraft. Its Navy had 38 tactical submarines, 31 principal surface combatants, 125 patrol and coastal combatants, 41 mine warfare vessels, and 48 amphibious ships.

At the same time, Russia does not face the challenge of coordinating up to 30 different geographic, political, diplomatic, strategic, and tactical efforts. It can create a consistent and interoperable set of forces, and it does not have to deal with the immense practical diseconomies of scale inherent in the NATO alliance.

An authoritarian Russia also presents the problem that the choice of escalation and accepting risks is largely up to President Putin. A structure like NATO presents far significant barriers to decisive action – wise or stupid – compared to Russia.

Russia seems to have made Belarus at least a proxy, if not a formal ally. According to the IISS, Belarus had 45,350 actives and 289,500 reserves in 2021. Its Army had 10,700 actives; 537 main battle tanks; 1,35 other armored vehicles; and 583 artillery weapons. Its Air Force and air defense forces had 11,750 personnel, 72 tactical combat aircraft, an upgraded S300-based surface-to-air missile defense system, and a surface-to-surface missile force with 96 launchers. Many of these systems were aging Soviet weapons dating back to the late 1970s but were comparable to the weapons in most of the East European nations that joined NATO after the break-up of the Soviet Union and Warsaw Pact.

Moreover, the crisis in Ukraine highlights the limits to the forces in the nations on Russia's western borders. It has benefited from substantial U.S. aid and new short-range, manportable systems, such as the U.S. Javelin anti-armor missile and Stinger anti-aircraft missile, and Turkish drones. Ukraine also had a nominal military strength of 209,000 actives and 900,000 reserves in 1990-1991. Ukraine had 45,350 actives and 289,500 reserves in 2021.

However, while its Army had 145,000 actives; its 537 main battle tanks were aging T-72s and T-64s, including 2,032 more tanks were in storage. It is far from clear that even a quarter of its 2,353 other armored vehicles and 1,818 artillery weapons are operational and sustainable in actual

combat. Its Air Force and air defense forces had 45,000 personnel, 125 tactical combat aircraft, and an S-300-based surface-to-air missile defense system as well as a surface-to-surface missile force with 90 conventional SS2 launchers.

Like most ex-Russian and Warsaw Pact forces, Ukraine relied on systems designed in the 1980's, and their operational status and collective sustainability was unclear. Its Navy had 11,000 personnel but only maintained1 principal surface combatant, 12 patrol and surface combatants, 1 mine warfare craft, and 1 amphibious structure. Its forces may have been Ukrainian, but they were Russian enough to have a distinctly Potemkin-like character.

The Northern (Norway, Greenland/Iceland) and Neutral (Sweden and Finland) Flank

Iceland and Greenland play an important role in supporting the defense of the Atlantic and in the increasingly important maritime routes through the Artic, but they depend heavily on U.S. forces. The Northern Flank of continental Europe has always been something of an anomaly. Norway shares a common border with Russia in its far North, is relatively isolated from other NATO European powers except Denmark, and has close ties to two "non-aligned" states: Sweden and Finland. At the same time, three small Baltic states – Estonia, Latvia, and Lithuania – now share a common border with Russia. These post FSU shifts have redefined the security problems in defending the region.

- ***Norway***

  It has limited defense expenditures. It cooperates closely with the United States, is modernizing its Air Force with F-35s, and is seeking to buy four German submarines. It does, however, have only limited forces to defend a nation bordering on Russia, and one with a long coast and a strategic position that is of growing importance as a northern maritime passage from the Pacific to the Atlantic is rapidly becoming a growing reality.

  In 1990-1991, Norway had a total of 44,100 actives and 185,000 reserves. Its 19,000-personnel Army had 36 operational tanks; 320 armored fighting vehicles and APCs; and 527 artillery weapons. Its 9,100-personnel Air Force had 87 combat aircraft. Its Navy had 5,300 personnel with 12 submarines; 5 principal surface combatants; 28 patrol and coastal combatants; and 10 mine warfare ships.

  In 2021, Norway had a total of 23,350 actives and 40,000 low-grade home guard reserves. Its 8,400-personnel Army had 80 operational tanks; 135 armored fighting vehicles; 390 APCs; and 48 artillery weapons. Its 2,400-personnel Air Force had 68 combat aircraft with F-16s and F-35s arriving. Its Navy had 4,250 personnel with 6 submarines; 4 principal surface combatants; 12 patrol and coastal combatants; and 4 mine warfare ships.

  Norway's defense plans depend to some degree on power projection by the U.S. Marines and U.S. airpower to support its limited number of F-35s and fleet. It has no major land-based missile and air defense systems.

- ***Sweden***

  It is "non-aligned" but has steadily improved its defense cooperation with the United States, Finland, and Britain, and it has relatively effective but small forces.

  The IISS reported in 1990-1991 that Sweden had 64,500 actives and 709,000 reserves. Its Army had 44,500 actives, 785 tanks, 800 other armored fighting vehicles, and an unknown number of artillery weapons. Its 8,000-personnel Air Force had 415 combat aircraft. Its

12,000-personnel Navy had 12 submarines, 42 patrol and coastal combatants, and 31 mine warfare craft.

The IISS reports that Sweden had 14,600 actives and 10,000 reserves in 2021. Its Army had 6,850 actives with 120 operational tanks; 411 armored fighting vehicles; 1,064 APCs; and 27 artillery weapons. Its 2,750-personnel Air Force had 96 JAS 39C/D Gripen combat aircraft. Its 2,100-personnel Navy had 5 submarines, 150 patrol and coastal combatants, and 7 mine warfare craft.

Sweden has acquired Patriot air defense missile systems with some anti-ballistic missile defense capabilities. Its 2,100-personnel Navy had an 850 personnel amphibious force. It is relatively well equipped for a coastal defense mission with 5 submarines, 5 corvettes, and 145 patrol and coastal combatants, but it has important limits in modernization and equipment. Defense of its island of Gotland presents serious operational challenges. Its Air Force has good readiness standards but is aging.

- ***Finland***

  The IISS reported in 1990-1991 that Finland had 31,000 actives. Its Army had 27,800 actives, 180 operational tanks, 290 other armored fighting vehicles, and an unknown number of artillery weapons. Its 1,800-personnel Air Force had 73 combat aircraft. Its 1,400-personnel Navy had 21 patrol and coastal combatants and 8 mine warfare craft.

  The IISS reports that Finland had 23,800 actives and 216,000 reserves in 2021. Its Army had 17,350 actives, 100 operational tanks, 825 other armored fighting vehicles and 672 artillery weapons. Its 2,050-personnel Air Force had 107 combat aircraft. Its 1,400-personnel Navy had 20 patrol and coastal combatants and 8 mine warfare craft.

  Like Sweden, Finland is "non-aligned" although it engages in defense cooperation with Sweden and Norway. It has small, effective military elements but has an aging territorial defense structure to cover a long border with Russia, although Russia could easily find weak points where it can use its massive resources of modern armor and airpower.

  Finland has not been able to finance balanced modernization plans and has problems in fully funding readiness, but it has improved its informal cooperation with NATO European states and the United States. It also has modernized its training and command control structures and is seeking to modernize its Air Force. It has light Crotale air defense missiles but no advanced land-based ballistic missile or air defense missiles. It does have significant artillery strength, and its F-18C/D fighters give it moderate air combat capabilities.

The Baltic States

The three small Baltic states are now independent, but they have only token military capabilities, no prior experience in independent military operations, and share a border with Russia. They also face some of Russia's most effective forces. Their security depends heavily on the risks Russia would face in confronting other European powers and the United States.

- ***Estonia***

  In 2021, it had 7,100 actives and 1,500 Army personnel. It had 0 operational tanks; 180 other armored vehicles; 188 artillery weapons; and 0 combat aircraft. Its 200-personnel Navy had 4 mine warfare craft.

Estonia has light border and territorial defense forces, but it is spending more on defense. It is highly dependent on NATO for deterrence and defense and could not defend against a serious Russian attack.

- ***Latvia***

  In 2021, Latvia had 6,250 actives and 11,000 reserves. Its 1,700-personnel Army had 3 training tanks, 123 other armored vehicles, and 100 artillery weapons. Its 500-personnel Air Force had no fixed wing combat aircraft. Its 550-personnel Navy had 5 patrol and coastal combatants and 4 mine warfare vessels.

  Latvia has light border and territorial defense capabilities and is also spending more on defense. It too is highly dependent on NATO for deterrence and defense and could not defend against a serious Russian attack.

- ***Lithuania***

  In 2021, Lithuania had 22,000 actives. Its 8,450-personnel Army had 0 tanks; 282 other armored vehicles; and 91 artillery weapons. Its 1,350-personnel Air Force had no fixed wing combat aircraft. Its 700-personnel Navy had 4 patrol and coastal combatants and 5 mine warfare vessels.

  Lithuania has limited light border and territorial defense capabilities. It too is spending more on defense, but it also is highly dependent on NATO for deterrence and defense and could not defend against a serious Russian attack through Belarus, Latvia, or the Russian enclave of Kaliningrad.

At the same time, the Baltic states introduce the fact that most of the former Warsaw Pact states shown in **Figure Eight** have barely begun effective conversion to forces that are fully interoperable with NATO forces, and they have generally failed to maintain anything approaching their former strength when they were supported and supplied by the FSU. Russia may see their membership in NATO as a threat, but only Poland is so far emerging as an effective military power, and its strength is largely defensive.

Once again, **Figure Two** also illustrates the ineffectiveness of NATO's burden-sharing efforts and the need to create a realistic approach to force development. Several of the former Warsaw Pact states in critical areas not only have failed to develop effective forces, but they have made little improvement even in raising total spending.

Moreover, the progress the U.S. and NATO's older members have made in being able to rapidly deploy major forces forward to deter and defend on the territory of NATO's new members is also generally limited. NATO has made some collective improvements here, but many older European members now lack much of their former ability to deploy forward, and their force posture lacks many elements of the readiness and sustainability to take such action.

Figure Eight: The Impact of Weak National Forces in NATO's New Forward Areas

Source: Adapted from David Brown, "How Prepared is Russia for Attack," *BBC*, February 14, 2022, https://www.bbc.com/news/world-europe-60158694.

Central Region

Several powers in NATO's Central Region – such as Poland – are making important progress in some areas and are improving the ability of forces from North America and rear areas in Europe to deploy forward in a crisis. Several other powers like Britain and Germany, however, have made serious force cuts.

The changes in NATO membership have also created new areas for forward defense, most of which must now be held by former members of the Warsaw Pact. Aside from Poland, several of these powers are making very mixed efforts to develop military forces that are modern and interoperable with the forces of older NATO states.

As is the case with the NATO's former Southern Region, Russia no longer has a long border with the Central Region states. Belarus and Ukraine are independent, although Belarus has steadily increased its military cooperation with Russia in recent years, and some of its exercises have increased their ability to cooperate in a Russian land thrust against NATO. This geography makes Poland a key power in defending the Central Region and in NATO's capability to deter Russia's conventional land and air forces, although much depends on Ukraine's remaining status as neutral or hostile to Russia.

Russia also is focusing heavily on improving its capability to conduct long-range precision missile and UCAV strikes on all of the Central Region and NATO European states – and on creating improved fighter and land-based surface-to-air and missile defenses – as well as the ability to pursue low-yield nuclear options. It also has steadily improved its capabilities for gray area and political warfare as alternatives to the overt use of military force.

- ***United Kingdom***

  The United Kingdom has spent more on defense in recent years, but it has made major force cuts. It has left the EU, and its recent white papers seem to emphasize a global role over a role in Europe.

  In its 1990-1991 *Military Balance*, the IISS reports that it had 300,100 actives and 347,100 reserves. Its Army had 149,600 actives; 1,314 main battle tanks; 4,490 other armored vehicles; and 729 artillery weapons. Its Air Force had 422 fighters and attack aircraft. Its Navy had 24 submarines, 48 principal surface combatants, 34 patrol and coastal combatants, 35 mine warfare vessels, and 7 amphibious ships.

  The 2021 edition of the IISS *Military Balance* reports that Britain had 148,500 actives and 78,600 reserves. Its Army had only 83,500 actives; 277 main battle tanks; 6,654 other armored vehicles; 1,238 UAVs; and 598 artillery weapons. Its Air Force had 162-225 fighters and attack aircraft. Its Navy had 11 submarines, 21 principal surface combatants, 25 patrol and coastal combatants, 13 mine warfare vessels, and 2 amphibious ships.

- ***Denmark***

  Denmark now plays a different role in NATO. The break-up of the FSU and Warsaw Pact have made its role in securing the Baltic more important and has also reduced the critical role it plays in securing the northern part of the Central Region – a role where Poland is now NATO's first line of defense.

  In 1990-1991, Denmark had a total of 31,700 actives and 72,400 reserves. Its 19,400-personnel Army had 336 operational tanks; 582 armored fighting vehicles and APCs; and

553 artillery weapons. Its 6,900-personnel Air Force had 106 combat aircraft. Its Navy had 5,400 personnel with 4 submarines, 3 principal surface combatants, 40 patrol and coastal combatants, and 9 mine warfare ships.

In 2021, Denmark had 15,400 actives and 44,200 reserves. Its Army had 8,000 actives and 34,400 reserves; 44 tanks; 388 other armored vehicles; and 32 artillery weapons. Its Air Force had 3,000 personnel and 30 operational combat aircraft. Its Navy had 2,250 personnel; 5 principal surface combatants; 12 patrol and coastal combatants; and 2 mine warfare vessels.

Denmark does have plans for some modernization, but it only spends a limited amount of its total defense budget on modernization efforts. It does not have significant land-based air or missile defenses. Its potential needs to help support and provide access to Sweden and Finland present serious challenges, as would a crisis or conflict in the Baltic states.

- ***Belgium***

  In 1990-1991, Belgium had a total of 92,000 actives and 450,000 reserves. Its 68,700-personnel Army had 334 operational tanks; 2,154 armored fighting vehicles and APCs; and 379 artillery weapons. Its 18,800-personnel Air Force had 126 combat aircraft. Its Navy had 4,500 personnel with 4 principal surface combatants and 37 mine warfare ships.

  In 2021, it had 25,000 actives and 5,350 reserves. Its 9,400-personnel Army had 0 tanks, 132 other armored vehicles, and 60 artillery weapons. Its 5,250-personnel Air Force had 54 combat aircraft. Its 1,500-personnel naval component had 2 principal surface combatants, 2 patrol and coastal combatants, and 5 mine warfare vessels.

  Belgium spent comparatively little on defense. It had too little armor to play an active role in forward area combat and questionable capability to sustain its small Air Force in active combat or to fund conversion to 5th generation systems. It does not have significant land-based air or missile defenses.

- ***Netherlands***

  In 1990-1991, the Netherlands had a total of 102,600 actives and 155,700 reserves. Its 63,000-personnel Army had 913 tanks, including 468 modern Leopards; 3,210 armored fighting vehicles and APCs; and 849 artillery weapons. Its 17,400-personnel Air Force had 193 combat aircraft. Its Navy had 16,500 personnel with 5 submarines, 14 principal surface combatants, and 26 mine warfare ships.

  In 2021, the Netherlands had 33,600 actives and 6,000 reserves. Its Army had 15,350 actives and 3,900 reserves; no tanks; 514 other armored vehicles; and 119 artillery weapons. Its Air Force had 6,400 personnel and 73 combat aircraft. Its Navy had 7,350 personnel; 4 submarines; 6 principal surface combatants; 4 patrol and coastal combatants; 6 mine warfare vessels; and 2 amphibious ships.

  The Netherlands has linked its forces to improved interoperable operations with Belgium, Denmark, and Germany, but it would have to operate directly with the forces of other countries in the face of any serious contingency. It does have some land-based air and missile defenses, but it lacks heavy armor and would provide more of a mix of combat support elements than an independent force.

- ***France***

  France funds moderate levels of defense efforts. It has sought and actively seeks to improve European defense cooperation and is slowly modernizing on a broad level. It has significant power projection capability, and it has advanced plans for mid-2020 to improve its capability for high intensity combat. It also has, however, made major force cuts relative to its Cold War levels.

  The IISS reports that in 1990-1991, France had 453,100 actives and 419,000 reserves. Its Army had 280,300 actives; 1,349 main battle tanks; 5,782 other armored vehicles; and 1,403 artillery weapons. Its Air Force had 845 combat aircraft. Its Navy had 17 submarines, 41 principal surface combatants, 24 patrol and coastal combatants, 23 mine warfare vessels, and 9 amphibious ships.

  The 2021 edition of the IISS *Military Balance* reports that it had only 203,250 actives and 41,050 reserves. Its Army had 114,700 actives; 222 main battle tanks; 1,817 other armored vehicles; 1,238 AUVs; and 265+ artillery weapons. It's Air Force had 279 fighters and attack aircraft. Its Navy had 8 submarines, 22 principal surface combatants, 20 patrol and coastal combatants, 17 mine warfare vessels, and 3 amphibious ships.

  Its capability to deploy its land forces forward in the Central Region and sustain them in combat is unclear, however, and so is its future ability to fund its modernization and improved sustainability plans. Its plans for developing long-range conventional strike capabilities and advanced forms of all domain operations that will be fully interoperable with the U.S., U.K., and other NATO powers are unclear, as is the value of its independent nuclear force in providing any degree of extended deterrence.

- ***Germany***

  Germany has sought to improve cooperation between Central Region powers but still badly underfunds readiness and sustainability, modernization, and key capabilities like land-based missile and air defense. Its force structure no longer seems to be large enough or sustainable enough to support its critical role in the forward defense of the Central Region.

  It has made critical force cuts. In 1990-1991, it had 476,300 actives and 1,009,400 reserves. Its Army had 335,000 actives; 7,000 main battle tanks; 15,536 other armored vehicles; and 4,579 artillery weapons. Its Air Force had 845 combat aircraft. Its Navy had 24 submarines, 14 principal surface combatants, 45 patrol and coastal combatants, and 54 mine warfare vessels.

  When it comes to estimating such force cuts, one also needs to consider that the former GDR or "East Germany" had another 137,700 personnel in its forces with 2,800 more tanks; 6,600 other armed vehicles; 2,203 artillery weapons; 191 combat aircraft; 19-22 principal surface combatants; 28 patrol and coastal combatants; 24 mine warfare vessels; and 12 medium amphibious ships.

  Today, Germany's forces are far smaller and many are far less ready and sustainable. The 2021 edition of the IISS *Military Balance* reports that Germany had 183,500 actives and 30,500 reserves. Its Army had 62,150 actives; 245 main battle tanks; 1,607 other armored vehicles; 1,238 UAVs; and 262 artillery weapons. Its Air Force had 279 fighters and attack aircraft. Its Navy had 8 submarines, 22 principal surface combatants, 20 patrol and coastal

combatants, 17 mine warfare vessels, and 3 amphibious ships. Readiness, training, sustainability, ability to deploy, and modernization are all at least somewhat underfunded.

- ***Poland***

  Poland has comparatively high levels of total military and modernization spending, but it is still converting to Western weapons and military structures.

  In 1990-1991, at the time of the breakup of the Warsaw Pact, the IISS reports that Poland had 476,300 actives and 1,009,400 reserves. Its Army had 335,000 actives; 7,000 main battle tanks; 15,536 other armored vehicles; and 4,579 artillery weapons. Its Air Force had 845 combat aircraft. Its Navy had 24 submarines, 14 principal surface combatants, 45 patrol and coastal combatants, and 54 mine warfare vessels.

  The IISS reports that Poland had a total force of some 114,500 personnel in 2021. Its Army had 58,500 personnel with 808 main battle tanks; 2,386 other armored vehicles; and 719 artillery weapons. Its Navy had 6,000 personnel with 2 major combatants, 5 patrol and coastal combatants, and 21 mine warfare vessels. Its 14,300-personnel Air Force had 94 combat aircraft in 2021, with a mix of aging Russian and U.S.-made F-16 aircraft. Its surface-to-air missiles were aging S-3 and SA-5 systems.

  Poland has improved its forward defense capability and signed a bilateral defense cooperation agreement with the U.S., and it cooperates with other NATO states through the Visegrad Group (V4) – the Czech Republic, Hungary, Poland, and Slovakia – which includes the ex-Warsaw Pact powers that now form the forward area in the Central Region. It is also a member of the Bucharest Nine – Poland, Romania, Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, and Slovakia.

  Russia could attack through Kaliningrad, across the regular Russian border, or possibly through Belarus, but Poland has a relatively large force structure (114,500 troops) and is slowly converting to Western weapons but still relies heavily on Russian weapons designs and aircraft. It has no missile defenses, and its land-based air defense are older Russian systems. Interoperability and all domain operations present major challenges.

- ***Slovakia***

  Slovakia is creating new forces for a new country. It only had 15,850 actives; 30 operational tanks; and 18 combat aircraft in 2021.

  It is seeking to modernize and acquire F-16 aircraft but has very low levels of overall defense effort and modernization activity as well as token military capabilities at best in dealing with any Russian force that can succeed in advancing through Ukraine or Poland. It is developing new defense plans but would be reliant on other NATO powers in any meaningful conflict.

- ***The Czech Republic***

  The Czech Republic is also creating a new set of military forces for a new country. The IISS reports it only had 24,900 actives in 2021. Its 13,000-personnel Army had 30 aging operational tanks, 927 other armored vehicles, and 96 artillery weapons. Its 5,860-personnel Air Force had 38 combat aircraft with some modern Gripen fighters. It has no navy.

The Czech Republic has long-term defense plans to create a more capable force by 2030-2035, but it has low levels of total defense and modernization spending. It now only has token military capabilities in dealing with any Russian force that succeeds in advancing through Ukraine, Poland, or Slovakia, and it would be heavily dependent on other NATO powers for air defense. It has established goals for increased capability, but it is unclear that it can meet them.

- ***Hungary***

The IISS reported in its 1990-1991 *Military Balance* that Hungary had 129,000 actives; 472,500 reserves; 2,888 tanks; 1,284 other armored vehicles; and 2,788 artillery weapons. It also had 195 combat capable aircraft and Russian surface-to-air missiles.

It had a relatively small military force of 27,800 personnel in 2021, with a mix of army, air, and joint forces that were largely equipped with Warsaw Pact-era major weapons – except for some Leopard Tanks and Gripen C/D fighters. Its 10,450-personnel Army had 92 tanks, 281 other armored vehicles, and 31 artillery weapons. Its 5,750-personnel air component had 14 combat capable aircraft. Hungary does not have a navy.

Hungary has moderate levels of total defense spending. It has increased levels of equipment spending, but it has no modern or land-based air or missile defenses and only maintains a brigade-sized land force and one active combat squadron with 14 aircraft. An effective defense against a Russian major combat force that penetrated through Ukraine, Slovakia, or Romania would have to come from other nations.

- ***Romania***

Romania forms a bridge between NATO's Central Region and Southern Flank, but it does not share a border with Russia or Belarus. A Russian attack would have to come through Ukraine or Moldova, or from the Black Sea. Romania has comparatively high levels of total defense spending but only moderate levels modernization, and it has a large inventory of Soviet systems it cannot use effectively or sustain in combat.

The IISS reported in its 1990-1991 *Military Balance* that Romania had 163,000 actives; 203,000 reserves; 2,817 tanks; 3,779 other armored vehicles; and 3,803 artillery weapons. Its Air Force had 28,000 personnel and 370 combat capable aircraft as well as Russian surface-to-air missiles. Its Navy had 9,000 personnel with 1 submarine, 5 major combatants, 84 patrol and coastal combatants, and 42 mine warfare vessels.

The IISS reports that Romania had 68,5000 actives in 2021. Its 35,380-personnel Army had 377 tanks; 927 other armored vehicles; and 1,118 artillery weapons. Its 10,700-personnel Air Force had 60 combat aircraft, most aging MiG-21s. Its 5,500-personnel Navy had 3 principal surface combatants, 24 patrol and surface combatants, and 11 mine warfare ships.

Its major weapons holdings were largely aging Warsaw Pact-era systems with some F-16s and Patriot missiles as well as NATO European made systems. It is slowly shifting to Western weapons, some used or older. It is larger and better equipped than some other former Warsaw Pact states but still has limited warfighting capability.

The New Southern Flank

NATO does not really have a Southern Flank in the classic historical sense of the term since it no longer shares a long common border with a Russian dominated Warsaw Pact. A major Russian land thrust would have to come through Belarus and Ukraine, and Ukraine – while neutral – is still fighting a low-level war with Russia. Austria and Switzerland are neutral and are not major objectives in any case. Accordingly, Russian land forces would have to drive through Belarus and Ukraine, and then through Hungary or Romania in order to reach the Southern Flank states.

Unless Belarus integrates its forces with Russia, it seems likely that Russia would choose to use land forces to attack the Central Region or rely on its growing long-range air and missile precision conventional strike capabilities to intimidate or force the Southern Flank states to comply with its objectives.

NATO's forces again depend heavily on weak former Warsaw Pact force structures, although Greece and Turkey have many effective combat elements.

- ***Bulgaria***

  Bulgaria would have to be attacked through Romania or from the Black Sea. Its forces are now far smaller, however, than those it had as a member of the Warsaw Pact. The IISS reported in its 1990-1991 *Military Balance* that Bulgaria had 129,000 actives; 472,500 reserves; 2,888 tanks; 1,284 other armored vehicles; and 2,788 artillery weapons. It also had 195 combat capable aircraft and Russian surface-to-air missiles.

  The IISS reports that it only had 36,950 actives and 3,000 reserves in 2021. Its 17,000-personnel Army had only 90 aging T-72 tanks, 280 other armored vehicles, and 176 artillery weapons. Its 8,500-personnel Air Force had 24 combat aircraft – aging Mig-29s, some MiG-21s, and some Su-25s. Its 4,450-personnel Navy had 3 principal surface combatants, 4 patrol and coastal combatants, 7 mine warfare ships, and one amphibious ship.

  Bulgaria does have moderate levels of total defense and modernization spending, but it is still equipped with aging Warsaw Pact land, naval, and air weapons. It has some aging SA-5 and SA-3 major air defense missiles. It has defense cooperation agreements with the United States and some European states, but it has made little progress in developing modern or interoperable forces.

- ***North Macedonia***

  North Macedonia is a small nation located between Serbia, Bulgaria, Greece, and Albania, with one major transit route running north to south from Serbia to Greece. It became NATO's 30th military power in March 2020, it has developed new defense plans and a new strategy, and it has made significant increases in its defense and modernization spending.

  It now, however, is a small military power with 8,000 actives and 4,850 reserves. In 2021, it only had 321 aging T-72A tanks, 211 other armored vehicles, and 87 artillery weapons. It does not have a separate air force or navy, its only combat aircraft are 12 attack helicopters (some in storage), and it has no major surface-to-air or land-based missile defenses.

- ***Greece***

Greece remains a relatively strong power. In 1990-1991, Greece had a total of 162,500 actives and 406,000 reserves. Its 117,000-personnel Army had 1,945 operational tanks; 2,295 armored fighting vehicles and APCs; and 1,850 artillery weapons. Its 18,800-personnel Air Force had 126 combat aircraft. Its Navy had 19,500 personnel with 10 submarines, 19 principal surface combatants, 36 patrol craft, 16 mine warfare ships, and 13 amphibious ships.

In 2021, it was a moderate military power with 142,700 actives and 221,350 reserves. Its army had 93,500 actives (including 45,000 conscripts);1,228 tanks; 2,541, other armored vehicles; and 3,518 artillery weapons. Its Air Force had 18,900 personnel and 230 combat capable aircraft – and it maintained Patriot batteries, SA-15s, and Crotale air defense missiles. Its Navy had 14,100 personnel with 11 submarines, 13 principal surface combatants, 34 patrol craft, 3 mine warfare ships, and 1 amphibious ship.

Greece has increased its total and modernization spending because of a perceived rise in the threat from Turkey and following some degree of economic recovery. While Greece plays a role in defending Europe against Russia and securing the Mediterranean, its large forces are also designed to defend Greece and Cyprus from Turkey. It also hosts an important U.S. air and naval facility in Crete, and it has ties to France. Its forces are relatively well trained, although its financial problems in recent years have limited its rate of modernization.

- ***Turkey***

  In 1990-1991, Turkey had a total of 647,400 actives and 1,107,000 reserves. Its 525,000-personnel Army had 3,714 l tanks; 3,324 armored fighting vehicles and APCs; and 4,191 artillery weapons. Its 67,400-personnel Air Force had 455 combat aircraft. Its Navy had 55,500 personnel with 15 submarines, 22 principal surface combatants, 46 patrol craft, 39 mine warfare ships, and 7 amphibious ships.

  Today, Turkey is a moderate military power which has steadily improved some aspects of its power projection capabilities over time. It does, however, focus on Greece as a potential threat. It also is projecting power and increasingly limiting its commitments to NATO, and it now focuses heavily on the Middle East. Its purchase of Russian systems has led the U.S. to exclude it from the F-35 program. Total defense spending is moderate, but equipment spending is high.

  In 2021, Turkish armed forces had 355,200 actives and 378,700 reserves, many with limited training and equipment. Its Army had 260,200 actives with 2,378 main battle tanks; 895 other armored vehicles; 5,266 APCs; 2,020 artillery weapons; and 89 armed helicopters. It's Air Force had 50,000 personnel and 306 combat capable aircraft – including F-16s. It is creating modern surface-to-air missile forces with 32 Russian S-400 land-based surface-to-air missile launchers and missile defenses – and it was acquiring more. Its Navy had 45,000 personnel; 12 submarines; 16 principal surface combatants; 45 patrol and coastal combatants; 5 amphibious ships; and 15 mine warfare vessels.

The Adriatic Flank

Russian land forces would need to transit Belarus and possibly breakthrough Ukraine to reach NATO's forward defense and attack the relatively small members of NATO in the Adriatic area. They are largely formed out of the former Yugoslavia, and they have no experience as fighting

forces. Most now have only limited defense capabilities as well as very marginal capabilities to deal with Russia's growing long-range precision strike capability.

- **Slovenia**

  Slovakia is another new state building on the remnants of Warsaw Pact forces. It has increased its defense spending in recent years, but it still spends comparatively little on defense and modernization. Its closest route to Russia goes through Hungary and does not include major roads. It only has limited access to the Adriatic.

  Its defense plans have not been successfully implemented, although it has improved its cooperation in some aspects of air defense with NATO. Its active forces have 15,850 personnel and it has no reserves. Its Army had 6,250 actives; 30 aging T-72 tanks; 274 armored fighting vehicles; 101+ APCs; 15 attack helicopters; and some S-300/SA-10 land-based air defense missiles. Its Air Force had 11 MiG-29 combat capable aircraft.

- **Croatia**

  Croatia has made major increases in total defense and modernization spending since 2014, but its resources remain limited. Its complex geography gives it a long coast on the Adriatic, but its closest borders to Russia are with Hungary and a neutral Serbia. It does not present an attractive land route for a Russian attack.

  In 2021, it had 15,200 actives and 18,350 reserves. Its Army had 15,200 personnel; 75 M-84 tanks; 102 armored fighting vehicles; 198 APCS; 67 artillery weapons; and no attack helicopters or major land-based air or missile defenses. Its Air Force had 11 aging MiG-21 fighters. Its Navy had 5 patrol and coastal combatants.

- **Montenegro**

  Montenegro has moderate levels of spending on defense and low levels of spending on modernization. It is a small coastal power on the Adriatic with limited transit routes through Bosnia and Herzegovina, Serbia, and Albania. It is seeking to integrate into NATO, but its forces are designed for national defense and are not capable of any form of power projection.

  At present, it has a very small army with 1,275 actives and has limited capability relative to its paramilitary police forces with only some 28 armored fighting vehicles and 30 artillery weapons. It does not have combat capable aircraft or attack helicopters and no land-based air or missile defenses. Its Navy had 4 patrol and coastal combatants.

- **Albania**

  Albania has a long Adriatic coast, but any major attack would face major problems and have to come through Montenegro, Serbia, or North Macedonia. It has increased its spending on defense and modernization in recent years, but its defense funding remains limited. It is seeking to eliminate its remaining Russian systems and modernize its Air Force and Navy.

  The IISS reported in its 1990-1991 *Military Balance* that Hungary had 129,000 actives; 472,500 reserves; 2,888 tanks; 1,284 other armored vehicles; and 2,788 artillery weapons. It also had 195 combat capable aircraft and Russian surface-to-air missiles.

In 2021, it had some 8,000 actives and no reserves. Its land forces had 3,000 personnel and 40 APCs. Its Air Force had no combat aircraft, and its Navy had 5 patrol and coastal combatants, while its Coast Guard had 22 patrol and coastal combatants.

The Mediterranean Flank

Several major Southern Flank powers are now significantly more distant from the forward area and the Russian border than when NATO was founded. Their capability to deploy forward and conduct intense combat has always been limited, and they are now more Mediterranean powers than powers that would commit land forces to the forward area. They can, however, play a major role in peacekeeping and counterterrorism, and Italy has significant power projection capability for low intensity warfare. Moreover, each has the resources to play a more active role in the Mediterranean and North Africa.

- **Italy**

  Italy is the major power in NATO's Mediterranean Flank and has spent added funds on modernization in recent years. It has not, however, fully funded its overall force structure, readiness, and sustainability, and it has made major force cuts after the collapse of the FSU.

  The IISS reports in its 1990-1991 *Military Balance* that Italy had 361,400 actives and 584,000 reserves. Its Army had 96,700 actives; 200 main battle tanks; 3,885 other armored vehicles; and 729 artillery weapons. Its Air Force had 449 fighter and attack aircraft. Its Navy had 9 submarines, 32 principal surface combatants, 18 patrol and coastal combatants, 15 mine warfare vessels, and 2 amphibious ships.

  The 2021 edition of the IISS *Military Balance* reports that Italy had 165,500 actives and 18,300 reserves. Its Army had 83,500 actives; 277 main battle tanks; 1,382 other armored vehicles; 994 artillery weapons; and 36 armed helicopters. It also maintained 20 longer-range SAMP/T surface-to air-missile launchers. Its Air Force had 223 combat capable aircraft. Its Navy had 8 submarines, 18 principal surface combatants, 16 patrol and coastal combatants, 10 mine warfare vessels, 3 amphibious ships, 18 combat aircraft, and 47 ASW helicopters.

- **Spain**

  Spain spends comparatively little on defense but has recently spent a larger share on modernization.

  In its 1990-1991 *Military Balance*, the IISS reports that Spain had 274,500 actives and 2,400,000 reserves. Its Army had 201,400 actives; 838 main battle tanks; 2,117 other armored vehicles; and 1,310 artillery weapons. Its 33,700-personnel Air Force had 221 fighter and attack aircraft. Its 39,400 personnel Navy had 8 submarines, 19 principal surface combatants, 60 patrol and coastal combatants, 12 mine warfare vessels, and 5 amphibious ships.

  The 2021 edition of the IISS *Military Balance* reports that Spain had 122,850 actives and 14,900 reserves. Its Army had 71,300 actives; 327 main battle tanks; 496 other armored vehicles; 903 APCs; 382 artillery weapons; and 24 armed helicopters. Its Air Force had 19,750 personnel, 223 combat capable aircraft – including Eurofighters and F-18s. It had 56 major land-based surface-to-air missile launchers but no missile defenses. Spain's Naval forces had 20,350 personnel, 2 submarines, 11 principal surface combatants, 23 patrol and

coastal combatants, 6 mine warfare vessels, 3 amphibious ships, 13 combat capable aircraft, and 24 ASW helicopters. It has a force of 5,340 marines.

- **Portugal**

  Portugal only spends a moderate amount on defense and comparatively little on modernization.

  In its 1990-1991 *Military Balance*, the IISS reports that Portugal had 68,000 actives and 190,000 reserves. Its Army had 44,000 actives; 86 main battle tanks; 2,117 other armored vehicles; and 1,310 artillery weapons. Its 33,700-personnel Air Force had 221 fighter and attack aircraft. Its 13,000-personnel Navy had 3 submarines, 8 principal surface combatants, 27 patrol and coastal combatants, no mine warfare vessels, and no amphibious ships.

  The 2021 edition of the IISS *Military Balance* reports that Portugal had limited armed forces with 27,250 actives and 211,700 reserves with only limited training and equipment. Its Army had 13,700 actives; 37 main battle tanks; 73 other armored vehicles; 406 APCs; 86 artillery weapons; and 24 armed helicopters. It had no major land-based surface-to-air missile launchers or missile defenses. Its Air Force had 5,900 personnel and 35 combat capable aircraft – including F-16s. Its 7,600 personnel naval forces had 2 submarines, 5 principal surface combatants, and 21 patrol and coastal combatants – as well as a small force of 960 marines.

Make U.S. Power Projection Capability and U.S. Ability to Support NATO and Strategic Partners With Its Global Systems Clear and Use Them Effectively to Support the NATO Alliance

As part of this effort, the United States should issue an unclassified annual report on U.S. power projection capabilities that goes beyond force levels and describes the support the U.S. is providing in space; cyber; artificial intelligence (AI); Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR); battle management (BM); joint all-domain operations (JADO); military technology; arms transfers; and key shifts in force structure like long-range precision strike and multilayer missile and air defense. In doing so, the U.S. must make it clear that America's global capabilities are of direct benefit to European and all other allies and strategic partners.

Develop Clear NATO Priorities and National Force Plans that Address the Major Changes Taking Place in Military Dynamics and in Emerging and Disruptive Technologies (EDTs)

The key to dealing with these issues is to go back to the NATO force planning efforts from the past that attempted to address member countries' force plans on a country-by-country basis and attempted to develop both interoperability and goals for sustainability, training and readiness, and modernization.

Some lessons here are obvious. Such efforts require annual updates, but they must look some five years into the future as to plans, program, and budgets to develop credible continuity and planning efforts. The U.S Future Years Defense Program (FYDP) and the European five-year plans need to

be properly implemented, and these plans must focus on the full range of military capabilities instead of simply fixating on major force numbers and weapons platforms.

What is less obvious is the need to focus on a future with very different military dynamics in an era of massive technological change. NATO has begun to address some of these issues, but they need to take into consideration both national force planning as well as the reality that smaller nations and forces will often need to depend heavily on the large powers and those with the most advanced technological base.

NATO cannot succeed here by asking every nation to make the same effort in its spending burden. The alliance must deal with national, political, and economic realities. It also faces extremely complex challenges in the form of what is almost certainly going to be an ongoing revolution in military affairs. There are issues too complex to deal with in this analysis in any depth, but the following figures illustrate the sheer level of change and its complexity.

- **Figure Nine** provides a brief summary of the new military dynamics NATO must adjust to over the coming decade.
- **Figure Ten** shows a NATO-created list of the emerging and disruptive technologies (EDTs) that the alliance as well as each member country must adjust to in shaping its future force plans.

  Figure Eleven shows a matching list issued by the U.S. Department of Defense of EDTs, and one that lists clearer force planning and modernization priorities.

They make it all too clear that member states must develop a common approach to modernization and joint all-domain warfare. Interoperability and standardization have always been a clear alliance priority, but the challenge is now far greater than in the past.

Figure Nine: NATO's Changing Military Dynamics

- **Declining focus on existing conventional major weapons system platforms.**
- **Shifts in JADO warfare, C4I, IS&R, and battle management.**
- **New capabilities for life cycle development, sustainment, and combat intensity.**
- **Drones, ballistic missiles, cruise missiles, and long-range attack systems.**
- **New forms of countervalue and counterforce targeting and strikes.**
- **Missile defense as well as layered air/missile, defense/passive, and civil defense.**
- **Proliferating other "smart" weapons to other countries, non-state actors, and extremists.**
- **New focus on space, cyber, information warfare for both military and internal security operations.**
- **New forms of paramilitary and internal security forces and operations.**
- **New types of "spoiler," gray area, hybrid, and irregular forces.**
- **New types of security assistance, outside military support, volunteers, mercenaries.**
- **Shifts in popular warfare to increase effectiveness of human shields and the use of population for defense and offense.**
- **Random and unpredictable character of the impact of emerging and disruptive technologies (EDTs).**

Figure Ten: NATO Listing of Emerging and Disruptive Military Technologies (EDTs) – I

EDT	Technology Focus Area (TFA)	NATO S&T Targets of Emphasis
Data	Advanced Analytics	**Big data & Long Data Processing and Analysis**
	Communications	Ad hoc and Heterogeneous Networks
		Advanced Signal Processing
		Trusted Multi-Domain Information Sharing
		Secure and Resilient Communications
	Advanced Decision Making	**Human Decision Making**
		Multi-Domain Situational Awareness
		Planning and Managing Uncertainties
	Sensors	Sensor Integration & Networks
Artificial Intelligence	Advanced Algorithms	**Artificial Intelligence**
		Big Data & Long Data Processing and Analysis
		Advanced Signal Processing
	Human-Machine Symbiosis	Human & machine interfaces
		Integrated Human – Machine Hybrid Forces
		Human-Autonomous Machine Teaming
	Applied AI	**Multi-Domain Situational Awareness**
		Planning and Managing Uncertainties
		Human Decision Making
Autonomy	Autonomous Systems	**Mission Autonomous Systems**
		Unmanned Platforms
	Countermeasures	Active & Passive EM, Acoustic and Optical Countermeasures
	Human-Machine Teaming	**Human & machine Interfaces**
		Human-Autonomous Machine Teaming
		Integrated Human – Machine Hybrid Forces
	Autonomous Behavior	**Clusters and Swarms**
		Sensor Integration & Networks
		Secure & Resilent Communications
		Rules of Engagement, Legal and Ethical Implications
Space	Operation	Clusters and Swarms
		Precision Control
	Platforms	High Assurance Engineering and Validation
		Modular, Scalable Systems
		Propulsion
		Fast & Agile Platforms
		Enhanced Energy Efficiency & Management
		Active & Passive EM, Acoustic and Optical Countermeasures
		Weapons - Techniques and Systems
	Sensors	EM Sensors
		Non-EM Sensors
		Sensor Integration & Networks
Hypersonics	Countermeasures	Active & Passive EM, Acoustic and Optical Countermeasures
		Weapons – Techniques and Systems
		Weapons effects
	Platforms and Propulsion	Fast and Agile Platforms
		Hypersonic Platforms
		Enhanced Energy Efficiency & Management
		Propulsion
Quantum	Communication	**Secure and Resilient Communications**
		Trusted Multi-Domain Information Sharing
	Information Science	**Big Data & Long Data Processing and Analysis**
	Precision Navigation	**Precision Control**
	Sensors	**EM Sensors**
		Non-EM Sensors

Figure Ten: NATO Listing Emerging and Disruptive Military Technologies – II

Biotechnologies	Bioinformatics	Big data & Long Data Processing and Analysis
		Human Resiliency
		Cultural Communications
		Group and Organisational Behaviour
		Medical Solutions for Health Optimisation
		Political Influence
		Social Influence
		EM Sensors
		Non-EM Sensors
	Synthetic Biology	**Human Resiliency**
		Medical Solutions for Health Optimisation
		Advanced and Adaptive Materials
	Human Augmentation	**Enhanced Cognitive Performance**
		Human & Machine Interfaces
		Integrated Human – Machine Hybrid Forces
		Alternative and Renewable Energy Sources
	Medical Countermeasures	**Human Resiliency**
		Medical Solutions for Health Optimisation
Materials	Additive Manufacturing	**In-theatre Fabrication & Production of Equipment**
	Energy	Power and Energy Storage
		Alternative and Renewable Energy Sources
	Novel Materials	**Advanced and Adaptive Materials**
		Hypersonic Platforms

Source: *NATO, Science & Technology Trends 2020-2040: Exploring the S&T Edge NATO Science & Technology Organization*, March 2020, https://www.nato.int/nato_static_fl2014/assets/pdf/2020/4/pdf/190422-ST_Tech_Trends_Report_2020-2040.pdf.

Figure Eleven: U.S. Under Secretary of Defense for Research and Engineering: Critical Technology Priorities

1. Seed Areas of Emerging Opportunity

Biotechnology

Biotechnology is an emerging engineering discipline that uses living systems to produce a wide range of technologies and capabilities. From fighting global pandemics and avoiding surprises to reducing logistics and sustainment costs and increasing energy efficiency, biotechnology can help change the way the Department conducts missions, performs in contested logistics environments, and adapts to major global changes.

Quantum Science

Quantum Science is the study of physical properties at small, even atomic, scales. Defense applications include atomic clocks, quantum sensors, quantum computing, and quantum networks. Quantum science promises to enable leap-ahead capabilities. Quantum computing can provide unprecedented computational speeds and help solve the Department's hardest analytical problems. Quantum sensors promise the ability to provide unprecedented accuracy in position, navigation, and timing. From more accurate information to faster decision making, to significantly stronger encryption capabilities, quantum science has the promise to deliver cutting-edge technology.

Future Generation Wireless Technology (FutureG)

FutureG is a suite of emerging wireless network technologies enabled by DoD and commercial industry cooperation to enable military operations and ensure a free and open internet. As Fifth Generation (5G) wireless technology is adopted and provides building blocks for capability, the DoD will also look to FutureG for leap-ahead technologies to lead in creating future standards. The Department will invest in FutureG technology development to lay the groundwork for continued United States leadership in information technology, which is vital for maintaining our economic and national security.

Advanced Materials

Advanced materials explore innovative new materials and novel manufacturing techniques that can dramatically improve many of the Department' s capabilities. Materials that have higher strength, lighter weight, higher efficiency, and can handle more extreme temperatures will have the potential to better protect our service members and enhance their ability to accomplish their missions.

2. Effective Adoption Areas - where there is existing vibrant commercial sector activity

Trusted AI and Autonomy

Artificial Intelligence (Al) is the software engineering discipline of expanding capabilities of software applications to perform tasks that currently require human intelligence. Machine learning is an engineering subfield of AI that trains software models using example data, simulations, or real-world experiences rather than by direct programming or coding. Autonomy is the engineering discipline that expands robots' abilities to perform tasks while limiting the need for human interaction. AI holds tremendous promise to improve the ability and function of nearly all systems and operations. Trusted AI with trusted autonomous systems are imperative to dominate future conflicts. As AI, machine learning, and autonomous operations continue to mature, the DoD will focus on evidence-based AI-assurance and enabling operational effectiveness.

Integrated Network Systems-of-Systems

Integrated Network Systems-of-Systems technology encompasses the capability to communicate, provide real-time dissemination of information across the Department, and effective command and control in a contested electromagnetic environment. Integrated Network Systems-of-Systems capability must enable engagements by any sensor and shooter, with the ability to integrate disparate systems. An interoperable network that leverages emerging capabilities across the electromagnetic spectrum such as 5G, software defined networking and radios, and modern information exchange techniques will allow the Department to better integrate many diverse mission systems and provide fully networked command, control, and communication that is capable, resilient, and secure.

Microelectronics

Microelectronics are circuits and components that serve as the "brain" to human-made electronic functional systems. Virtually every military and commercial system relies on microelectronics. Diminishing microelectronics manufacturing in the United States and supply chain concerns have highlighted national economic and security risks. Working closely with industry, academia, and across the Government, the Department is addressing the need for secure microelectronics sources and will leverage state-of-the-art commercial development and production for defense microelectronic solutions.

Space Technology

Space technologies include space flight, Space communication and other technologies needed to maintain space operations. With rising threats and increasing dependence on space-based systems, the Department's space strategy must shift away from exquisite satellites to a more robust and proliferated architecture. Novel space technologies are necessary to enable resilient cross-domain operations. The space strategy must incorporate technologies that enhance the Department's adaptive and reconfigurable capabilities in space situational awareness, space control, communication path diversity, on-orbit processing, and autonomy.

Renewable Energy Generation and Storage

Renewable energy generation and storage includes solar wind, bio-based and geothermal technologies, advanced energy storage, electronic engines, and power grid integration. Renewable energy generation and storage promises to decrease warfighter vulnerability and deliver new operational capabilities for the Department. From more efficient batteries to diversifying energy sources and reduced fuel transportation risks, renewable energy generation and storage will add resilience and flexibility in a contested logistics environment.

Advanced Computing and Software

Advanced computing and software technologies include supercomputing, cloud computing, data storage, computing architectures, and data processing. Software is ubiquitous throughout the Department, but the speed at which software develops outpaces the Department's ability to stay up to date. The Department must rapidly modernize its legacy software systems with resilient, affordable, and assured new software that has been designed, developed, and tested using processes that establish confidence in its performance. The Department must migrate to a Development-Security-Operations (DevSecOps) approach in its software development and evolve to a model of continuous development, continuous test, and continuous delivery. The Department must leverage modular open system architecture approaches to isolate hardware from software and enable rapid upgrades to secure processors.

Human-Machine Interfaces

Human-Machine Interface refers to technologies related to human-machine teaming and augmented and virtual reality. Rapid advancements in this technology will have a multitude of benefits for our service members. Highly immersive realistic training environments provide real-time feedback to enhance warfighter performance. Intuitive interactive human-machine interfaces enable rapid mission planning and mission command by providing a common operational picture to geographically distributed operations.

3. Defense-Specific Areas

Directed Energy

Directed Energy Weapons utilize lasers, high power microwaves, and high energy particle beams to produce precision disruption, damage, or destruction of military targets at range. Directed energy systems will allow the Department to counter a wide variety of current and emerging threats with rapid responses and engagement at the speed of light. High-power lasers and high-power microwave technologies both offer new ways to counter diverse sets of threats.

Hypersonics

Hypersonic systems fly within the atmosphere for significant portions of their flight at or above 5 times the speed of sound, or approximately 3700 miles per hour. Hypersonics dramatically shorten the timeline to strike a target and increase unpredictability. While strategic competitors are pursuing and rapidly fielding advanced hypersonic missiles, the DoD will develop leap-ahead and cost-effective technologies for our air, land, and sea operational forces.

Integrated Sensing and Cyber

To provide advantage for the joint force in highly contested environments, the Department must develop wideband sensors to operate at the intersection of cyber space, electronic warfare, radar, and communications. Sensors must be able to counter advanced threats and can no longer be stove-piped and single function.

Source: *USD(R&E) Technology Vision for an Era of Competition*, February 1, 2022, https://www.cto.mil/wp-content/uploads/2022/02/usdre_strategic_vision_critical_tech_areas.pdf?utm_source=EGov%20Welcome%20Email&utm_medium=email&utm_campaign=ExecutiveGov%20Daily%2002.03.2022%20%28X4gXzs%29&kla_id=01EP4ECWBPZCHENPJ31W4B1R2A&_kx=zE9LstVbwmHyuF-Rji_78OQd7SKPzHQ-OhuSk62ySL8%3D.TBKKxP.

Provide a Classified and Unclassified Annual Net Assessment of the Security Balance and the Levels of Deterrence and Defense Capabilities that NATO Provides

Just as there is a critical difference between issuing strategic rhetoric and actually implementing a meaningful strategy, there is a critical difference between talking in broad terms about relative deterrent and warfighting capabilities and actually having a mix of strategy, plans, programs, and budgets that respond to key threats and are proven to be effective. The only way to verify such capabilities is to examine the forces on each side in detail, look at key scenarios, and provide net assessments of the balance of capabilities to deter and defend.

Here both NATO as an organization and all member countries, including the U.S., are currently not providing any net assessments or any other substantive analyses of relative capability at the open-source level. They do not provide any assessments of the current and future balance, the relative effectiveness of NATO in deterring and defending, and the strengths and weaknesses on each side.

There are no country-by-country assessments of the progress being made at the regional or national level, of Russian military efforts and capabilities, of the success of counterterrorism activities, or of out-of-area operations. To the extent NATO justifies its existence, it does so largely on the basis of political momentum – something that may have worked during the Cold War but has far less political and popular impact today.

This might make sense if there were real-world secrets to be kept, but there are no real secrets from Russia at this level. Basic force numbers, trends, and modernization efforts are impossible to conceal, and most NATO countries report them publicly, as do a variety to key references like the annual editions of the IISS *Military Balance*. The lack of transparency in providing a real-world justification of NATO at the net assessment level has only two real-world explanations: First, the failure to learn from experience; and second, an effort to avoid political controversy and embarrassment.

Preparing an annual classified and unclassified net assessment of the security balance – and of the levels of deterrence and defense capabilities that NATO can actually provide – is a critical step in justifying adequate defense efforts and winning valid public support. Open-source net assessment activity provides a critical focus for debating what needs to be done, is a means of educating voters and political figures, and is critical in showing that deterrence is adequate in preventing and limiting actual conflict. It also forces national security decision makers and legislators to actually plan and analyze – activities which are far rarer in practice than many realize.

Focus on the Broader Transatlantic Need to Compete with China and Develop a Collective Approach to Persuade It to Cooperate and to Limit the Risk of some Future Conflict

Finally, the U.S. and Europe need to come to grips with the fact that China is emerging as a new authoritarian superpower, and one with far more military and economic power than Russia. Geography alone means that the U.S. and its Asian and Pacific partners must play the key role in dealing with China's growing military threat. Europe needs to recognize that the U.S. will need to shift some resources to accomplish this. Europe must also recognize this it too will play a role in competing with China and in finding ways to persuade it to shift back toward global cooperation and play a peaceful role in dealing with outside states.

At the same time, the U.S. and Europe need to pay equally close attention to the growing challenge from Russia and the growing threat posed by Russian and Chinese military cooperation. The U.S. and Europe also need to pay the same attention to the fragile structure of security, shown by the previous analysis, which has emerged out of the force cuts that the U.S. and older members of NATO have made since the breakup of the former Soviet Union and Warsaw Pact and out of the weaknesses in the new forward areas in NATO because of the limits to the Eastern European forces that have joined NATO since the break-up of the FSU and the Warsaw Pact.

The Changing Role of the Superpowers: 1991 to 2021

There is no easy way to illustrate the scale of the changes in the military balance between the three current superpowers since many are qualitative rather than quantitative. **Figure Twelve** illustrates the quantitative changes in some detail. It shows just how much smaller U.S., Russian, and Chinese force numbers are today in many such metrics and that their current forces bear only a limited resemblance to the forces they deployed in 1991.

At the same time, the previous analysis has shown that the qualitative improvements in Russian forces mean that cuts in force numbers in **Figure Twelve** do not mean cuts in Russian capability to threaten, pressure, or fight in a Europe where NATO countries have made – at the very least – equal reductions in their force numbers. Moreover, **Figure Twelve** shows that the U.S. made major force cuts after 1991, matching those of its European partners

Russia relied heavily on military mass until the break-up of the FSU, but it has steadily improved its force quality in many areas like air and missile defense since 1991. It has remained competitive in conventional weapons modernization, and it has aggressively modernized it nuclear forces. It has shown its ability to compete in gray area warfare in Libya and Ukraine, created new forward capabilities in Syria, and returned to the Mediterranean – as well as steadily improved its cooperation with China in Asia and the Pacific.

Russia may have lost military and economic strength because of the break-up of the FSU and the liberation of East European states – many of which have joined NATO. Yet, many of these former Warsaw Pact states have failed to modernize their forces and make them more interoperable with NATO.

The fact that the expansion of NATO has fundamentally changed the strategic map of Europe does not mean that most of the states that have joined NATO since the break-up of the FSU do not depend on the U.S. and other European states for deterrence and defense. As this analysis has

shown, rhetoric about European defense cooperation cannot ignore the critical new vulnerabilities in NATO's new forward areas. Russia remains a major and growing threat.

Figure Twelve: Balance of U.S., Russian, and Chinese Military Forces in 1991 (After Break Up of Former Soviet Union) and in 2021

	1991			2021		
	U.S.	**Russia**	**China**	**U.S.**	**Russia**	**China**
Defense Expenditures ($US billions)	$293.0	$128.8	$6.00	$785.0	61-65.0	?
Defense Budget ($US billions)	$287.5	$133.7	$7.56	$731.0	45-50.0	193,0
Active Military Personnel	2,029,600	3,400,000	3,030,000	1,388,100	900,000	2,035,000
Reserve Military Personnel	1,721,700	5,239,000	1,200,000	844,950	2,000,000	510,000
SSBN	34	60	1	14	11	6
ICBMs	1,000	1,388	8	400	336	104
IRBM	0	0	60	0	0?	110+
MRBM	0	0	0	0	0?	186
Nuclear Bombers	277	177	?	66	76	?
Army Active Personnel	731,700	1,875,000 [d]	2,300,000	485,400	280,000	965,000
Main Battle Tanks	15,585	54,400	1,420	2,509	2,840	5,650
Other Armored Fighting Vehicles	6,789	37,000	2,500	4,810	6,920	8,480
Armor Personnel Carriers	26,480	50,000+	3,200	10,549	6,100+	3,950
Artillery (Towed, SP, MRL)	2,323	51,200	19,800	2,962	3,134+	6,584
Surface-to-Surface Missiles	?	1,350	?	168	150	297
Attack/Armed Helicopters [a]	1,653	2,270	8?	714	?	
Navy Active Personnel	584,800	450,000	227,000[d]	346,500	150,000	260,000
Tactical Nuclear Submarines	86	111	4	51	17	6
Tactical Conventional Submarines	0	126	88	0	21	47
Principal Surface Combatants	207	218	56	124	31	80
Aircraft Carriers	13	5	0	11	1	1
Combat Capable Aircraft	1,242	1,354	880	989	219	426
ASW Helicopters	412	287	65	111	44	32
Cruisers/Battleships	48	38	0	24	4	1
Destroyers & Frigates	146	174	56	89	26	77
Patrol and Coastal Combatants	30	382	869	83	125	25
Principal Amphibious Ships	65	78	61	32	20	6
Mine Warfare	28	581	128	8	41	56
Marine/Naval Infantry/Coastal Defense						
Active Personnel	195,700	41,500	33,000	180,950	37,000	35,000
Tanks	719	1,050	?	0	330	?
AFVs, and APCs	1,739	1,649	?	485	1,500	85
Artillery	477	1,130	?	852	405	40+
Active Combat Capable Aircraft	162	na	na	362	?	?
Armed Helicopters	122	na	na	141	?	?
Air Force Active Personnel	517,400	420,000	470,000	331,400	165,000	395,000
Bomber	see Strategic	410	370[e]	139	137	176
Fighter Ground Attack (FGA)	3,813[c]	2,240	4,500	1,000	415	866+
Fighter	[b]	2,130	?	261	185	517
Attack	[b]	na	?	143	264	140
Recce	36	475	?	0	0	0
EW, IS&R, ELINT	?	?	?	36	92	71
AE&W/C2	23	?	?	35	17	24
Tanker	?	?	?	156-181	333	13
Transport/Airlift	943	620-1,820	600	206	445	238+
Major Surface-to-Air Missile Launcher	707	8,650	?	480	536?	552+
ABM Launch Units	4?	100	0	42	68	0

Notes: [a] Army armed helicopters include those in national air force. [b] Included in total for U.S. FGA fighters. Does not include 904 U.S. reserve combat Aircraft in 1991. [c] Includes Air Defense Troop personnel & missile Launchers. [d] Less Marines and Coast Defense. [e] Some nuclear and/or missile armed.

Source: Adapted by the author from relevant country sections of the IISS, *Military Balance, 1919-1992* and *2021*

Understanding the Qualitative Scale of Change in China

What **Figure Twelve** cannot illustrate, however, is the sheer scale of change in areas like space, stealth, precision strike, major weapons design, missile warfare and defense, artificial intelligence (AI), C4I/battle management, IS&R (intelligence, surveillance, and reconnaissance), and nuclear forces that have steadily reshaped the forces of both Russia and China since 1991 – and that will further revolutionize deterrence and defense over the coming decades.

These qualitative changes have created modern Chinese military forces that no longer rely on mass, aging weapons and military organization, and aging tactics – forces that have a steadily growing capability to project power on a global basis. Chinese forces have changed radically since 1990, and done so to the point where China is becoming a peer competitor to the U.S. in Asia and could become equal or superior to the United States on a global basis at some point between 2030 and 2045.

Moreover, the U.S. and Europe need to look beyond the military dimension and recognize that China's focus on integrating both military and economic development has already made China a direct competitor to both the U.S. and Europe in STEM (science, technology, engineering, and mathematics), most aspects of manufacturing capability, and many aspects in terms of global influence.

While any effort to show the scale of these changes has many uncertainties and limitations, both Americans and Europeans need to consider the trends illustrated in the following figures and find as good of a common approach to dealing with them as possible. They cannot afford the lack of dialogue and mutual analysis and planning that led to incidents like the recent French and U.S. crisis on submarine sales to Australia:

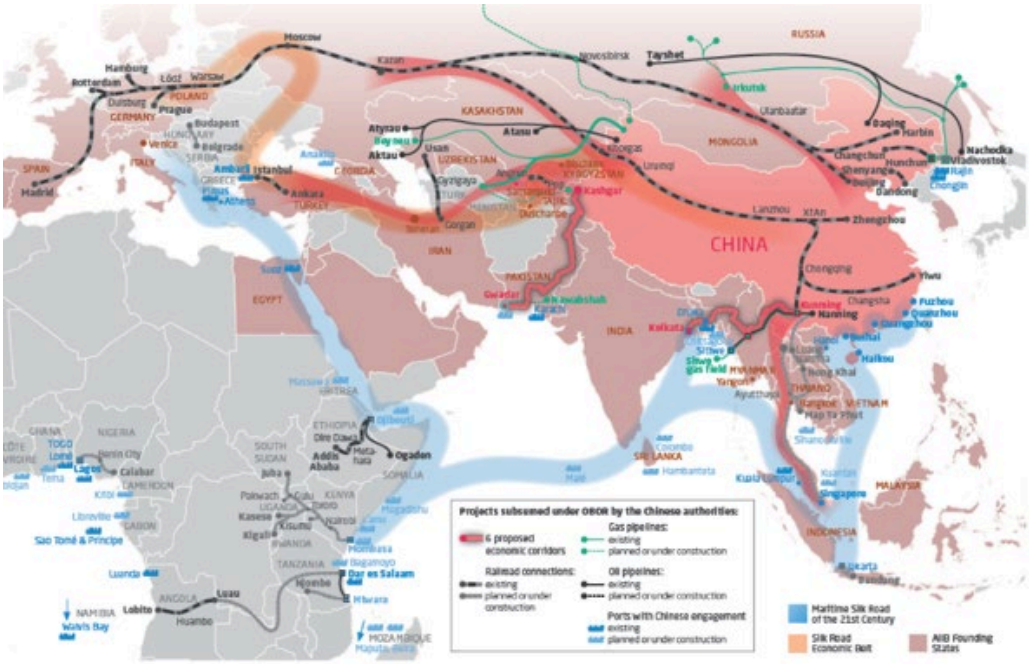
- ***Figure Thirteen: China's Growing Global Impact*** shows the massive expansion of China's economic and strategic activity, including its impact on Europe as well as the rest of the world.
- ***Figure Fourteen: Different Estimates of Chinese versus U.S. GDP and GNI*** shows that China has already overtaken the U.S. in terms of total economic size by some metrics.
- ***Figure Fifteen: China as the Arsenal of Autocracy*** shows that China has already overtaken the U.S. and other states in manufacturing capacity and that it has become a massive competitor in research and development spending that far outpaces Europe and Russia.
- ***Figure Sixteen: Japanese MoD Estimate of Rise in Chinese Defense Spending*** shows that China now spends 42 times more on military forces per year than it did in 1990.
- ***Figure Seventeen: Inventories of Nuclear Warheads in Chinese, Russian, U.S., European, and Other Nuclear Forces in 2021*** shows China is now expanding its strategic and theater nuclear forces. China now has far larger nuclear forces than Britain and France and is acquiring a wide range of dual capable precision strike systems.
- ***Figure Eighteen: Japanese MoD Estimate of Rates of Key Aspects of Chinese Military Modernization*** illustrates the fact that China is improving the strengths and quality of its conventional forces more quickly than the U.S. and European powers.

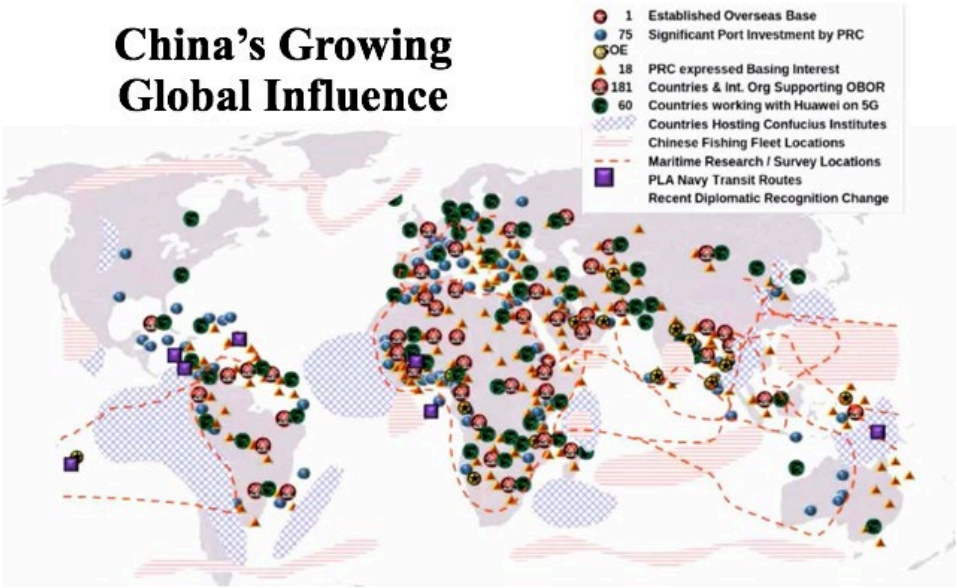
- ***Figure Nineteen: The Expanding Chinese Naval Threat*** illustrates the extent to which China already is a major threat to the U.S. role in the Pacific and helps illustrate why the AUKUS agreement and Australia's willingness to buy nuclear submarines to compete with Chinese naval forces is so important.

These charts, however, only hint at the full scale of the rising Chinese challenge in the Pacific, Asia, Europe, and the world. They do not address many aspects of Chinese force development and strategic competition or the rising cooperation between China and Russia and their military exercise activity. They only hint at the extent to which the West faces a broad economic challenge as well as a military one, and the level of effort China is putting into taking a global lead in research, development, and applied technology. As a result, the West now faces two "superpowers" rather than one.

Figure Thirteen: China's Growing Global Impact

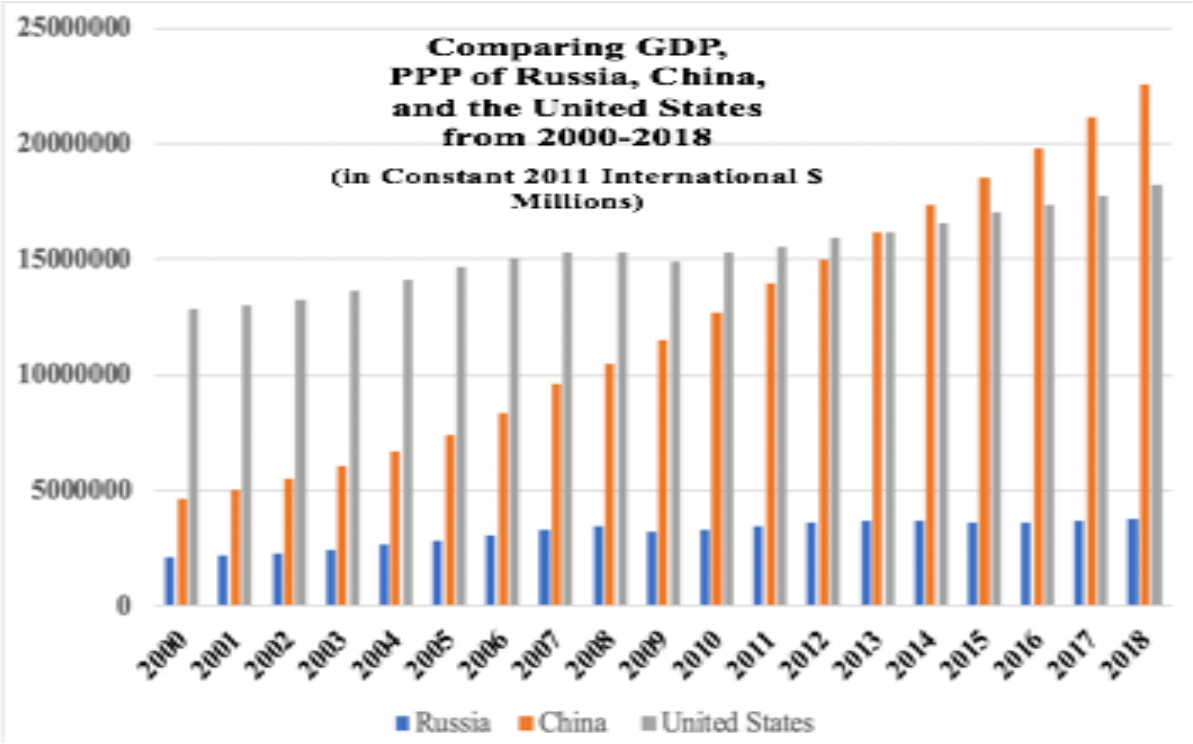
Belt and Road

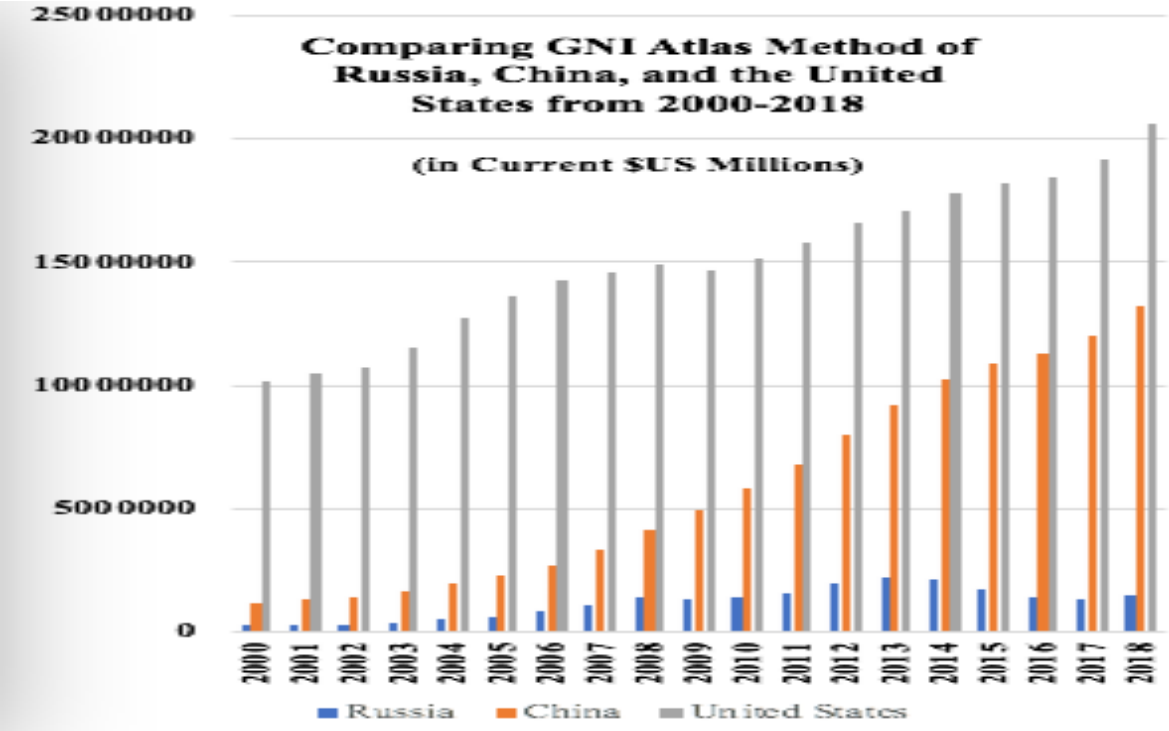




Source: Brian Wang, MERICS China Monitor, January 20, 2017, https://www.nextbigfuture.com/2017/01/philippines-will-attend-chinas-one-belt.html; and Office of the Secretary of Defense, *Annual Report to Congress Military and Security Developments Involving the People's Republic of China 2017*, May 15, 2018,p. 44, https://www.defense.gov/Portals/1/Documents/pubs/2017_China_Military_Power_Report.PDF: Reformatted from Lt. General Mike Minihan," United States Indo Pacific Command," NDU WMD, July 7, 2020, *https://us-lti.bbcollab.com/collab/ui/session/playback/load/7cf6bb5c7aaa4aa9930d7bd7b8df0b00*; and FAS *https://fas.org/wp-content/uploads/2020/09/PACOM2020_NDU-WMD-Brief2020_Minihan070720.pdf*.

Figure Fourteen: Different Estimates of Chinese versus U.S. GDP and GNI

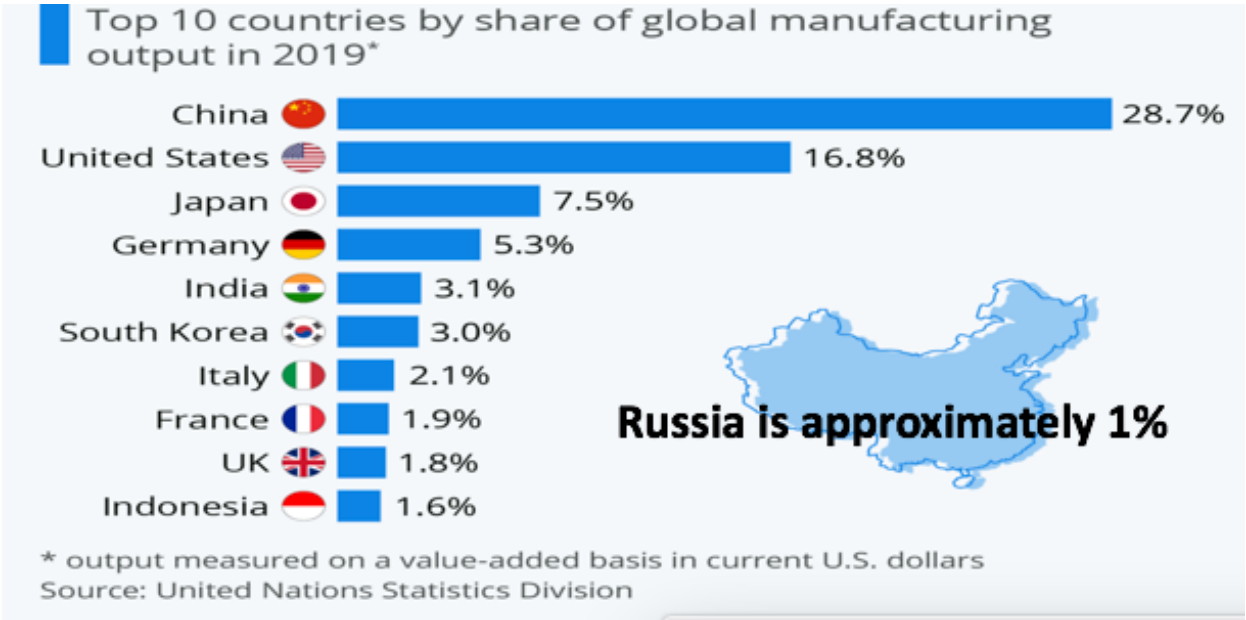




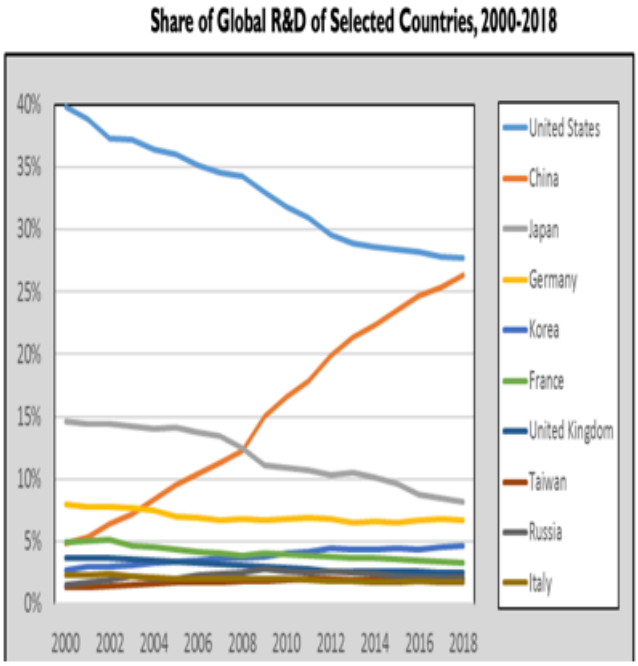
Source: World Bank, "Country Database: China," accessed November 2020.

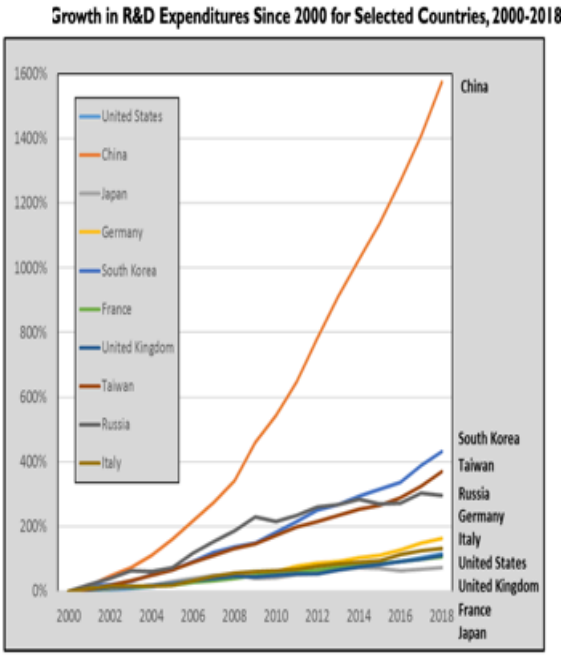
Figure Fifteen: China as the Arsenal of Autocracy

China has become the World's Manufacturing Superpower



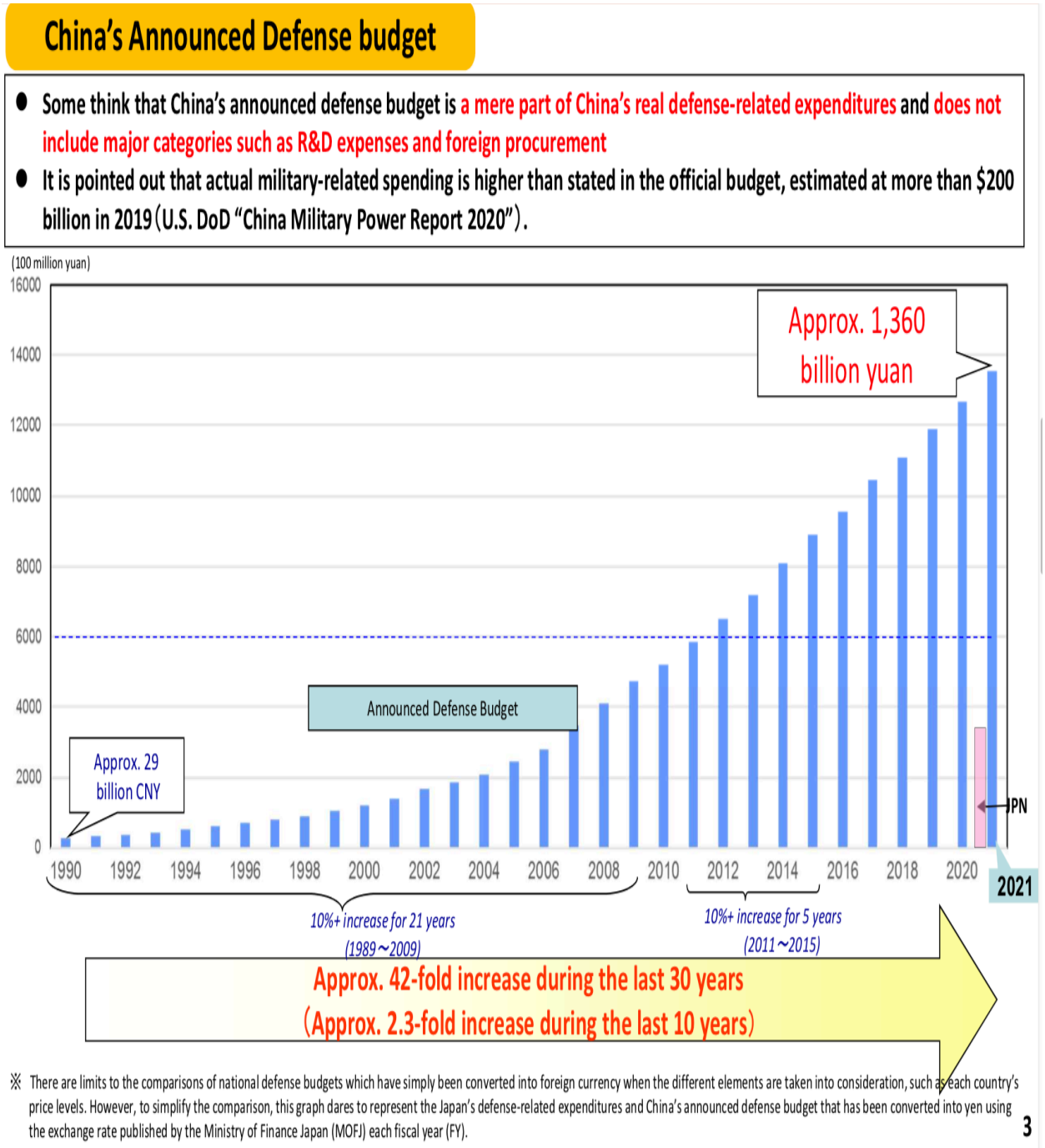
(Annual Expenditure on Research and Development (Adjusted for Purchasing Power Parity)





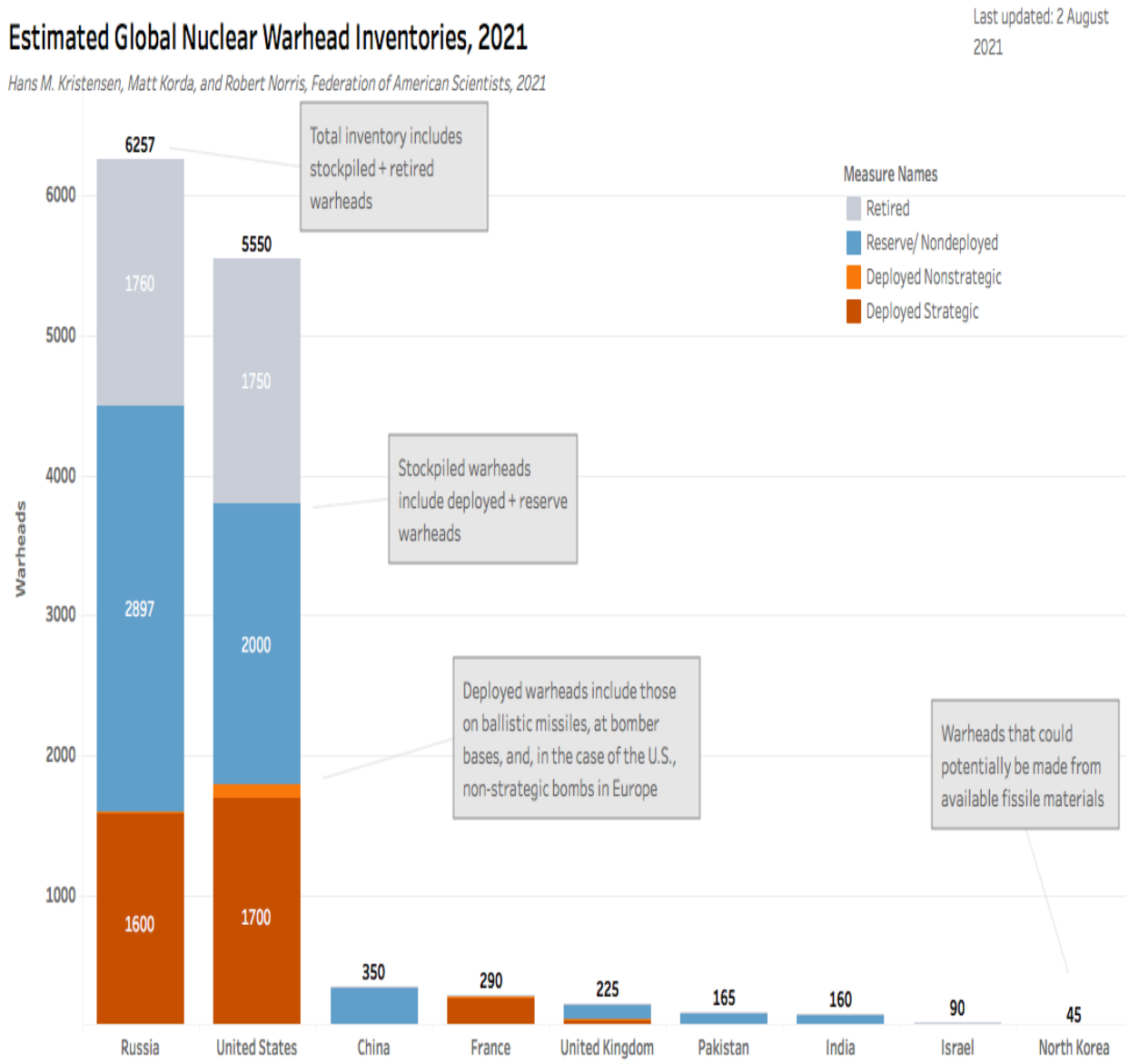
Source: Felix Richter, "China Is the World's Manufacturing Superpower," May 4, 2021, Statista, https://cdn.statcdn.com/Infographic/images/normal/20858.jpeg; and John F. Sargent Jr., "Global Research and Development Expenditures: Fact Sheet," *Congressional Research Service*, R44283, April 29, 2020.

Figure Sixteen: Japanese MoD Estimate of Rise in Chinese Defense Spending



Source: Japanese Ministry of Defense, September 2021, https://www.mod.go.jp/en/d_act/sec_env/pdf/ch_d-act_a_e_210906.pdf

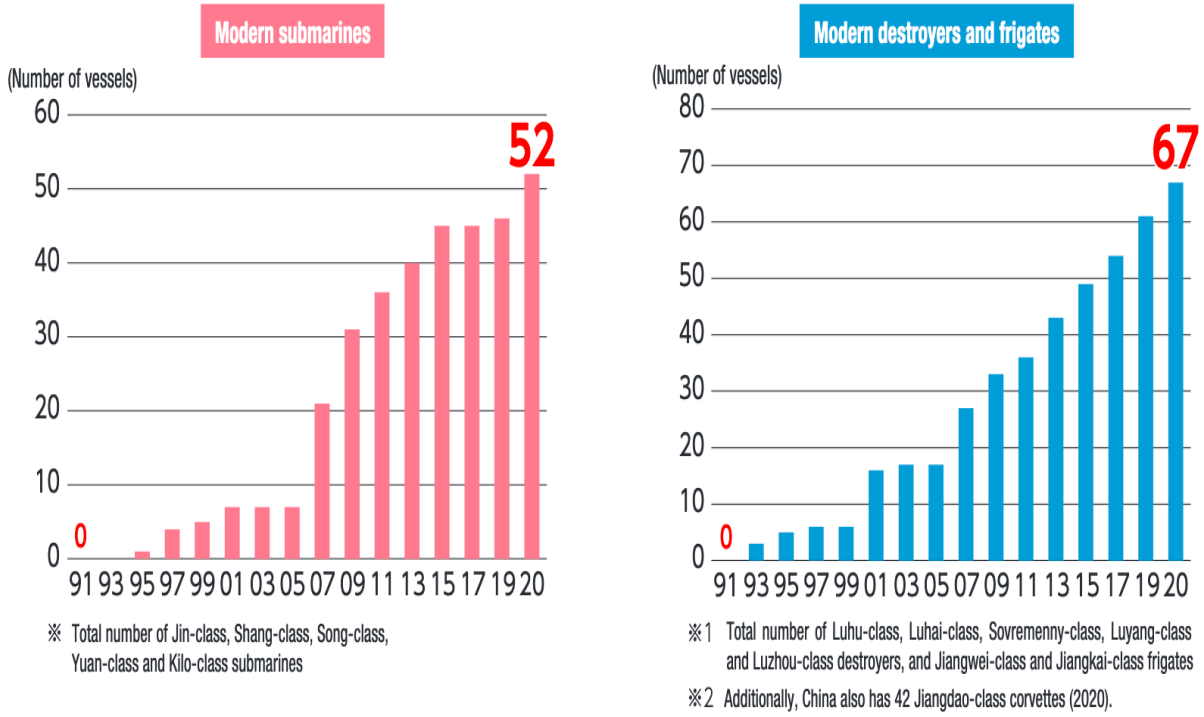
Figure Seventeen: Inventories of Nuclear Warheads in Chinese, Russian, U.S., European, and Other Nuclear Forces in 2021



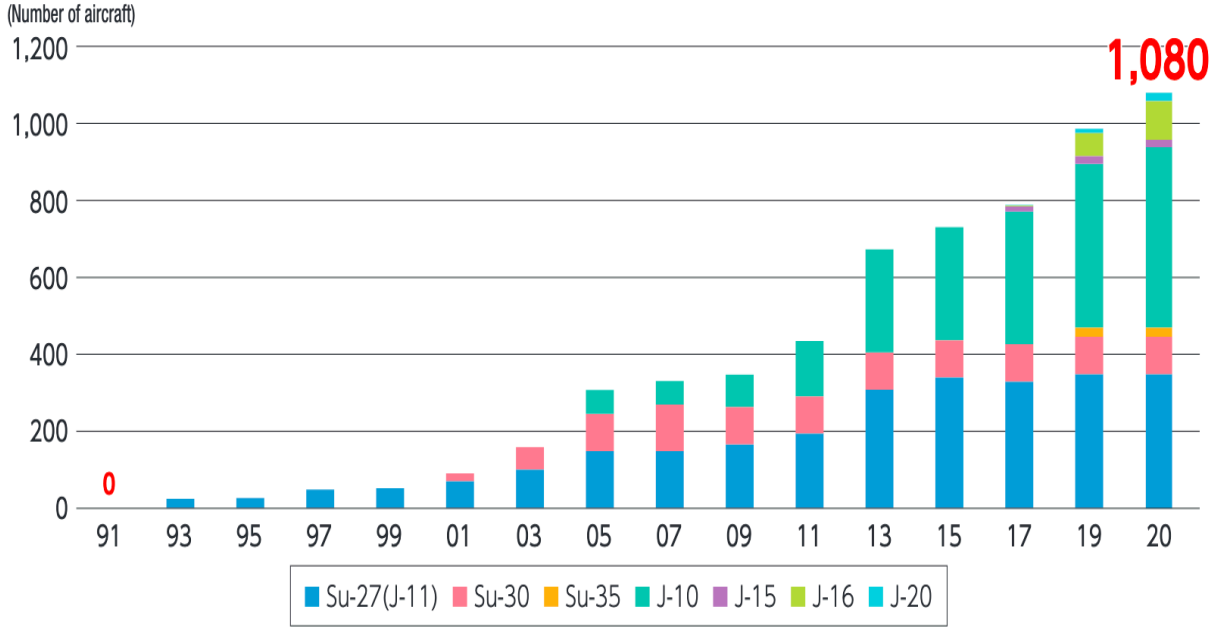
Source: Adapted from Hans M. Kristensen and Matt Korda, "Status of World Nuclear Forces," https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces; and China Is Building A Second Nuclear Missile Silo Field, July 26, 2021, https://fas.org/blogs/security/2021/07/china-is-building-a-second-nuclear-missile-silo-field/.

Figure Eighteen: Japanese MoD Estimate of Rates of Key Aspects of Chinese Military Modernization

Key Ships



Fourth and Fifth Generation Fighters



Source: Adapted by authors from Japanese Ministry of Defense, *Defense of Japan*, 2020, p. 67.

Figure Nineteen: The Expanding Chinese Naval Threat

Estimate Numbers of Chinese and U.S. Navy Battle Force Ships, 2020-2040

Figures for Chinese ships are from U.S. navy, reflecting data as of October 2020

Ship type	2020	2025	2030	2040	2040 change from 2020
Ballistic missile submarines	4	6	8	10	+6
Nuclear-powered attack submarines	6	10	14	16	+10
Diesel attack submarines	47	47	46	46	-1
Aircraft carriers	2	3	5	6	+4
Cruisers and destroyers	41	52	60	80	+39
Frigates and corvettes	102	120	135	140	+38
LHA-type amphibious assault ships	0	4	4	6	+6
LPD-type amphibious ships	7	10	14	14	+7
LST-type amphibious tank landing ships	30	24	24	15	-15
TOTAL of types shown above	**239**	**276**	**310**	**333**	**+94**
TOTAL number of U.S. Navy battle force ships	***297***	***n/a***	***n/a***	***n/a***	***n/a***

Source: For Chinese navy ships: U.S. Navy data provided to CRS by Navy Office of Legislative Affairs, reflecting data as of October 26, 2020.

Notes: "n/a" means not available.

(Figures for Chinese ships taken from annual DOD reports on military and security developments involving China)

Year of DOD report	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2020 change from 2005
Ballistic missile submarines	1	1	1	1	2	2	2	2	3	3	4	4	4	4	4	4	+3
Nuclear-powered attack submarines	6	5	5	5	6	6	5	5	5	5	5	5	5	5	6	6	0
Diesel attack submarines	51	50	53	54	54	54	49	48	49	51	53	57	54	47	50	46	-5
Aircraft carriers	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	2	+2
Cruisers	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	+1
Destroyers	21	25	25	29	27	25	26	26	23	24	21	23	31	28	33	32	+11
Frigates	43	45	47	45	48	49	53	53	52	49	52	52	56	51	54	49	+6
Corvettes	0	0	0	0	0	0	0	0	0	8	15	23	23	28	42	49	+49
Missile-armed coastal patrol craft	51	45	41	45	70	85	86	86	85	85	86	86	88	86	86	86	+35
Amphibious ships: LSTs and LPDs	20	25	25	26	27	27	27	28	29	29	29	30	34	33	37	37	+17
Amphibious ships: LSMs	23	25	25	28	28	28	28	23	26	28	28	22	21	23	22	21	-2
Total of types above (*does not include other types, such as auxiliary and support ships*)	**216**	**221**	**222**	**233**	**262**	**276**	**276**	**271**	**273**	**283**	**294**	**303**	**317**	**306**	**335**	**333**	**+117**
China Coast Guard ships	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*n/a*	*185*	*240*	*248*	*255*	*n/a*
Total U.S. Navy battle force ships (which includes auxiliary and support ships but excludes patrol craft)	291	282	281	279	282	285	288	284	287	285	289	271	275	279	286	296	+5
Total U.S. Navy battle force ships compared to above total for certain Chinese ship types	+75	+61	+59	+46	+20	+9	+12	+13	+14	+2	-5	-32	-42	-27	-49	-37	-112

Source: Adapted from: *China Naval Modernization: Implications for U.S. Navy Capabilities, Congressional Research Service*, RL33153, September 9, 2021, pp. 8, 10.

NATO and Cooperation in Dealing with Both China and Russia

The practical problem is how the U.S. and Europe should work together to find the right balance in meeting the challenge from both China and Russia, discuss the relative levels of effort the U.S. and Europe should assign to both superpowers, and focus on the additional threats posed by out-of-area challenges like terrorism and extremism. This must, to a large extent, be the subject of regular diplomacy. The economic and civil dimensions of competition with Russia and China are already as serious as the military dimensions in what might be called "white area" competition or "warfare" that must be addressed through civil means.

NATO is, however, the best potential forum for assessing – and reacting to – the need to balance the relative commitment to dealing with the military of Russia and China as well as from other outside threats. Trying to shape the most effective approach to Russia while taking thirty different approaches to China almost ensures a failure to find the right balance and execute the right compromises and changes.

Making a common effort to address both Russia and China as a key part of NATO annual planning, intelligence, and net assessment efforts can do much to avoid mutual confusion and tension over the need to change. It can provide a forum for realistic analysis and dialogue, and it can help share information on an "Atlantic" basis.

Appendix One: NATO Estimate of 2021 Defense Spending by Country

(in $ Current Millions)

	2014	2015	2016	2017	2018	2019	2020e	2021e
Current prices and exchange rates								
Albania	178	132	131	145	176	200	188	239
Belgium	5,200	4,204	4,258	4,441	4,845	4,761	5,427	6,503
Bulgaria	747	633	671	724	962	2,159	1,075	1,253
Canada	18,172	18,689	17,708	23,700	22,399	22,572	23,595	26,523
Croatia*	1,064	883	837	924	966	1,002	1,031	1,846
Czech Republic	1,975	1,921	1,866	2,259	2,750	2,910	3,201	4,013
Denmark	4,057	3,364	3,593	3,780	4,559	4,557	4,979	5,522
Estonia	514	463	497	541	615	637	719	787
France	52,022	43,496	44,209	46,133	50,507	49,710	52,727	58,729
Germany	46,176	39,833	41,606	45,470	49,772	52,549	58,902	64,785
Greece	5,234	4,520	4,637	4,752	5,388	4,843	5,019	8,014
Hungary	1,210	1,132	1,289	1,708	1,615	2,050	2,770	2,907
Italy	24,487	19,576	22,382	23,902	25,641	23,559	26,071	29,763
Latvia**	294	282	403	485	710	692	743	851
Lithuania**	428	471	636	817	1,057	1,094	1,176	1,278
Luxembourg	253	250	236	326	356	386	406	474
Montenegro	69	57	62	65	75	74	83	97
Netherlands	10,349	8,673	9,112	9,643	11,172	12,092	13,125	14,378
North Macedonia	124	105	104	101	120	146	154	219
Norway	7,722	6,142	6,431	6,850	7,544	7,536	7,272	8,292
Poland**	10,107	10,588	9,397	9,940	11,857	11,824	13,590	13,369
Portugal	3,007	2,645	2,616	2,738	3,249	3,299	3,306	3,975
Romania**	2,691	2,581	2,645	3,643	4,359	4,608	5,051	5,785
Slovak Republic	999	987	1,004	1,056	1,298	1,802	2,050	2,043
Slovenia	487	401	449	477	547	572	568	760
Spain	12,634	11,096	9,975	11,889	13,200	12,630	12,828	14,875
Turkey	13,577	11,953	12,644	12,971	14,168	14,089	13,396	13,057
United Kingdom	65,692	59,505	56,362	55,719	60,380	59,399	61,925	72,765
United States	653,942	641,253	656,059	642,933	672,255	730,149	784,952	811,140
NATO Europe and Canada	**289,275**	**254,423**	**255,595**	**275,100**	**300,167**	**301,608**	**321,376**	**363,100**
NATO Total	**943,217**	**895,676**	**911,654**	**918,033**	**972,422**	**1,031,757**	**1,106,328**	**1,174,240**

Notes: Figures for 2020 and 2021 are estimates. The NATO Europe and Canada and NATO Total aggregates from 2017 onwards include Montenegro, which became an Ally on 5

June 2017, and from 2020 onwards include North Macedonia, which became an Ally on 27 March 2020.

* Year 2021: estimated average derived from the range reported.

** These Allies have national laws or political agreements which call for 2% of GDP to be spent on defence annually, consequently future estimates are expected to change

accordingly. For past years Allies defence spending was based on the then available GDP data and Allies may, therefore, have met the 2% guideline when using those figures. (In

2018, Lithuania met 2% using November 2018 OECD figures.)

Source: *NATO, Defence Expenditure of NATO Countries (2014-2021)*, COMMUNIQUE PR/CP(2021)094, June 11, 2021.

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[1] See NATO Advisory Group on Emerging and Disruptive Technologies, *Annual Report 2020*, (Brussels, Belgium: 2020); and NATO Science and Technology Organization, *Science and Technology Trends, Exploring the S&T Edge*, March 2020.

[2] For the Trump document, see the White House release of "U.S. Strategic Framework for the Indo-Pacific," February 11, 2022.

On that same day at the same time, the Biden administration released three new Indo-Pacific strategy documents of its own: *Indo-Pacific Strategy of the United States*, February 2022, https://www.whitehouse.gov/wp-content/uploads/2022/02/U.S.-Indo-Pacific-Strategy.pdf; White House, "Fact Sheet: Indo-Pacific Strategy of the United States," https://www.whitehouse.gov/briefing-room/speeches-remarks/2022/02/11/fact-sheet-indo-pacific-strategy-of-the-united-states/; White House, "US Indo-Pacific Strategy: Background Press Call by Senior Administration Officials Previewing the U.S. Indo-Pacific Strategy," https://www.whitehouse.gov/briefing-room/statements-releases/2022/02/11/background-press-call-by-senior-administration-officials-previewing-the-u-s-s-indo-pacific-strategy/.

[3] "Macron says European defense autonomy and NATO membership are compatible," Reuters, June 18, 2021, https://www.reuters.com/world/europe/macron-says-european-defense-autonomy-nato-membership-are-compatible-2021-06-18/.

[4] "Macron says European defense autonomy and NATO membership are compatible," Reuters, June 18, 2021, https://www.reuters.com/world/europe/macron-says-european-defense-autonomy-nato-membership-are-compatible-2021-06-18/.

[5] See NATO Advisory Group on Emerging and Disruptive Technologies, *Annual Report 2020*, (Brussels, Belgium: 2020); and NATO Science and Technology Organization, *Science and Technology Trends, Exploring the S&T Edge*, March 2020.

[6] NATO, *Defence Expenditure of NATO Countries (2014-2021)*, COMMUNIQUE PR/CP(2021)094, June 11, 2021.

[7] NATO, *Defence Expenditure of NATO Countries (2014-2021)*, COMMUNIQUE, PR/CP(2021)094, June 11, 2021.

[8] For one such estimate, see Michael Kofman and Richard Connolly, "Why Russian Military Expenditure is Much Higher than Commonly Understood (As is China's)," *War On the Rocks*, December 16, 2019, https://warontherocks.com/2019/12/why-russian-military-expenditure-is-much-higher-than-commonly-understood-as-is-chinas/.

[9] For a quick open source summary, see, NATO, *NATO 2030*, www.nato.int › pdf › 2106-factsheet-nato2030-en.

[10] IISS, *Military Balance,* 1991-1992, pp. 26-27.

[11] IISS, *Military Balance,* 2015, pp. 52-54.

[12] IISS, *Military Balance,* 2015, pp. 60-62.