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Chinese Strategy and Military Forces in 2021

A Graphic Net Assessment

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Photo: STR/AFP via Getty Images

Burke Chair
In Strategy

Introduction

There is no simple way to introduce the challenges that China's strategic presence and growing civil and military capabilities pose in competing with the United States. China's capability to compete at given levels has increased radically since 1980 in virtually every civil and military area, and China has set broad goals for achieving strategic parity and superiority, although the timeframes for such goals are vague – and neither China nor the United States has published anything like a credible unclassified net assessment of current and future capabilities or provided details as to how each country's broad statements about strategic goals would actually be implemented.

The Burke Chair is now presenting a regularly updated summary briefing on key developments in Chinese capabilities to compete with the United States and other powers. This briefing is supported by a wide range of graphs, maps, and tables that provide a diverse view of the summary data on a wide range of China's strategic and military capabilities where these can be summarized in quantitative form or by using maps and selected quotes. It has added summary comparisons of China and the U.S. where possible, recognizing that the estimates are often different and controversial.

One key goal in developing this briefing is to illustrate the complexity of the various forms of competition, and the fact that the competition is both civil and military, is global rather than centered in one area like Taiwan or the South China Sea, and is often a competition for military and civil influence that goes far beyond Asia – and where each nation's ability to influence and deter may well be more important than its ability to fight.

Another goal is to illustrate the sheer complexity of the competition and its many different dimensions, as well as the rapid rate of change in many key areas of military force, economics, and politics – rates of change where it is clear that experts are forced to speculate as to how each side will progress over periods of at least the next two decades to understand these vectors of change.

In many ways, the competition between the U.S. and China is like a game of three-dimensional chess where there are no fixed rules, no limit to the number of boards where the game is played, and no clear limits to the number of state and non state actors that can join the game and move on their own. It is also a competition where there are strong incentives to cooperate and to limit the level of actual conflict. To paraphrase *War Games*, the only way that China and the U.S. can “win” at theater levels of conflict and above is to not play. Successful deterrence means playing by Sun Tzu's rules, not those of Clausewitz.

The briefing draws heavily on official sources, but it should be noted that even the data provided in U.S. government sources often do not agree – even when they are generated by the same source. It relies, where possible, on the U.S. Department of Defense's annual report on *Chinese Military Power* for 2020, (<https://media.defense.gov/2020/Sep/01/2002488689/-1/-1/1/2020-DOD-CHINA-MILITARY-POWER-REPORT-FINAL.PDF>), which seems to be the most reliable and balanced official unclassified source available.

The briefing also includes reporting by the Congressional Research Service, U.S. combatant commands, Japanese and South Korean official reporting, and a wide range of other think tanks and expert sources in an effort to deliberately illustrate the wide range of different official and expert estimates. *These data again often differ in detail, and the original source must be carefully consulted to fully understand the figures involved.* The reader should also be aware that many of the summary graphics and data drawn from official sources and the work of other experts and think tanks can only highlight given aspects of competition, and they have to be taken out of context. The sources of each page are shown in detail and again illustrate the complexity of the competition and the need to both examine its full spectrum, as well as the details of each key area of particular interest.

Five key cautions need to be kept in mind in interpreting these estimates and data.

- *First, China emphasizes the integrated use of political, economic, and military power, and it is using such assets to achieve its goals without warfighting with major powers like the United States. It also has a potential advantage as a unified authoritarian state in using centralized state planning to commit its resources and competition at the civil as well as at the military level. The U.S. and other Western states have increasingly attempted to respond using measures like sanctions, but they do not have political and economic systems that allow the state to directly integrate such operations, and much of the U.S. and Western analytic effort focuses separately on military dynamics and warfighting compared to civil and economic competition. This analysis too focuses on military trends, although some broad data on civil, economic, and technology competition are included.*
- *Second, the nature of warfare is changing rapidly both in terms of irregular warfare and in every aspect of major conflict. Many of the changes involve high levels of future uncertainty and are taking place at highly classified levels. Cyber conflict, space, “informatization,” joint all-domain operations, precision conventional strike, use of artificial intelligence, and use of third-party state and non-state actors are only a few of the changes involved. These do not lend themselves easily to the broad force and trend data used in this analysis, but they have already sharply shaped the ability to influence, intimidate, deter, and actually fight, and China’s comparative success in these areas – many of which are cutting edge aspects of civil technology and manufacturing – may dominate the future of military competition over the coming decades in ways that no one can now credibly predict and assess.*
- *Third, parts of this analysis reflect the fact that the U.S. has heavily emphasized competition in the Pacific, and particularly in the South China Sea, dealing with Taiwan and involving China’s growing pressure on South Korea, Japan, and in the Indian Ocean region. The data in this analysis show that focus is all too justified given the growth of Chinese military power in each region. So far, this focus has led the U.S. to understate the importance of China’s ability to use its economic power on a global basis to conduct the equivalent of gray and white area warfare, its growing capability to put pressure on Central Asian and Indian Ocean states, its growing links to Russia, and its role as a truly global power where its economic strength may compensate for its current lack of military power projection capability. The U.S. has so far focused on improving its capability to fight a major war against China – improvements that are necessary but no substitute for effective civil-military competition on a global basis.*
- *Fourth, it is still too early to predict exactly how China will improve its nuclear and dual nuclear/conventional warfighting forces and defenses over time, and President’s proposed FY2022 budget shows the U.S. is still in the process of forming a coherent strategy and force posture as well. It now seems likely that that China will develop a far more advanced capability for mutual assured destruction at high levels of conflict, but will focus on economic and civil competition – and gray area, irregular, and conventional wars at low theater levels. China’s emergence as a direct rival to the United States and as a far more powerful military and economic power than Russia, not only is redefining the nuclear balance, but it is creating a world in which the risk of nuclear escalation between the major power must be evaluated in terms of three states, rather than two – and with the risk that new forms of warfare will further complicate the challenges for deterrence, warfighting, defense, and arms control. There is an important difference between “mutual assured destruction” and “mutual assured confusion and uncertainty.”*

- *Fifth, international statistics always present major challenges in comparability, but these problems are generally far greater when they involve radically different political, military, and economic systems. Many of the data in this brief are also derived from classified sources and are rounded or adjusted to provide an accurate picture of broad trends, but they are not the exact data from a given source or methodology – which often are not described in the original source. Given sources of data and experts often disagree or focus on different metrics, time periods, and method of comparison. There are also a number of areas where current unclassified estimates are lacking or do not seem credible.*

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China's Declared Strategy

China's Pre-2015 Strategy

- **A “period of strategic opportunity” in the international environment that allows China to focus on building “comprehensive national power.”**
- **The CCP’s contemporary strategic objectives are to:**
 - **Perpetuate CCP rule.**
 - **Maintain domestic stability.**
 - **Sustain economic growth and development.**
 - **Defend national sovereignty and territorial integrity.**
 - **Secure China’s status as a great power.**

China's Post-2015 Strategy

China's Military Strategy built on a series of biennial defense reviews that Beijing published beginning in 1998 to mitigate international concern about the lack of transparency of its military modernization. What differentiated the document from its predecessors was that it, for the first time, publicly clarified the PLA's role in protecting China's evolving national security interests and shed light on policies, such as the PLA's commitment to nuclear deterrence.

The report outlined eight “strategic tasks,” or types of missions the PLA must be ready to execute:

- Safeguard the sovereignty of China's territory.
- Safeguard national unification.
- Safeguard China's interests in new domains, such as space and cyberspace.
- Safeguard China's overseas interests.
- Maintain strategic deterrence.
- Participate in international security cooperation.
- Maintain China's political security and social stability.
- Conduct emergency rescue, disaster relief, and “rights and interest protection” missions.

DoD Summary of Chinese Strategy 2020 – I

China's National Strategy

- > The People's Republic of China's (PRC's) strategy aims to achieve “the great rejuvenation of the Chinese nation” by 2049. China's strategy can be characterized as a determined pursuit of political and social modernity that includes far-ranging efforts to expand China's national power, perfect its governance systems, and revise the international order.
- > The Chinese Communist Party (CCP) frames this strategy as an effort to realize long-held nationalist aspirations to “return” China to a position of strength, prosperity, and leadership on the world stage.
- > The CCP's leadership has long viewed China as embroiled in a major international strategic competition with other states, including, and in particular, the United States.
- > In 2019, China intensified its efforts to advance its overall development including steadying its economic growth, strengthening its armed forces, and taking a more active role in global affairs.

Foreign Policy

- > The PRC's foreign policy seeks to revise aspects of the international order on the Party's terms and in accordance with ideas and principles it views as essential to forging an external environment conducive to China's national rejuvenation.
- > In 2019, the PRC recognized that its armed forces should take a more active role in advancing its foreign policy, highlighting the increasingly global character that Beijing ascribes to its military power.

Economic Policy

- > The CCP prioritizes economic development as the “central task” and the force that drives China's modernization across all areas, including its armed forces.
- > China's economic development supports its military modernization not only by providing the means for larger defense budgets, but through deliberate Party-led initiatives such as OBOR and Made in China 2025, as well as the systemic benefits of China's growing national industrial and technological base.

Military-Civil Fusion (MCF) Development Strategy

- The PRC pursues its MCF Development Strategy to “fuse” its economic and social development strategies with its security strategies to build an integrated national strategic system and capabilities in support of China's national rejuvenation goals.
- > MCF encompasses six interrelated efforts: (1) fusing the China's defense industrial base and its civilian technology and industrial base; (2) integrating and leveraging science and technology innovations across military and civilian sectors; (3) cultivating talent and blending military and civilian expertise and knowledge; (4) building military requirements into civilian infrastructure and leveraging civilian construction for military purposes; (5) leveraging civilian service and logistics capabilities for military purposes; and, (6) expanding and deepening China's national defense mobilization system to include all relevant aspects of its society and economy for use in competition and war.
- > While MCF has broader purposes than acquiring foreign technology, in practice, MCF means there is not a clear line between the PRC's civilian and military economies, raising due diligence costs for U.S. and global entities that do not desire to contribute to the PRC's military modernization.

DoD Summary of Chinese Strategy 2020 – II

Defense Policy & Military Strategy

- > The PRC has stated its defense policy aims to safeguard its sovereignty, security, and development interests. China’s military strategy remains based on the concept of “active defense.”
- > In 2019, the PLA remained primarily oriented towards longstanding regional threats while emphasizing a greater global role for itself in accordance with China’s defense policy and military strategy.
- > China’s leaders stress the imperative of meeting key military transformation markers set in 2020 and 2035. These milestones seek to align the PLA’s transformation with China’s overall national modernization so that by the end of 2049, China will field a “world-class” military.
- The CCP has not defined what it means by its ambition to have a “world-class” military. Within the context of China’s national strategy, however, it is likely that China will aim to develop a military by mid-century that is equal to—or in some cases superior to—the U.S. military, or that of any other great power that China views as a threat to its sovereignty, security, and development interests.

Key Takeaways

- > China’s strategy seeks to achieve “the great rejuvenation of the Chinese nation” by 2049. China’s strategy can be characterized as a determined pursuit of political and social modernity that includes far-ranging efforts to expand China’s national power, perfect its governance systems, and revise the international order.
- > The Chinese Communist Party (CCP) frames this strategy as an effort to realize long-held nationalist aspirations to “return” China to a position of strength, prosperity, and leadership on the world stage.
- > The CCP asserts its absolute leadership and governance systems are indispensable to China’s national renewal into a “great modern socialist country.”
- > In 2019, China intensified its efforts to advance its overall development including steady economic growth, strengthening its armed forces, and taking a more active role in global affairs.
- > The CCP’s leadership has long viewed China as embroiled in a major international strategic competition with other states, including, and in particular, the United States.

Comparative Total Civil & Military Strength in 2021

Category	U.S.		China		Russia		World Total
	Value	%of World	Value	%of World	Value	%of World	
Nuclear Weapons							
Retired	2,000	34%.	-	NA	2,897	49%	5,820
Stockpiled	3,800	39%	350	3.6%	4,497	47%	9,600
Deployed	1,700	45%	-	-	1,600	43%	3,700
Total ^a	5,500	41%	350	2.6%	6,257	47%	13,100
Military Budget							
IISS	758.0	41%	193.2	10.6%	43.1	2.3%	1,809.2
Military Spending							
SIPRI	778.2	39%	252.3	12.8%	61.7	3.1%	1,960.0
GDP							
\$US current Trillions	21,433	24.4%	14,279	16.2%	1,699	1.9%	87,734
Population							
Millions	334.9	4.3%	1,397.0	17.9%	142.3	1.8%	7,772.8

^a Adds France (290), UK (195), Pakistan (160), India (150), Israel (90), and DPRK (35).

Source: Hans M. Kristensen and Matt Korda, "Status of World Nuclear Forces," <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>; IISS "Defense budget data," *Military Balance, 2020*, pp. 529-530.; SIPRI, "Military Expenditure in Current \$US millions," SIPRI Military Expenditure Database; World Bank, "GDP (current US\$)" <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>; CIA *World Factbook*, Country Sections, <https://www.cia.gov/library/publications/the-world-factbook/>

China's Broader Civil- Military Ability to Compete

Chinese Civil-Military Fusion Development Strategy – I

Key Takeaways

- > The PRC pursues its Military-Civil Fusion (MCF) Development Strategy to “fuse” its economic and social development strategies with its security strategies to build an integrated national strategic system and capabilities in support of China’s national rejuvenation goals.
- > Although China’s MCF strategy includes objectives to develop and acquire advanced dual-use technology for military purposes and deepen reform of the national defense science and technology industries, its broader purpose is to strengthen all of China’s instruments of national power by “fusing” aspects of its economic, military, and social governance.
- China’s MCF development strategy encompasses six interrelated efforts: (1) fusing the China’s defense industrial base and its civilian technology and industrial base; (2) integrating and leveraging science and technology innovations across military and civilian sectors; (3) cultivating talent and blending military and civilian expertise and knowledge; (4) building military requirements into civilian infrastructure and leveraging civilian construction for military purposes; (5) leveraging civilian service and logistics capabilities for military purposes; and, (6) expanding and deepening China’s national defense mobilization system to include all relevant aspects of its society and economy for use in competition and war.
- Although MCF has broader purposes than acquiring foreign technology, in practice, MCF means there is not a clear line between the PRC’s civilian and military economies, raising due diligence costs for U.S. and global entities that do not desire to contribute to the PRC’s military modernization.

The PRC pursues its Military-Civil Fusion (MCF) Development Strategy as a nationwide endeavor that seeks to “fuse” its economic and social development strategies with its security strategies to build an integrated national strategic system and capabilities in support of China’s national rejuvenation goals. The Party’s leaders view MCF as a critical element of their strategy for the PRC to become a “great modern socialist country” which includes becoming a world leader in science and technology (S&T) and developing a “world-class” military. Although China’s MCF strategy includes objectives to develop and acquire advanced dual-use technology for military purposes and deepen reform of the national defense S&T industries, its broader purpose is to strengthen all of China’s instruments of national power by “fusing” aspects of its economic, military, and social governance.

China pursues MCF through six interrelated efforts. Each effort overlaps with the others and has both domestic and international components. The Party seeks to implement the MCF Development Strategy across every level of China’s party-state from the highest national-level organs down to provinces and township. China refers to these six aspects as “systems,” which may also be understood as mutually supporting lines of effort or components. The six systems in the MCF Development Strategy are:

The Advanced Defense Science, Technology, and Industrial System. This system focuses on fusing China’s defense industrial base and its civilian technology and industrial base. This includes expanding the private sector’s participation in China’s defense industrial base and supply chains as well as improving the efficiency, capacity, and flexibility of defense and civilian industrial and manufacturing processes. This broader participation seeks to transfer mature technologies both ways across military and civilian sectors, with the goal to produce outsized benefits for both sectors. This also aims to increase the competitiveness within the PRC’s defense industrial base in which one or two defense SOEs dominate an entire sector. This MCF system also seeks to advance China’s self-reliance in manufacturing key industrial technologies, equipment, and materials to reduce its dependence on imports, including those with dual-uses. The PRC’s MCF-influenced industrial and technology endeavors include *Made in China 2025* that sets targets for China to achieve greater self-sufficiency in key industrial areas such as aerospace, communications, and transportation.

The Military-Civil Coordinated Technology Innovation System. This MCF system seeks to maximize the full benefits and potential of the country’s S&T development. Consistent with the CCP leadership’s view that high technology and innovation are critical to strengthening China’s composite national power, this system develops and integrates advanced technologies across civilian and military entities, projects and initiatives—with benefits flowing in both directions. This includes using cutting-edge civilian technology for military applications or to more broadly advance military S&T as well as using military advancements to push civilian economic development. Although related to the Advanced Defense Science, Technology, and Industrial System, this system largely focuses on

Chinese Civil-Military Fusion Development Strategy – II

fusing innovations and advance in basic and applied research. Specific efforts in this MCF system include strengthening and promoting civilian and military R&D in advanced dual-use technologies and cross-pollinating military and civilian basic research. Additional efforts include promoting the sharing of scientific resources, expanding the institutions involved in defense research, and fostering greater collaboration across defense and civilian research communities. This system also seeks to foster “new-type” research institutions with mixed funding sources and lean management structures that are more dynamic, efficient, and effective than the PRC’s wholly state-owned research bodies. Examples of MCF-influenced dual-use S&T endeavors include China’s Innovation Driven Development Strategy and Artificial Intelligence National Project.

The Fundamental Domain Resource Sharing System. This system includes building military requirements into the construction of civilian infrastructure from the ground up as well as leveraging China’s civilian construction and logistics capacities and capabilities for military purposes. This includes factoring military requirements and dual-use purposes into building civilian private and public transportation infrastructure such as airports, port facilities, railways, roads, and communications networks. This also extends to infrastructure projects in dual-use domains such as space and undersea as well as mobile communications networks and topographical and meteorological systems. Another element seeks to set common military and civilian standards to make infrastructure easier to use in emergencies and wartime. This aspect of MCF has arguably the greatest reach into the PRC’s local governance systems as military requirements inform infrastructure construction at the province, county, and township levels. The influence of this aspect of MCF is visible in the PRC’s major land reclamations and military construction activities in the South China Sea, which brought together numerous government entities, the PLA, law enforcement, construction companies, and commercial entities. It may also have important implications for the PRC’s overseas infrastructure projects and investments under OBOR as the PRC seeks to establish a more robust overseas logistics and basing infrastructure to allow the PLA to project and sustain military power.

The Military Personnel (Talent) Cultivation System. This MCF system seeks to blend and cultivate military and civilian S&T expertise through education programs, personnel exchanges, and knowledge sharing. The purpose of this effort is to improve the utilization of experts able to participate in S&T projects irrespective of whether they are military or civilian (or even foreign) experts and allow expertise to flow more freely across sectors. This aspect of MCF also seeks to reform China’s talent cultivation system, which encompasses hundreds of talent recruitment plans, in order to improve China’s human capital, build a highly skilled workforce, and recruit foreign experts to provide access to know-how, expertise, and foreign technology. It takes into account all levels of education from the Party’s nationwide “patriotic education” programs for children to the matriculation of post-doctorate researchers within China and at institutions abroad. Many of the PRC’s named “talents” programs are likely influenced by MCF planning, as are reforms in its military academies, national universities, and research institutes.

The Socialized Support and Sustainment System for the PLA. This system entails two major efforts that seeks to shift the PLA away from its inefficient self-contained logistics and sustainment systems and towards modern streamlined logistics and support services. First, it seeks to harness civilian public sector and private sector resources to improve the PLA’s basic services and support functions—ranging from food, housing, and healthcare services. The concept is to gain efficiencies in costs and personnel by outsourcing non-military services previously performed by the PLA while also improving the quality of life for military personnel. Second, it seeks to further the construction of a modern military logistics system that is able to support and sustain the PLA in joint operations and for overseas operations. This system seeks to fuse the PLA Joint Logistic Support Force’s (JLSF) efforts to integrate the military’s joint logistics functions with the PRC’s advanced civilian logistics, infrastructure, and delivery service companies and networks. These arrangements seek to provide the PLA with modern transportation and distribution, warehousing, information sharing, and other types of support in peacetime and wartime. This fusion also seeks to provide the PLA with a logistics system that is more efficient, higher capacity, higher quality, and global in reach.

The National Defense Mobilization System. This MCF system binds the other systems as it seeks to mobilize China’s military, economic, and social resources to defend or advance China’s sovereignty, security and development interests. The Party views China’s growing strength as only useful to the extent that the party-state can mobilize it. China views mobilization as the ability to use precisely the instrument, capability, or resource needed, when needed, for the duration needed. Within the PLA, the reforms in 2015-16 elevated defense mobilization to a department called the National Defense Mobilization Department (NDMD), which reports directly to the Central Military Commission (CMC). The NDMD plays an important role in this system by organizing and overseeing the PLA’s reserve forces, militia, and provincial military districts and below. This system also seeks to integrate the state emergency management system into the national defense mobilization system in order to achieve a coordinated military-civilian response during a crisis. Consistent with the Party’s view of international competition, many MCF mobilization initiatives not only seek to reform how China mobilizes for war and responds to emergencies, but how the economy and society can be leveraged to support China’s strategic needs for international competition.

Chinese Civil-Military Fusion Development Strategy – III

Development and Significance. The Party has explored the concept of leveraging or integrating the combined contributions of the military and civilian sectors since the PRC's founding. The current MCF concept initially took root in the early 2000s as the Party sought methods to enhance China's overall development. This led Party leaders to call for improving "military-civilian integration" that echoed the collaboration between the defense and civilian sectors that China observed in the United States and other developed countries. Implementation of these efforts stalled due to a lack of centralized government control and the organizational barriers that exist across the party-state. Coinciding with the 11th Five Year Plan (FYP) (2006-2010), China began replacing "military-civilian integration" with "military-civilian fusion." In 2007, Party officials publicly noted the change from "integration" to "fusion" was not merely cosmetic, but represented a "theoretical 'great leap' following a long period of trial and error."

Since that time, MCF's ambitions have grown in scope and scale as the Party has come to view it as a means to bridge China's economic and social development with its security development in support of the PRC's national strategy to renew China. As such, the Party has continued to elevate MCF's importance. In 2015, the CCP Central Committee elevated the MCF Development Strategy to a national-level strategy to serve as a "bridge" between the PRC's national development strategy and its national security strategy that seeks to build an "integrated national strategic system and capabilities," all of which support the PRC's goal of national rejuvenation.

Management and Implementation. The overall management and implementation of the MCF Development Strategy involves the most powerful organs in the party-state: the Politburo, the State Council (notably the National Development and Reform Commission), and the CMC. In addition to signifying its importance, the CCP Central Committee's elevation of the MCF Development Strategy to a national-level strategy also intended to overcome obstacles to implementation across the party-state.

This elevation also led to the establishment of the Central Commission for Military Civilian Fusion Development (CCMCFD) in 2017, chaired by General Secretary Xi Jinping, Premier Li Keqiang, several other members of the Politburo Standing Committee, two State Councilors, both CMC Vice Chairmen, 12 Ministry-level leaders, and others. The stated objective of the CCMCFD is to build China's "national strategic system and capabilities." This commission works to improve the "top-level design" of MCF and overcome impediments to implementation. The elevation of the MCF Development Strategy and the creation of the CCMCFD signals the importance that Party leaders place on MCF and the scope and scale of the strategy's ambitions.

MCF Linkages. Each MCF system entails linkages between dozens of organizations and government entities, including:

- > *Ministry-level organizations from the State Council:* Examples include the National Development and Reform Commission, Ministry of Foreign Affairs, Ministry of Industry and Information Technology, Ministry of Education, and key state entities such as the State Administration of Science and Technology in National Defense and others.
- > *Lead military organs subordinate to the Central Military Commission:* CMC Strategic Planning Office, Joint Political, Logistics, and Equipment Development Departments, as well as operational units and the regional military structure at the Military District and Sub-District levels; military universities *Other SOEs and quasi-private companies:* high profile examples include PRC high-tech corporations and important SOEs like China Ocean Shipping Company (COSCO), China National Offshore Oil Company, and major construction companies that have roles in OBOR projects as well as helping the PRC build out occupied terrain features in the South China Sea.
- > *Provincial governments:* In practice, many MCF efforts involve partnerships between provincial or city government entities and military district departments and PLA departments.

RAND Estimate of China's Dream International End State by 2050

Domain	Sample Objectives
Major powers	China is the global leader with the largest network of client states and predominant international influence; major powers maintain stable, cooperative ties with China under a permeable spheres-of-influence-type arrangement. Major powers manage their differences according to norms established by China, but all respect the primacy of China's interests and authority worldwide.
Periphery	China has become the predominant economic, political, and security power in the Indo-Pacific while coexisting with major powers, such as Japan and India. China leads a network of client states based primarily among developing countries in South, Southeast, and Central Asia.
Developing world	China has developed a political and security constituency of developing countries around the world, based mainly along the BRI routes in Eurasia, the Middle East, and Africa. Most of the developing world is integrated into BRI-related trade, investment, and infrastructure architecture led by China. China maintains clients, primarily along the BRI routes and into Latin America, that help protect Chinese interests and promote its authority.
Multilateral	The United Nations remains a key institution, but it has been renovated to uphold principles, norms, and values favored by China; established and newer Chinese-led regional and global multilateral relationships generally reflect Beijing's preferred norms, values, and clients.
Global governance/ domains	Chinese discourse is dominant in Asia and widely understood globally; Chinese norms, values, and preferences are predominant in the global management of space, cyber, law, and maritime domains. China acts as a provider of global goods, principally in collaboration with its clients.

RAND Estimate of Chinese “Victory” Condition in U.S.-China Relations

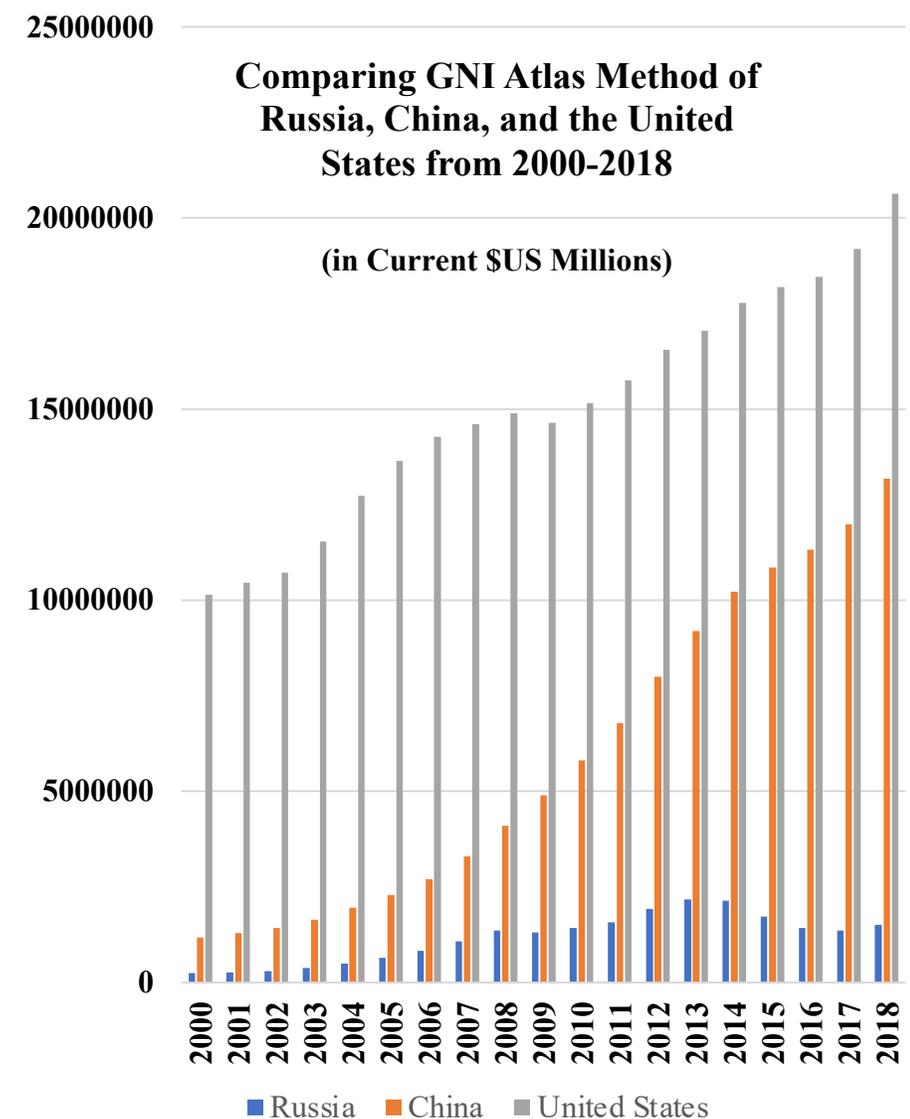
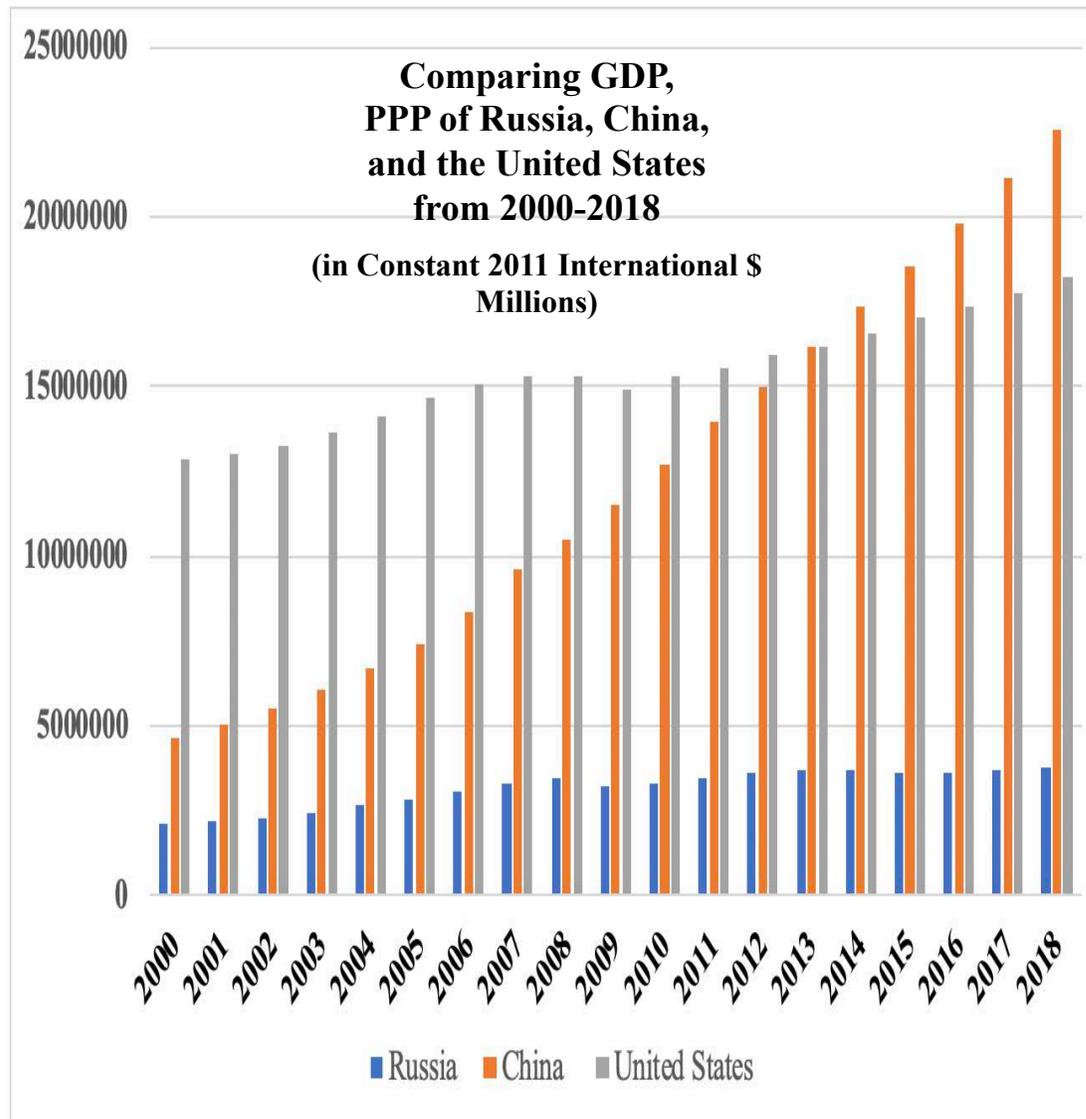
Condition	Explanation
United States and China avoid war	China and the United States maintain peaceful, stable relations despite the persistence of friction points and disputes. This does not preclude crises, proxy conflicts, and confrontations of a more limited scope, however, so long as these are deescalated effectively.
United States accepts Chinese international leadership	The United States defers to Chinese international leadership and behaves in a manner consistent with a position of inferiority. The United States agrees to support the norms and values upheld by China as the informal basis for international relations. The United States largely accepts China’s leadership role in multilateral organizations.
United States refrains from harming Chinese interests	The United States agrees to revise policies to accommodate Chinese preferences on Taiwan and other core interests. The United States refrains from interfering in China’s internal affairs. U.S. involvement in confrontations between China and U.S. allies and partners in Asia is limited at most to symbolic gestures. The United States respects the interests of China’s client states and generally refrains from policies that antagonize Beijing.
China has gained primacy in Eurasia, Middle East, and Africa	China’s network of client states predominates in Eurasia, the Middle East, and Africa. The United States participates in the economic and political life of those areas on terms acceptable to China. Chinese success in leading integration along BRI routes leaves the United States in a position of disadvantage, which Washington has little ability to reverse.
U.S. primacy reduced to Americas	China defers to the United States in its leadership in the Americas, although it expects the United States to respect Chinese interests and authority and avoid harming the interests of Chinese client states in that region.
Differences managed according to Chinese norms	The United States and China manage their differences in bilateral and multilateral institutions and venues in accordance with norms of diplomatic relations upheld by China.
Cooperation on shared concerns	Despite differences and disagreements, the two countries cooperate on shared concerns and coordinate with one another in bilateral and multilateral institutions and venues approved by China.

Comparative UN Human Development Rankings in 2019

Category	U.S.	China	Russia
Overall Country Ranking	17	85	52
Human Development Index, (HDI) (Value)	0.926	0.761	0.824
Life Expectancy in Years	78.9	76.9	72.6
Expected Years of Schooling	16.3	14.0	15.0
Mean Years of Schooling	13.4	8.1	12.2
Gross National Income (GNI) Per Capita (PPP-US\$)	63,826	16,057	26,157

Source: *UN Human Development Rankings 2021*, United Nations, <http://hdr.undp.org/en/content/latest-human-development-index-ranking>.

Comparative Size of Economy



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

China Is the World's Manufacturing Superpower

Top 10 countries by share of global manufacturing output in 2019*



* output measured on a value-added basis in current U.S. dollars

Source: United Nations Statistics Division

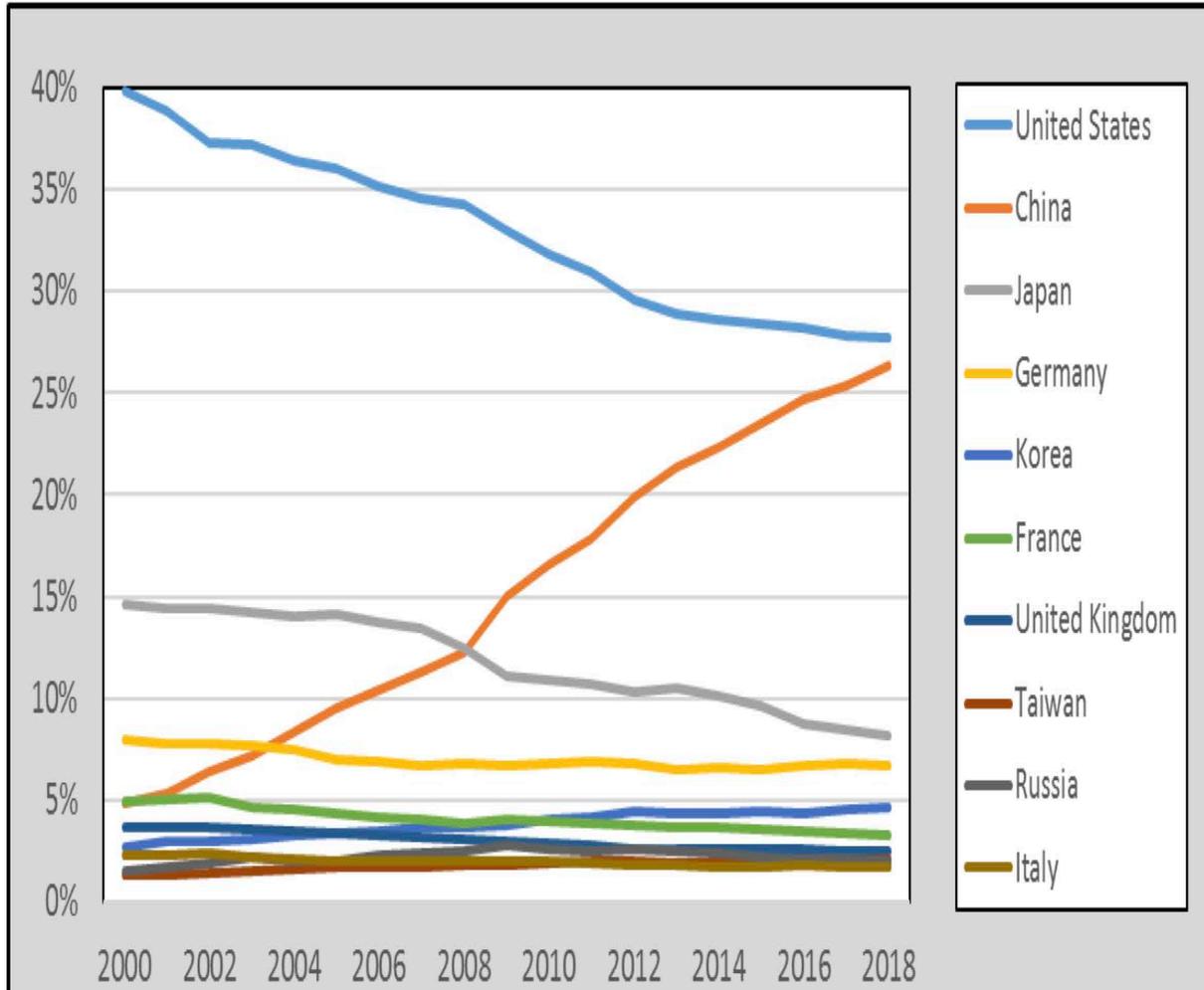


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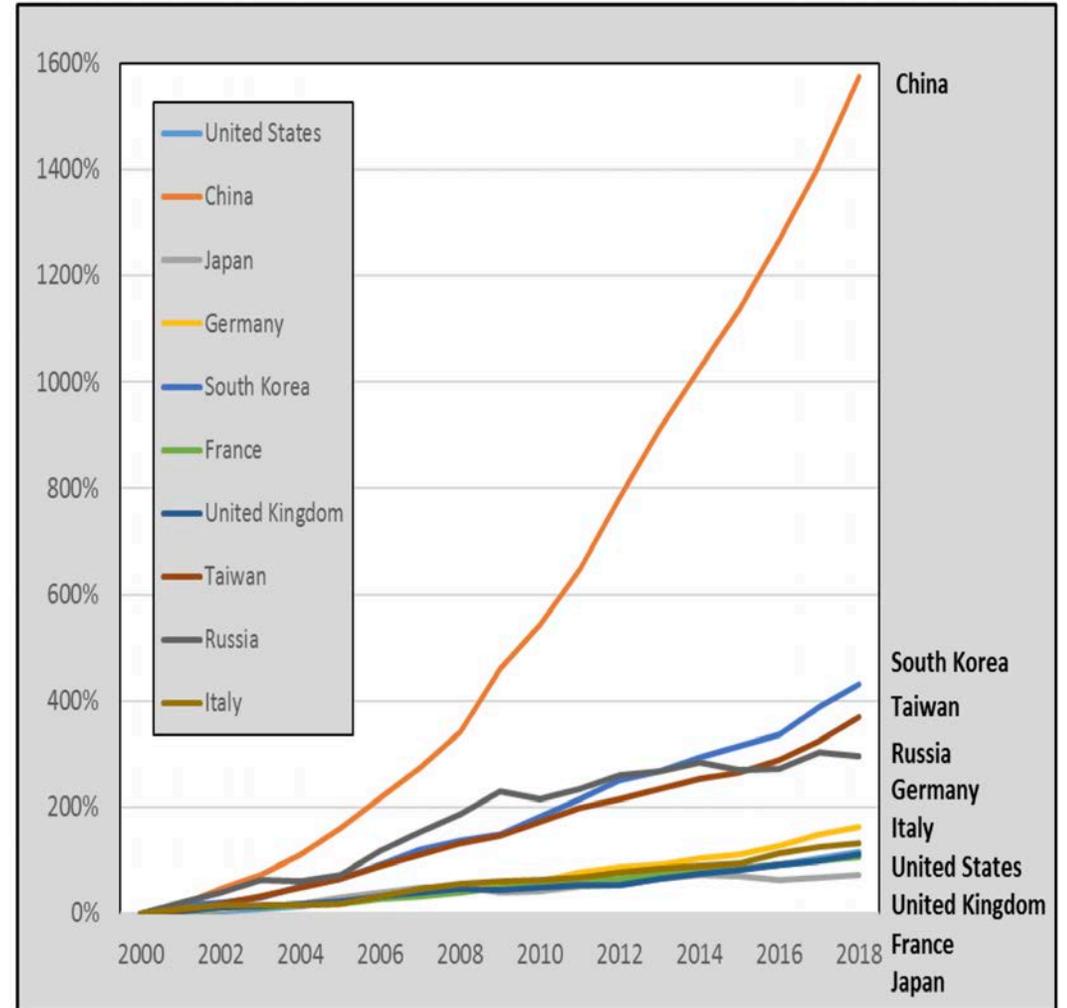
CRS Estimate of Comparative R&D Spending

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

Share of Global R&D of Selected Countries, 2000-2018

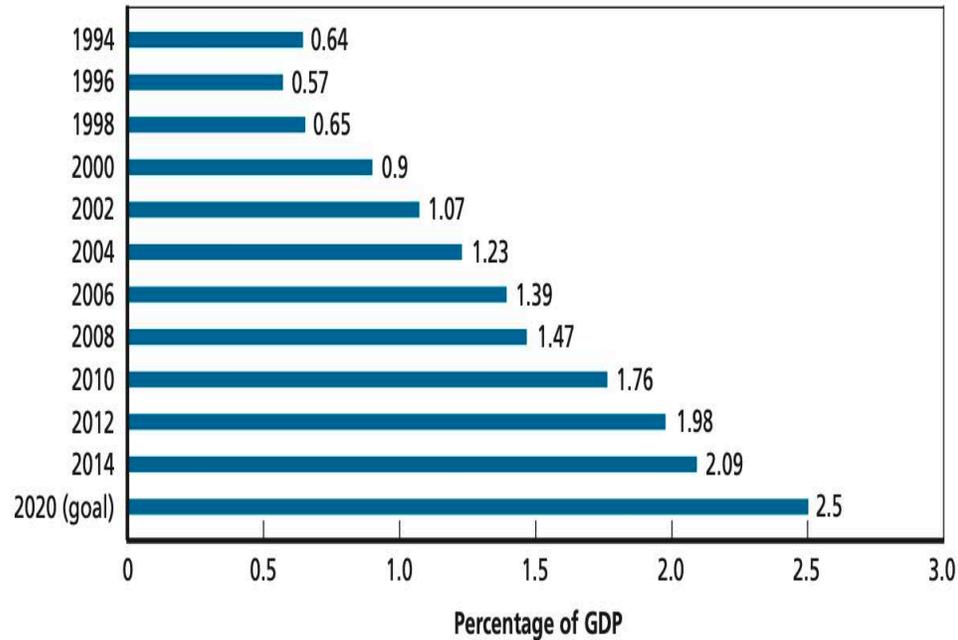


Growth in R&D Expenditures Since 2000 for Selected Countries, 2000-2018



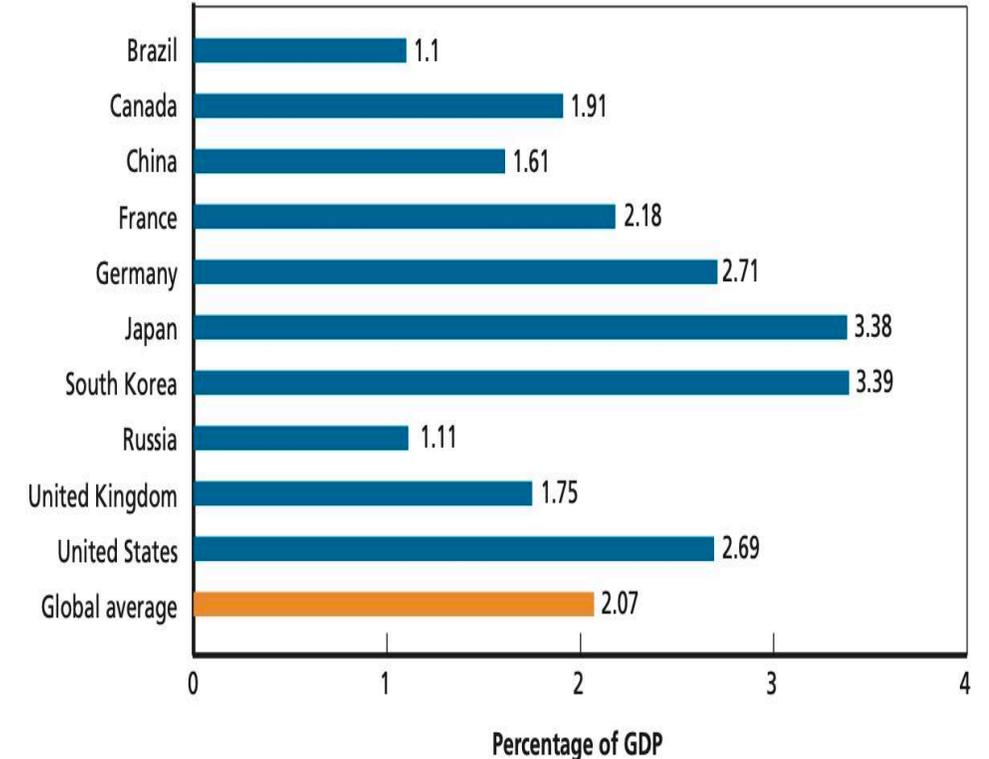
RAND Estimate of Trends in R&D Spending

China's Gross Expenditures on Research and Development as a Percentage of GDP, 1994–2014



SOURCES: Original data from National Bureau of Statistics and the Ministry of Science and Technology, *China Statistical Yearbook on Science and Technology*, 1995–2015 yearly editions, Beijing: China Statistics Press, 1995–2015; chart adapted from Tai Ming Cheung, Thomas Mahnken, Deborah Seligsohn, Kevin Pollpeter, Eric Anderson, and Fan Yang, *Planning for Innovation: Understand China's Plans for Technological, Energy, Industrial, and Defense Development*, University of California, 2016, p. 60.

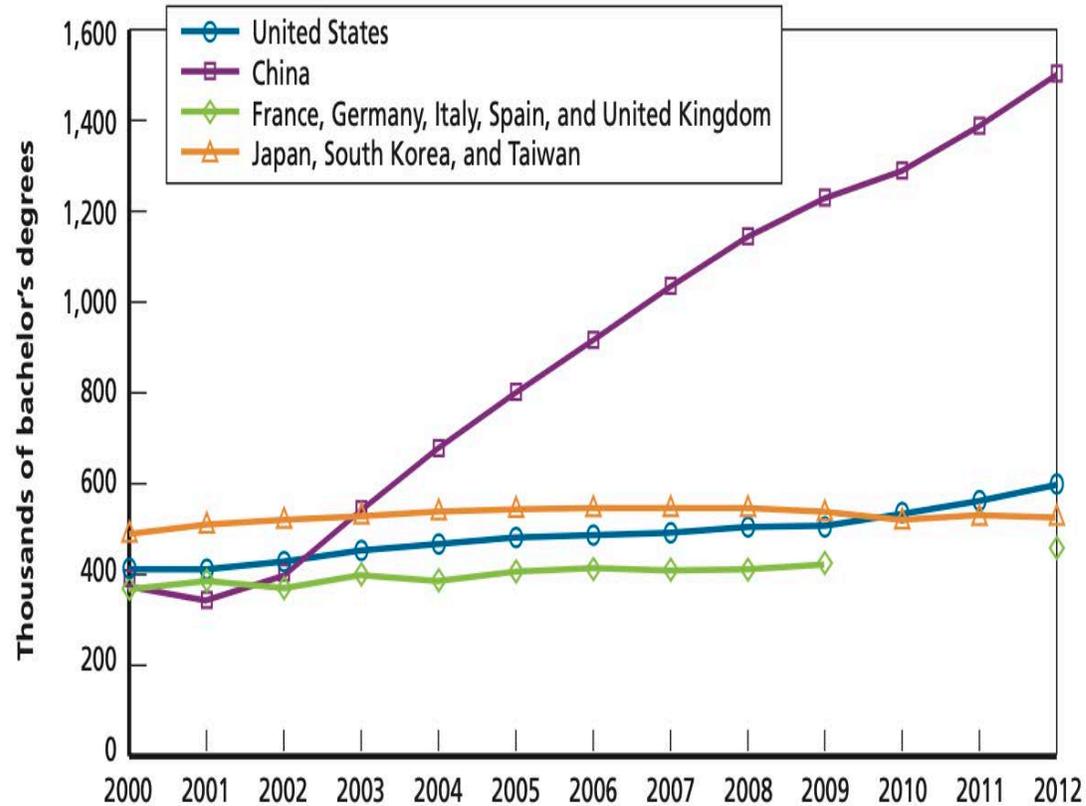
R&D Expenditures as a Percentage of GDP for Selected Countries, 2005–2012 Average



SOURCE: Cheung et al., 2016; data from World Bank, 2017.

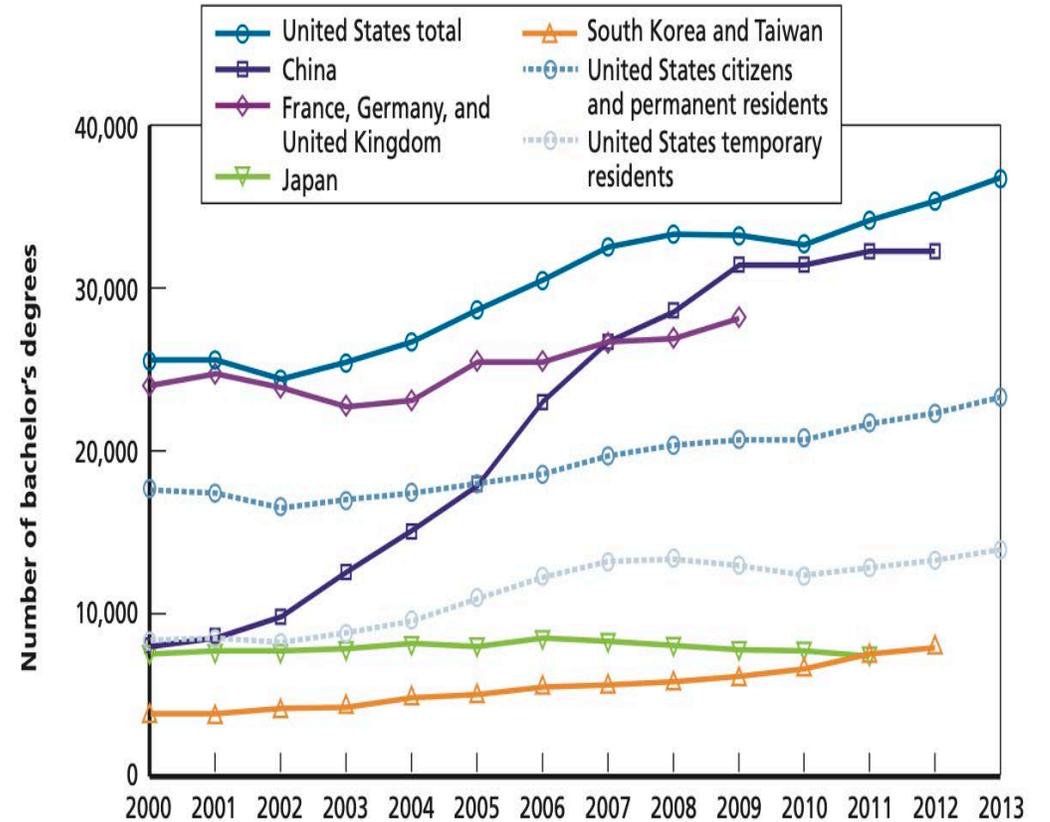
RAND Estimate of Comparative Levels of Technical Education

Science and Engineering Bachelor's Degrees by Location, 2000–2012



SOURCES: National Science Board, *Science and Engineering Indicators 2016*, 2016, p. O-7; OECD, *Online Education Database*, database, updated September 2017b.

Doctoral Degrees in Science and Engineering by Location, 2000–2013



SOURCES: National Science Board, 2016, p. O-10; OECD, 2017b.

“Dual Use” Civil-Military Science & Technology – I

China’s S&T Goals and Plans. The PRC has issued an array of major national plans over the last decade that stress indigenous innovation and the rapid development of strategic S&T sectors, such as information and communications technology (ICT), high-end manufacturing, quantum technology, alternative energy, and biotechnology. The PRC’s 13th Five-Year Plan calls for accelerating research on “majorly influential disruptive technologies” and the pursuit of “leapfrog” S&T developments in order to win “a competitive advantage in the new round of industry transformation.” While slowly increasing funding for basic research, China has made comprehensive efforts to grow the country’s inventive capabilities over the last decade.

- The 2017 National Artificial Intelligence Plan describes steps for China to become the “world’s major AI innovation center” by 2030 and calls for the country to accelerate the integration of AI with the economy, society, and national defense. The plan foresees a great expansion in the “breadth and depth of AI applications in... national defense construction.”
- Other plans address the development of various sectors of China’s robust Internet ecosystem, including cloud computing, big data, e-commerce, and next-generation broadband wireless communications networks, including fifth-generation (5G) wireless networks. Due to information sharing requirements with the PRC’s security services as required by PRC laws, worldwide expansion of 5G networks by PRC companies will challenge the security and resiliency of other countries’ networks.

The commercial sector increasingly drives breakthroughs in advanced dual-use technologies, and PRC companies have research efforts aimed at generating breakthroughs in emerging technologies. China continues to execute “Made in China 2025,” an ambitious industrial policy centered around “smart manufacturing,” that seeks to create a vanguard of corporations in the PRC that are global leaders in ten strategic industries. These industries include new generation information technology, high-grade machine tooling and robotics; aerospace equipment; marine engineering equipment and high-tech ships; advanced rail transportation equipment; new-energy automobiles; electric power equipment; agricultural equipment; new materials; and biomedicine and high-tech medical devices. The plan stresses the need to replace imported technology with domestically produced technology, a goal that corresponds with China’s desire to reduce its reliance on other nations and develop a fully indigenous defense sector. In addition to presenting an economic challenge to nations that export high-tech products, the plan directly supports China’s military modernization goals by stressing proprietary mastery of advanced dual-use technologies. China’s leaders have used less inflammatory rhetoric regarding “Made in China 2025” in response to concerns from advanced industrial countries regarding the PRC’s licit and illicit acquisition of intellectual property pursuant to that policy.

Heavy Government and Corporate Sector Investment. The PRC has mobilized vast resources to fund research and subsidize companies involved in strategic S&T fields while pressing private firms, universities, and provincial governments to cooperate with the military in developing advanced technologies. Although China remains reliant on certain types of foreign technology, the country’s decades-long execution of a strategy of advancing domestic S&T and R&D through large-scale technology transfer has deepened the expertise of scientists and engineers in the PRC and placed them at, or near, the forefront of many scientific fields.

- The PRC’s state investment funds established to support priority industries have marshalled hundreds of billions of dollars in capital.
- China expects to field an exascale computer based on domestically produced technology by 2020, ahead of the United States, the European Union, and Japan.
- China conducted the first quantum-secured intercontinental videoconference in September 2017 and plans to have a satellite-enabled, global, quantum-encrypted communications capability operational by 2030. China is also reportedly building the world’s largest quantum research facility slated to open in the city of Hefei in 2020. China already has a 2,000 km secure quantum communication ground line between Beijing and Shanghai and plans to expand the line across China.
- In 2019, scientists in the PRC claimed to have developed a human brain-computer interface to send targeting information directly to a search-and-rescue drone. Also in 2019, a separate group of scientists claimed to have developed a brain-computer interface that enabled human-thought control of a rat in a maze, signifying China’s interest advanced human-machine teaming technologies.

“Dual Use” Civil-Military Science & Technology – II

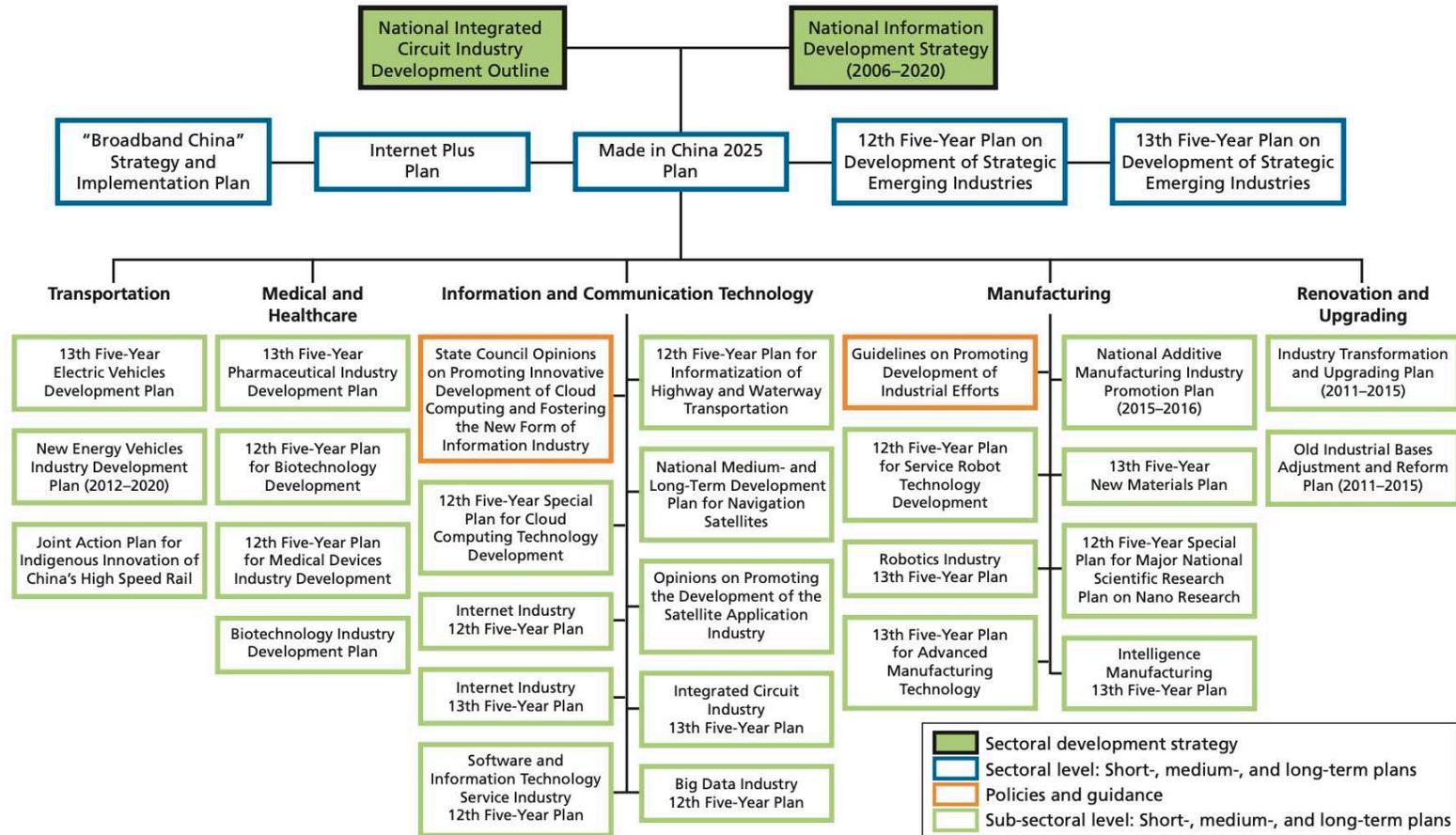
China’s private sector, led by Internet companies Baidu, Alibaba, and Tencent and telecommunications equipment manufacturers Huawei and Zhongxing Telecommunications Company Ltd. (ZTE), is driving the development of emerging technologies, such as facial recognition and 5G, by establishing innovation centers and funding technology startups, or in the case of 5G, competing to build the world’s next-generation networks. PRC technology companies are also expanding into overseas markets, in some cases by offering smart city technologies, a development that could increase their access to foreign talent and data.

- > In 2017, China designated Alibaba, Baidu, iFlytek, and Tencent as the country’s official “AI Champions,” with SenseTime joining in 2018. This designation gives these companies the lead for setting national technical standards and enables extensive cooperation with China’s national security community. In 2019, China added ten new companies, including Huawei, Hikvision, Megvii, and Yitu, to the champions list.
- > In November 2017, the PRC startup Yitu won a U.S. government-sponsored competition involving facial recognition technology. Yitu, along with other PRC AI and facial recognition firms like SenseTime, Megvii, and Deepglint, reportedly received hundreds of millions of dollars in investments in 2017. China is the world’s largest market for video surveillance technologies.
- > The 2017 National Intelligence Law requires PRC companies, such as Huawei and ZTE, to support, provide assistance, and cooperate in China’s national intelligence work wherever they operate.

Potential Military Applications. China’s pursuit of an innovation-driven economic model supports its goal of building a “modern and specialized military capable of fighting and winning wars in the information age.” China intends to harness its commercial technology sector to accomplish the PLA’s goal of intelligentized warfare. The PLA has reorganized a key military think tank—the Academy of Military Sciences (AMS)—and reasserted this organization’s leadership of military science research programs. The CMC has tasked the revamped AMS to drive defense innovation, conduct enhanced academic outreach, and to ensure that the PLA’s warfighting theory and doctrine fully capitalize on disruptive technologies like AI and autonomous systems.

- Researchers at the China Academy of Sciences reportedly developed an early version of an AI- powered decision-support system that the PRC Ministry of Foreign Affairs is field-testing with its diplomats. The system uses deep learning and a neural network for “geopolitical environment simulation and prediction.”
- The PRC is pursuing a number of advanced military capabilities with disruptive potential such as hypersonic weapons, electromagnetic railguns, directed energy weapons, and counterspace capabilities. The country’s effort to build national corporate champions that achieve rapid market dominance across a range of frontier technologies directly complements the PLA’s modernization efforts and carries serious military implications. Given China’s willingness to deploy emerging technologies rapidly and at massive scale as well as China’s focus on MCF, the PLA would likely quickly benefit from any scientific breakthroughs with military utility. Potential military applications of some emerging technologies include:
- *AI and Advanced Robotics:* enhanced data exploitation, decision support, manufacturing, unmanned systems, and command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR).
- *Semiconductors and Advanced Computing:* enhanced cyber operations and weapons design, and shortened R&D cycles.
- *Quantum Technologies:* secure global communications, enhanced computing and decryption capabilities, undersea target detection, and enhanced submarine navigation.
- *Biotechnology:* enhanced warfighter selection and performance, advanced human-machine teaming.
- *Hypersonic and Directed Energy Weapons:* global strike and defeat of missile defense systems, anti- satellite (ASAT)/missile/ unmanned aircraft system capabilities.
- *Advanced Materials and Alternative Energy:* improved military equipment and weapon systems.

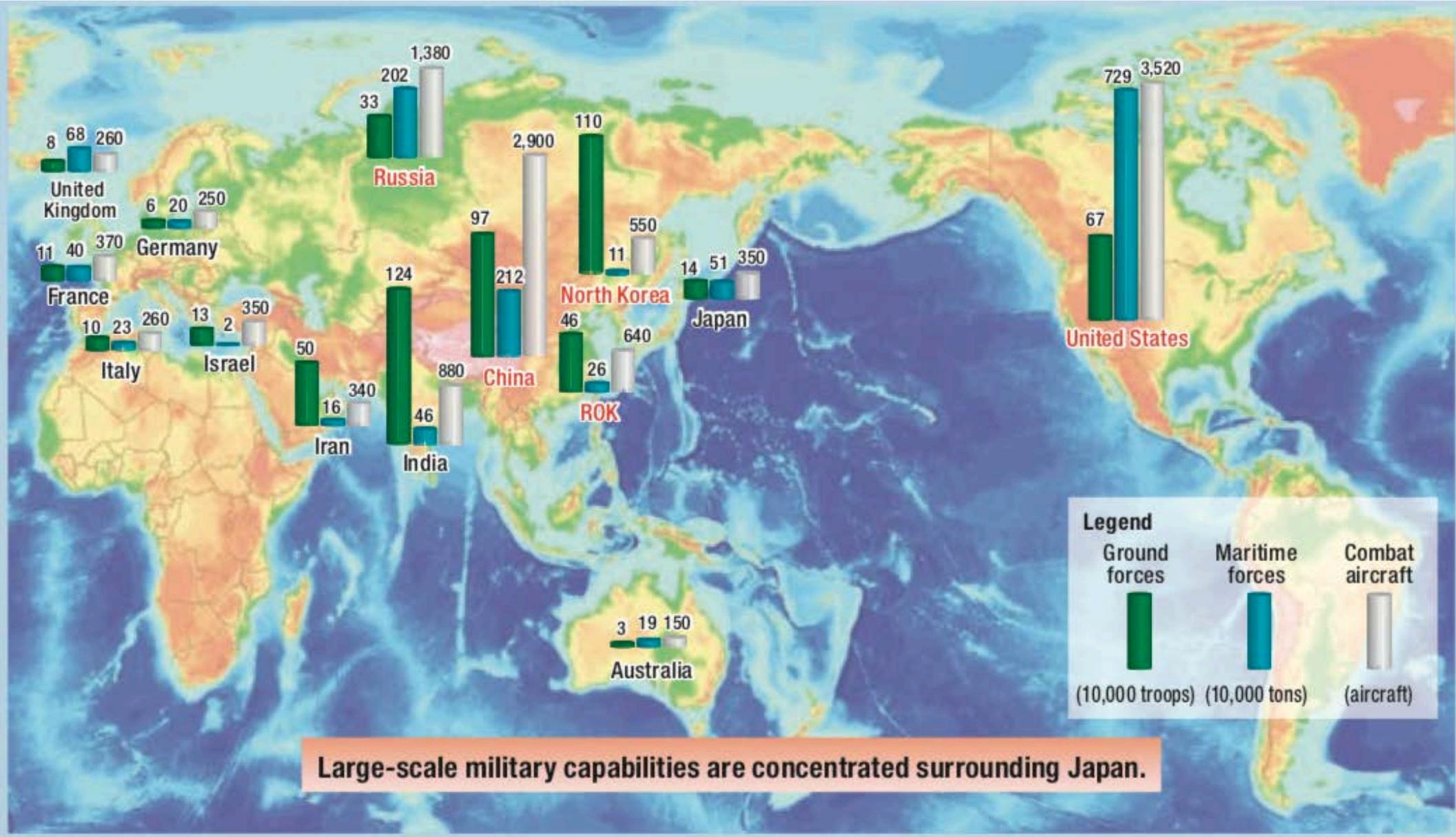
RAND Estimate of Key Areas of Chinese Civil Development Plans and Priorities with Impact of Strategic Capability to Compete



SOURCE: Cheung et al., 2016.

China's Growing Global Civil- Military Presence and Influence

Japanese View of Global Security Environment: 2021



Source: Japanese Ministry of Defense, *Defense of Japan*, 2020, p. 15.

Non-War Military Activities (NWMA)

PLA writings divide military operations into two categories: war and non-war. The PLA's concept of non-war military activities (NWMA) is an expansive and diverse set of military operations ranging from humanitarian assistance and disaster relief (HA/DR) to suppressing domestic unrest to maritime rights protection. PLA writings describe NWMA as serving a variety of political purposes, occurring at varying intensities and durations, *and may include the threat of violence or the use of violence from low levels to levels approaching war.*

According to PLA writings, NWMA are an important “strategic means” for the military to serve the national political interest. Additionally, the PLA views NWMA as an effective way for it to support and safeguard China's development, as a means to expand the PRC's global interests, and an opportunity to gain valuable operational experience.

NWMA can be conducted internationally or domestically and encompass activities in multiple domains. NWMA can notably include operations in which the PLA uses coercive threats and/or violence below the level of armed conflict against states and other actors to safeguard the PRC's sovereignty and national interests.

NWMA can also blend military and law enforcement activities including for maritime rights protection, border and coastal defense, air and sea control, deterrence operations, suppression of domestic unrest, and other forms of stability maintenance operations. NWMA also includes military diplomacy, HA/DR, counterterrorism, counterpiracy, counterdrug, peacekeeping, and noncombatant evacuation operations.

In the past, PRC official writings have described aspects of NWMA as military operations other than war (MOOTW).

The Security Aspects of “One Belt, One Road” – I

The CCP seeks to create international conditions that are conducive to the PRC’s continued development and that are compatible with its aspirations for China’s rejuvenation as a “great modern socialist country.” CCP leaders believe that the PRC’s global activities, including the PLA’s growing global presence, contribute to creating a “favorable” international environment for China’s national rejuvenation. This evolving approach parallels the Party’s view that the initial decades of the 21st century represent a “period of strategic opportunity” to focus on building China’s composite national power.

The CCP has tasked the PLA to develop the capability to project power outside China’s borders and immediate periphery to secure the PRC’s growing overseas interests and advance its foreign policy goals. China is focusing efforts to develop security relationships with key countries along its periphery and beyond the Second Island Chain. In addition to promoting the One Belt, One Road (OBOR) initiative, China almost certainly will seek new cooperative security partnerships with foreign nations, including the expansion of the PLA’s global military attaché presence and access, and ensuring more reliable, cost-effective, and diverse sources of energy and other strategic resources.

The PRC probably will continue to expand the PLA’s global military presence through humanitarian assistance, naval escorts and port calls, UN peacekeeping operations (PKO), arm sales, influence operations, and bilateral and multilateral military exercises. Through these engagements, Beijing can strengthen and expand its diplomatic relationships to advance its foreign policy goals, to include shaping the international system to align with the PRC’s interests, and allow the PLA to gain operational experience.

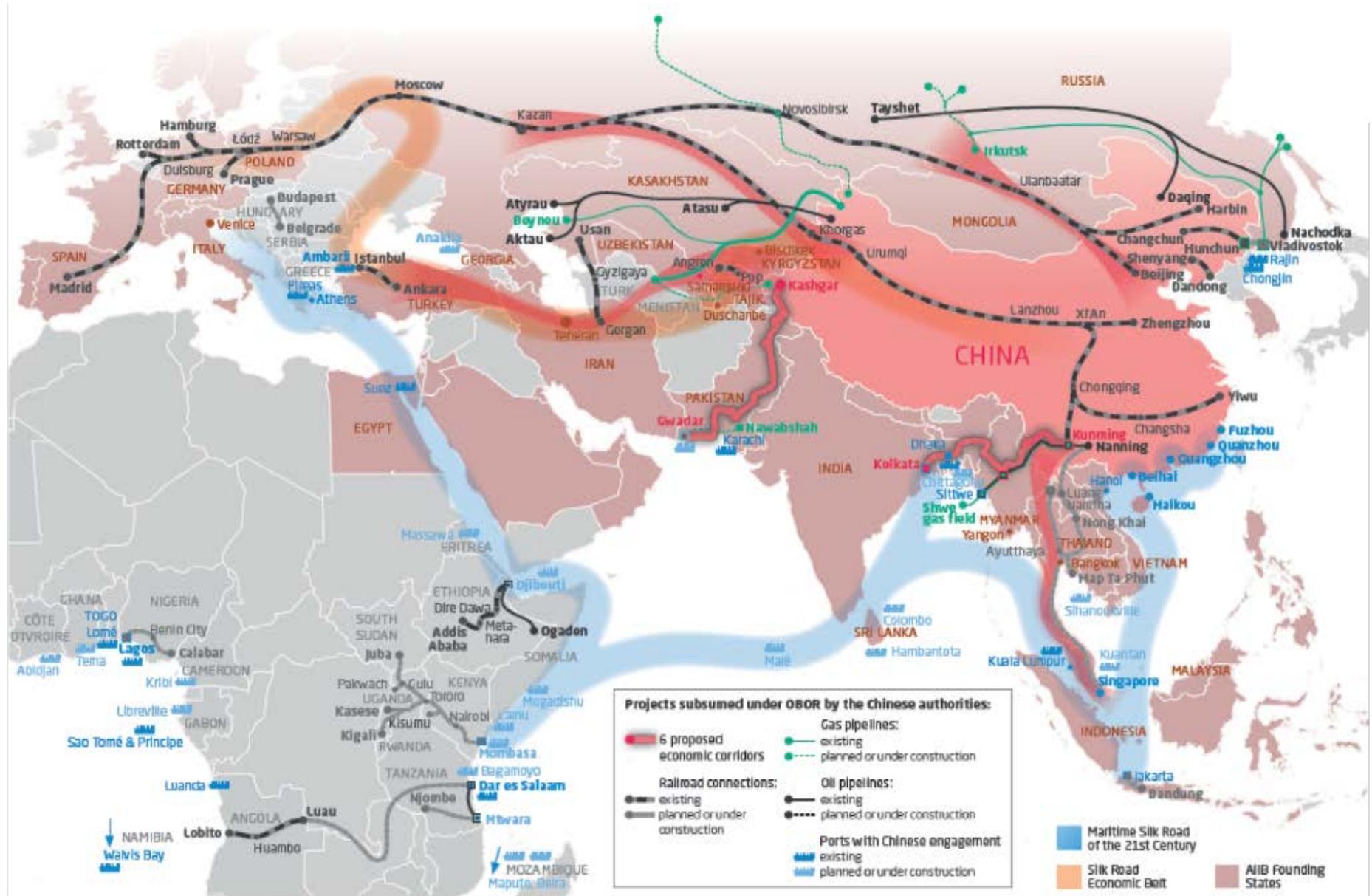
First announced in 2013, China’s OBOR initiative is a signature foreign and economic policy advanced by President Xi Jinping. Beijing uses OBOR to support its strategy of national rejuvenation by seeking to expand global transportation and trade linkages to support its development and deepen its economic integration with nations along its periphery and beyond. China implements OBOR by financing, constructing, and developing transportation infrastructure, natural gas pipelines, hydropower projects, digital connectivity, and technology and industrial parks worldwide. PRC leaders have touted the economic benefits of OBOR and invited foreign partners to join, promising wealth and prosperity to those nations that participate. Since its creation, over 125 countries have signed OBOR cooperation documents. OBOR-related spending is difficult to estimate because there is no comprehensive list of projects.

In support of its national strategy, the PRC pursues a range of goals through OBOR to include strengthening its territorial integrity, increasing its energy security, and expanding its international influence. Given the Party views the PRC’s security and development interests as complementary, the PRC leverages OBOR to invest in projects along China’s western and southern periphery to improve stability and diminish threats along its borders. Similarly, OBOR projects associated with pipelines and port construction in Pakistan intend to decrease China’s reliance on transporting energy resources through strategic choke points, such as the Strait of Malacca.

The PRC attempts to use the economic influence it accrues through OBOR to encourage participating countries to support Beijing’s priorities and objectives on a range of other matters. The PRC applies military, intelligence, diplomatic, and economic tools to counter perceived threats to OBOR’s long-term viability, although the party-state lacks the expertise necessary to assess comprehensive risks in most OBOR participating countries. China’s leaders have tried to counteract negative perceptions of OBOR to attract potential investors as well as reduce suspicions of Beijing’s intentions. In the wake of domestic and international criticism of OBOR, China has attempted to appear more responsive to partner-country input, and open to wider participation. In April 2019, China hosted leaders from 37 countries and delegates from over 150 countries to the second Belt and Road Forum in Beijing. During the forum, PRC leaders attempted to respond to criticism and concerns over corruption, debt sustainability, environmental effects, and the CCP’s underlying goals associated with OBOR.

China's Belt and Road "Civil" Efforts

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.



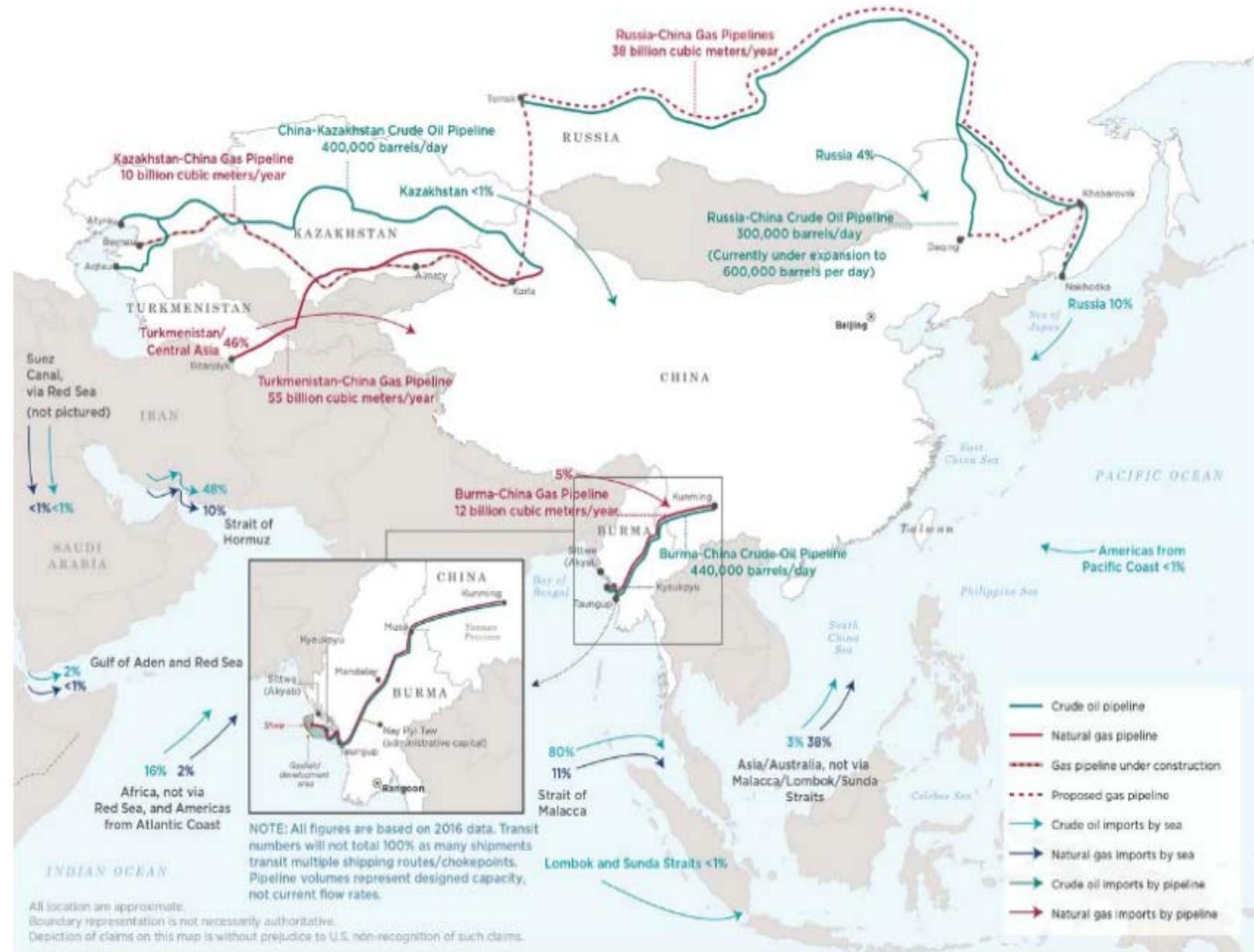
China's Growing Global Influence



Source: Reformatted from Lt. General Mike Minihan, "United States Indo Pacific Command," NDU WMD, July 7, 2020, <https://us-iti.bbcollab.com/collab/ui/session/playback/load/7cf6bb5c7aaa4aa9930d7bd7b8df0b00>; and FAS https://fas.org/wp-content/uploads/2020/09/PACOM2020_NDU-WMD-Brief2020_Minihan070720.pdf.

China's Energy and Maritime Security

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*, p. 44, May 15, 2018, https://www.defense.gov/Portals/1/Documents/pubs/2017_China_Military_Power_Report.PDF.



Chinese Influence Operations

- The PLA has emphasized the development of its “Three Warfares” concept—comprised of psychological warfare, public opinion warfare, and legal warfare—in its operational planning since at least 2003.
- The PRC conducts influence operations to achieve outcomes favorable to its strategic objectives by targeting cultural institutions, media organizations, business, academic, and policy communities in the United States, other countries, and international institutions.
- The CCP seeks to condition domestic, foreign, and multilateral political establishments and public opinion to accept Beijing’s narratives.
- CCP leaders probably consider open democracies, including the United States, as more susceptible to influence operations than other types of governments.

The PLA has emphasized the development of its “Three Warfares” concept—encompassing psychological warfare, public opinion warfare, and legal warfare—in its operational planning since at least 2003. Psychological warfare uses propaganda, deception, threats, and coercion to affect the adversary’s decision-making, while also countering adversary psychological operations. Public opinion warfare disseminates information for public consumption to guide and influence public opinion and gain support from domestic and international audiences. Legal warfare uses international and domestic laws to gain international support, manage political repercussions, and sway target audiences. China views the cyberspace domain as a platform providing opportunities for influence operations, and the PLA likely seeks to use online influence activities to support its overall “Three Warfares” concept and to undermine an adversary’s resolve in a contingency or conflict.

The PRC conducts influence operations by targeting cultural institutions, media organizations, business, academic, and policy communities in the United States, other countries, and international institutions. CCP leaders probably consider open democracies, including the United States, as more susceptible to influence operations than other types of governments. The PRC’s influence operations are coordinated at a high level within the party-state and executed by a range of actors, such as the United Front Work Department, the Propaganda Ministry, the State Council Information Office, the PLA and the Ministry of State Security (MSS). The CCP has a long history of using influence operations for domestic purposes, including “United Front Work” prior to the formulation of the PRC and onwards, to co-opt and align non-Party actors in society. The CCP utilizes United Front actors to advocate for the PRC’s sovereignty interests within China and abroad.

... The CCP seeks to condition domestic and foreign publics to accept Beijing’s narratives surrounding its priorities like OBOR and South China Sea territorial and maritime claims. Furthermore, the PRC seeks to harness academia and educational institutions, think tanks, and state-run media to advance its soft power campaign in support of the PRC’s interests. For example, the PRC uses its citizens studying abroad and academic organizations to spread the Party’s narrative on Tibet and the Dalai Lama. Chinese Students and Scholars Associations and Confucius Institutes organize events to support the PRC’s sovereignty claims. They also organize protests and lodge complaints against academic institutions that fail to comport with the Party’s narratives.

The PRC’s foreign influence activities also focus on establishing and maintaining influence with power brokers within foreign governments to promote policies that Beijing views will facilitate its national rejuvenation, despite the PRC’s public position that it does not interfere in the internal affairs of other countries. China’s diplomatic outreach stresses building personal rapport with influential people, providing assistance, and emphasizing “win-win cooperation” through trade and diplomacy. This approach allows China to offer expedited, small-scale accomplishments to partners abroad, often in exchange for seemingly symbolic gestures of support to the PRC’s long-term strategic goals. Some initiatives such as the Forum on China-Africa Cooperation (FOCAC), the China-Arab States Cooperation Forum, the “17+1” initiative between China and 17 Central and Eastern European countries, and the Belt and Road Forum.

Atlantic Council Ratings of Formal Bilateral Influence Capacity – I

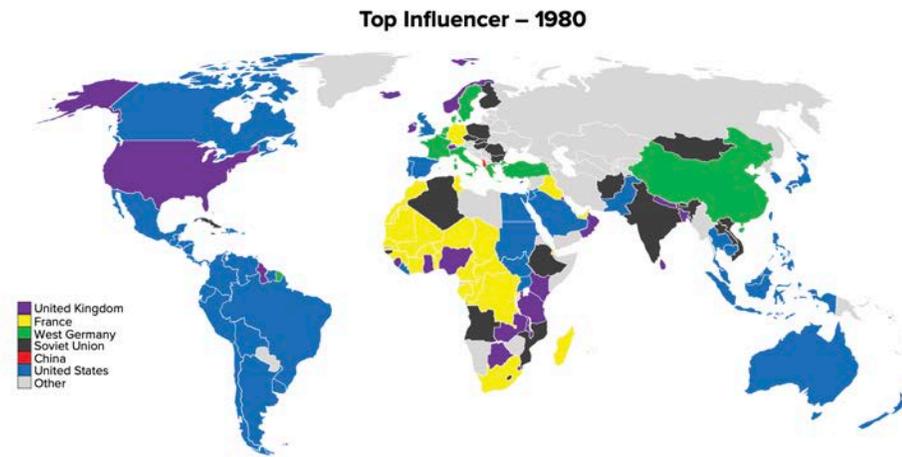


Figure 2: Top influencer in each country, 1980.

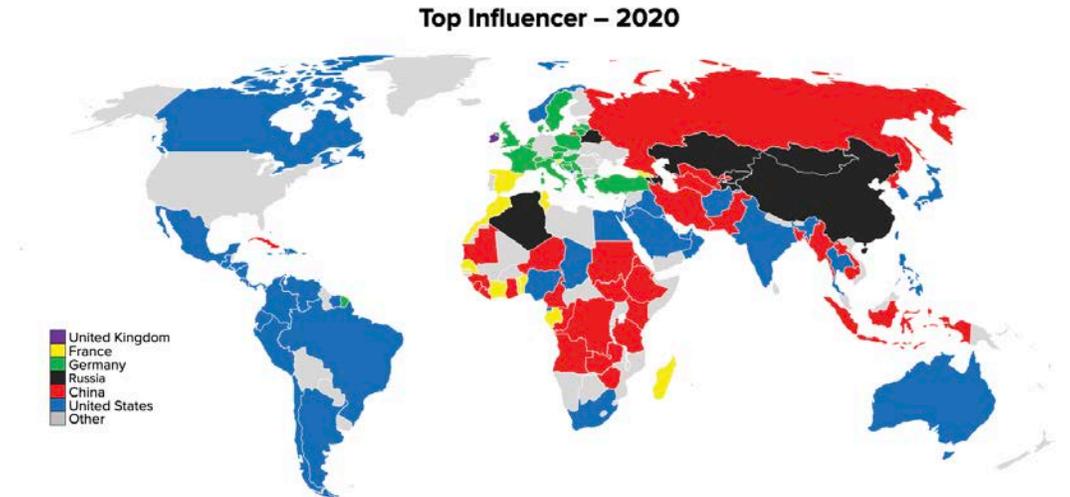


Figure 1: Top influencer in each country, 2020.



Figure 3: Top influencer in each country, 2000.

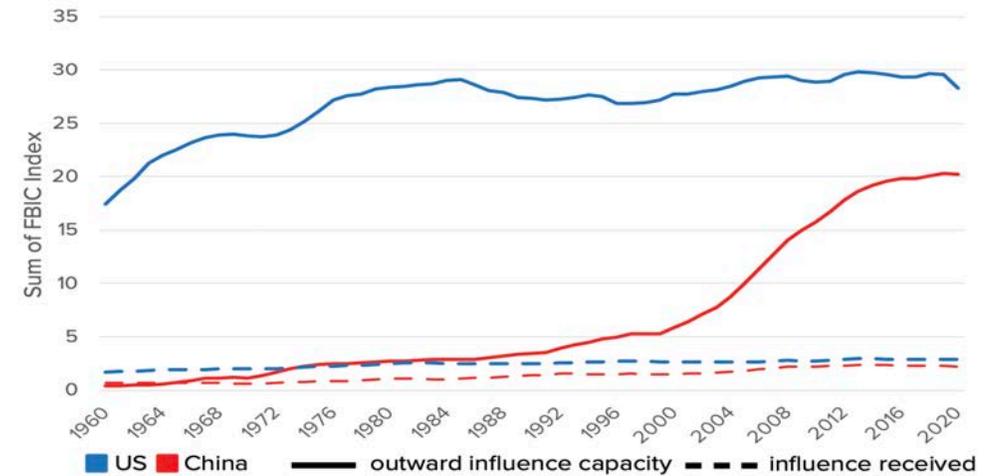


Figure 4: Sum of outward and inward FBIC Index scores for China and the United States.

Atlantic Council Ratings of Formal Bilateral Influence Capacity – II

Figure 1 shows this for six historically influential countries for the year 2020. The United States is the most influential country across the Western Hemisphere, and Germany is the top-ranked influencer across much of Europe, while Chinese influence has spread across much of Southeast Asia and Africa. Russia is the top-influencer primarily in Central Asia, though its influence capacity also spills over into Belarus, its much smaller and highly dependent neighbor, and into Algeria, the third largest importer of Russian arms over the past half-decade. Meanwhile, the influence of previous colonial powers is much more limited, with French influence scattered across North, West, and Southern Africa, and the UK displaying the top influence only in Ireland.

Figures 2 and 3 show these patterns across time. In 1980, the world saw much more influence from traditional colonial powers, with French influence stretching across Africa and influence from the United Kingdom spread around the world. The influence of the Soviet Union was also much more pronounced, as was influence from the United States in most of East and Southeast Asia. By the year 2000, the geopolitical environment had shifted once again. French influence across Africa had declined, and influence from Russia was more consolidated across Eastern Europe and Central and South Asia. Chinese influence had started to emerge at this point, with growth in key emerging partners like Iran and Sudan.

The changing structure of the international system away from its unipolar moment in the years following the Cold War has been the focus of much policy-oriented research. The rise of China is unmistakable, with overall economic activity growing from \$937 billion in 1990 to \$13.3 trillion by 2020,¹⁴ military spending increasing from \$23 billion in 1990 to \$273 billion by 2020, and population in extreme poverty declining from 66 percent in 1990 to less than 1 percent by 2020... The growth of China's relational power is also reflected in its FBIC Index scores, showing a cumulative increase from a global summed value of three in 1990 to over twenty today. Meanwhile, US values have remained relatively flat from the 1980s to the present, with some slight reductions over the past few years. See *Figure 4*, which compares the outward influence capacities of China and the United States from 1960 through 2020 as well as the influence received in each country.

PEW Poll of Outside Views of China: 2002-2021 – I

Large majorities in most places have negative opinions of China

% who have an **unfavorable** view of China

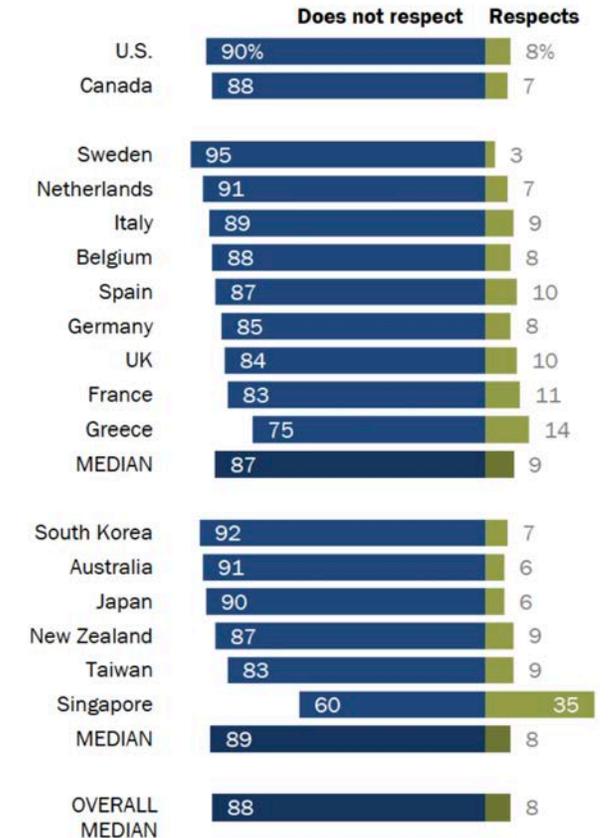
	Most unfavorable																Least unfavorable	
	'02	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16	'17	'18	'19	'20	'21
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
U.S.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	73	76
Canada	-	27	-	37	-	36	-	-	-	45	-	48	40	40	45	67	73	73
Sweden	-	-	-	40	-	-	-	-	-	-	-	-	59	49	52	70	85	80
Netherlands	-	34	-	-	-	-	-	-	-	-	-	-	43	42	45	58	73	72
Germany	-	37	33	54	68	63	61	59	67	64	64	60	60	53	54	56	71	71
Belgium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	71	67
France	-	42	41	51	72	60	59	49	60	58	53	49	61	52	54	62	70	66
UK	-	16	14	27	36	29	35	26	35	31	38	37	44	37	35	55	74	63
Italy	-	-	-	61	-	-	-	-	64	62	70	57	61	59	60	57	62	60
Spain	-	21	38	43	56	41	38	39	46	47	55	50	56	43	48	53	63	57
Greece	-	-	-	-	-	-	-	-	38	37	46	-	37	40	48	32	-	42
Japan	42	-	71	67	84	69	69	61	84	93	91	89	86	83	78	85	86	88
Australia	-	-	-	-	40	-	-	-	-	35	-	33	39	32	47	57	81	78
South Korea	31	-	-	42	49	54	56	-	-	50	42	37	-	61	60	63	75	77
Taiwan	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	69
New Zealand	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	67
Singapore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	34

Note: Prior to 2020, U.S. surveys were conducted by phone. See topline for results.
 Source: Spring 2021 Global Attitudes Survey, Q4b.
 "Large Majorities Say China Does Not Respect the Personal Freedoms of Its People"

PEW RESEARCH CENTER

Nearly all in publics surveyed say China disregards its people's freedoms

% who say the government of China ___ the personal freedoms of its people



Note: Those who did not answer are not shown.
 Source: Spring 2021 Global Attitudes Survey, Q6a.
 "Large Majorities Say China Does Not Respect the Personal Freedoms of Its People"

PEW Poll of Outside Views of China: 2002- 2021 – II

Unfavorable views of China remain at or near historic highs in many places

% who have an **unfavorable** view of China



Note: Prior to 2020, U.S. surveys were conducted by phone. See topline for results.

Source: Spring 2021 Global Attitudes survey, Q4b.

"Large Majorities Say China Does Not Respect the Personal Freedoms of Its People"

RAND Estimate of Chinese Influence – I: Output Analysis: Each Focus Country’s Position on China’s Leading Strategic Goals

	Did the Focus Country:						
	Establish Economic Ties with Taiwan ^a	Decline to Support the 2016 Hague Ruling ^b	Abandon Contested Territorial Claims	Join the Belt and Road Initiative and Allow Chinese Investment ^c	Allow 5G Investments from Chinese Company Huawei ^d	Stop or Downgrade Security Cooperation with the U.S. ^e	Allow Chinese Military Bases or Access ^f
Australia	Red	Dark Red		Dark Green	Dark Red	Red	
Brazil				Dark Green	Light Green		
Cambodia				Dark Green	Dark Green		Light Green
Ethiopia				Dark Green			
Germany	Red	Red			Red		
India	Red	Red			Light Red	Red	
Indonesia		Light Green		Dark Green	Light Green		
Italy				Dark Green	Red		
Japan		Dark Red			Dark Red	Red	
Kenya				Dark Green			
Laos				Dark Green			
Malaysia	Red	Red		Dark Green	Light Green		
Mexico				Dark Green			
Nigeria				Dark Green			
Philippines	Red	Dark Red		Dark Green		Light Green	
Singapore	Red			Dark Green			
South Korea	Red	Red		Dark Green	Light Green		
Sri Lanka				Dark Green			Light Green
Thailand	Red	Light Green		Dark Green	Light Green	Light Green	
Vietnam	Red	Dark Red				Red	

NOTE: Green represents a position favorable to China; red represents a position opposed to China’s; darker shades represent more-decisive stances.

Source: Michael Mazarr, Bryan Frederick, John Drennan, Emily Ellinger, Kelly Eusebi, Bryan Rooney, Andrew Stravers, Emily Yoder, *Understanding Influence in the Strategic Competition with China*, RAND, RRA-290-1, 2021, p. 79.

RAND Estimate of Chinese Influence – II: Chinese Influence-Seeking: Case Study Details and Outcomes, 2010–2019

Country	Input	Purpose	Degree of Chinese Influence	Output
Australia	<ul style="list-style-type: none"> Bribe legislators to support preferred policies Detain an Australian national as leverage in iron ore price negotiations Purchase media companies and publish pro-China information 	<ul style="list-style-type: none"> Sway political outcomes, especially related to the South China Sea Discourage Chinese diaspora in Australia from participating in anti-China demonstrations 	Moderate	<ul style="list-style-type: none"> Public backlash over China's efforts New laws passed to restrict foreign influence in politics Australian government remains hesitant to curtail Chinese influence or express positions contrary to Chinese preferences
Greece	<ul style="list-style-type: none"> Investments in Greek port infrastructure and other foreign direct investment Engagement with the government and nongovernmental organizations 	<ul style="list-style-type: none"> Make Greece China's economic entryway to the rest of Europe Allow economic success to sway political decisions 	Moderate	<ul style="list-style-type: none"> Greece loathe to challenge China Greece blocked and watered down EU measures against China
Japan	<ul style="list-style-type: none"> Initiated a fishing vessel conflict in disputed waters Suspended export of rare earth minerals important to Japanese tech companies Other economic sanctions (tourism) 	<ul style="list-style-type: none"> Test territorial integrity and seek to benefit from South China Sea resources Pressure Tokyo into preferred policies 	Minimal	<ul style="list-style-type: none"> Japan defended the Senkaku Islands with force Japan did not give in to economic pressures Tech companies diversified sources Japan began an economic program to compete with the Belt and Road Initiative Public backlash
Maldives	<ul style="list-style-type: none"> Promote a pro-Beijing political party Invest in infrastructure through the Belt and Road Initiative Pursue a free trade agreement 	<ul style="list-style-type: none"> Shift political alignment toward Beijing Build an economic relationship beneficial to China 	Minimal	<ul style="list-style-type: none"> Pro-Beijing president and party voted out of office Significant backlash over China's actions
Mongolia	<ul style="list-style-type: none"> Close the border and cancel flights between the countries in response to Mongolia hosting the Dalai Lama Invest in infrastructure through the Belt and Road Initiative 	<ul style="list-style-type: none"> Discourage acceptance of the Dalai Lama, who promotes autonomy for Tibet 	Minimal	<ul style="list-style-type: none"> Public backlash Mongolia promised not to host the Dalai Lama anymore, but the new government is not beholden to that promise New laws passed to limit foreign influence Government diversified the source of its loans
New Zealand	<ul style="list-style-type: none"> Bribe public officials Intimidate academics Sign a free trade agreement and build an economic relationship Foster Confucius Institutes 	<ul style="list-style-type: none"> Sway political outcomes in China's favor Sway public opinion 	Moderate	<ul style="list-style-type: none"> Public backlash but the government response has been weak Self-censored speech at universities to avoid reprisals or loss of funding from Beijing
Norway	<ul style="list-style-type: none"> Suspend diplomatic relations and impose sanctions as punishment for awarding the Nobel Peace Prize to a Chinese dissident 	<ul style="list-style-type: none"> Get Norway to promise to never again award the prize to a Chinese dissident 	Minimal/moderate	<ul style="list-style-type: none"> Norway helped admit China as an observer to the Arctic Council Norway refused to meet with the Dalai Lama in 2014 Chairman of the Nobel committee was ousted from his position, but Norway did not apologize for its choice Diplomatic relations were restored in 2016 after Norway compromised little relative to China's initial demands
Philippines	<ul style="list-style-type: none"> Support Chinese fishing vessels operating in disputed waters Impose economic sanctions 	<ul style="list-style-type: none"> Test territorial integrity and seek to benefit from South China Sea resources 	Minimal	<ul style="list-style-type: none"> Philippines initiated international arbitration of the issue, which resulted in the 2016 Permanent Court of Arbitration ruling in the Philippines' favor
South Korea	<ul style="list-style-type: none"> Release official statements opposing the THAAD deployment Impose multiple forms of economic punishment 	<ul style="list-style-type: none"> Persuade South Korea to reverse or suspend the deployment Discourage further military advancements 	Minimal	<ul style="list-style-type: none"> THAAD briefly suspended but eventually fully deployed South Korea made assurances to China that it would not deploy any further U.S. defense systems or join a military alliance with the United States and Japan, but those promises could be reversed Public backlash

Source: Michael Mazarr, Bryan Frederick, John Drennan, Emily Ellinger, Kelly Eusebi, Bryan Rooney, Andrew Stravers, Emily Yoder, *Understanding Influence in the Strategic Competition with China*, RAND, RRA-290-1, 2021, pp. 80-84

RAND Estimate of Chinese Influence – III: Chinese Influence-Seeking: Case Study Details and Outcomes, 2010–2019

Country	Input	Purpose	Degree of Chinese Influence	Output
Sri Lanka	<ul style="list-style-type: none"> Shield Sri Lanka from UN sanctions Provide military equipment to help end the civil war Invest in infrastructure Intervene in politics to support a preferred candidate 	<ul style="list-style-type: none"> Coerce debt dependency Compel intelligence-sharing Sway political decisions 	Moderate	<ul style="list-style-type: none"> Preferred candidate was defeated in 2015, but another preferred candidate was elected in 2019 New port leased to a Chinese company for 99 years Sri Lanka's massive debt continues to give China influence
Taiwan	<ul style="list-style-type: none"> Impose economic punishment for the Tsai administration's stance on independence Use economic leverage and promises to get countries to switch allegiances from Taipei to Beijing Pursue United Front activities and general information operations 	<ul style="list-style-type: none"> Isolate Taiwan from the international community Prevent independence for Taiwan and maintain the One China status quo Ultimately unify Taiwan and the People's Republic of China 	Moderate	<ul style="list-style-type: none"> Public backlash Influence efforts backfired, and the preferred candidate was defeated in a landslide Taiwan's isolation pushed it closer to the United States rather than China
Thailand	<ul style="list-style-type: none"> Issue a safety warning to Chinese citizens to discourage travel to Taiwan following two incidents Hold military exercises with Taiwan Invest in infrastructure through the Belt and Road Initiative 	<ul style="list-style-type: none"> Demonstrate to Thailand the value of its relationship with China 	Moderate	<ul style="list-style-type: none"> Thailand waived visa fees for Chinese and other tourists Economic and security cooperation increased Thailand hedges between the United States and China

Source: Michael Mazarr, Bryan Frederick, John Drennan, Emily Ellinger, Kelly Eusebi, Bryan Rooney, Andrew Stravers, Emily Yoder, *Understanding Influence in the Strategic Competition with China*, RAND, RRA-290-1, 2021, pp. 80-84

Structure and Force Development of China's People's Liberation Army (PLA)

DIA Overview of PLA

The People's Liberation Army at a Glance

Services: Army, Navy, Air Force, Rocket Force, Strategic Support Force.

Personnel: Approximately 2 million in regular forces.

Recruit base: Conscription, some volunteer.

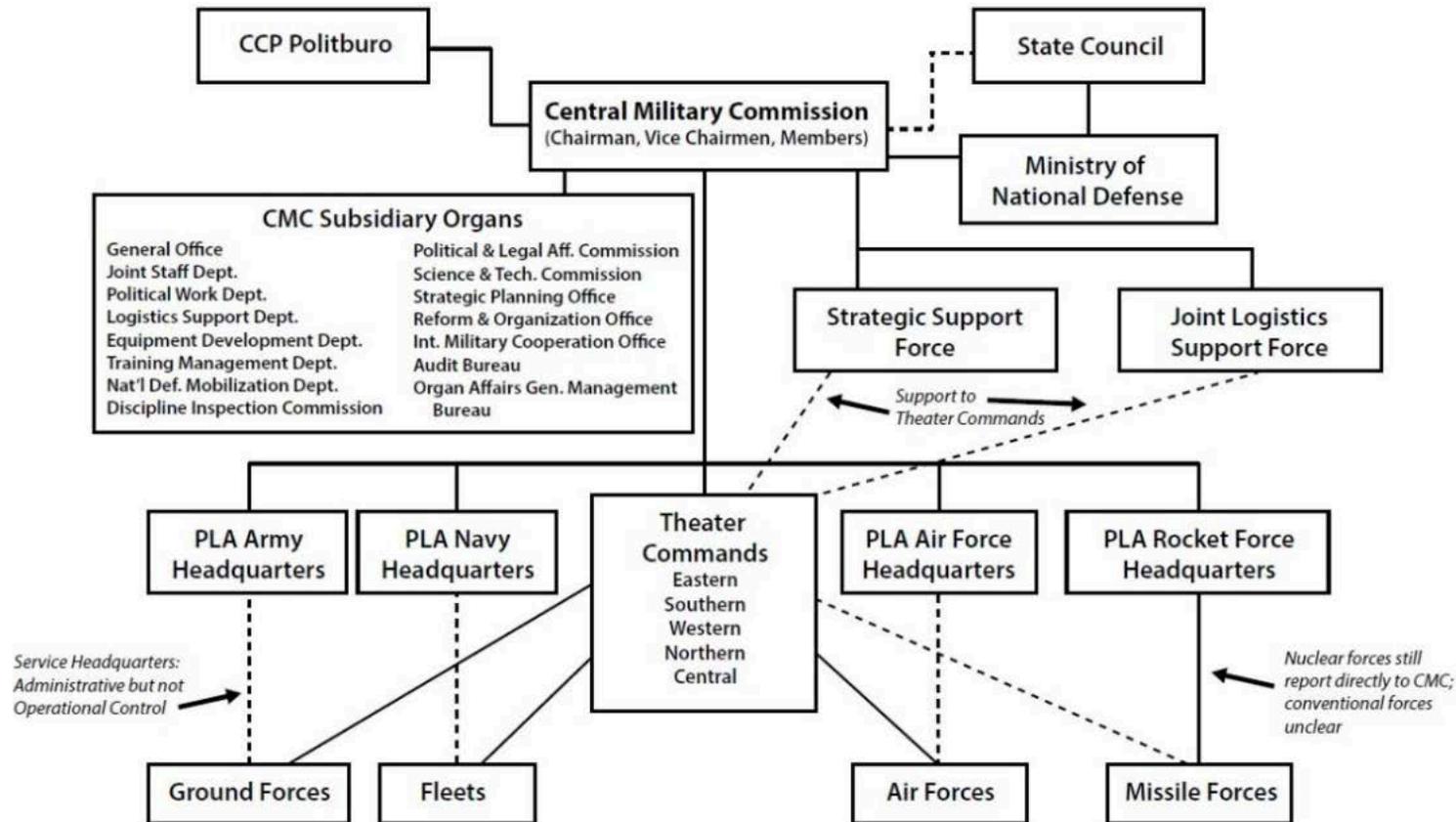
Equipment profile: Primarily domestic systems heavily influenced by technology derived from other countries; modern weaponry in each service; some advanced weaponry.

Core strength: Long-range precision strike, information warfare, nuclear retaliatory capability.

Developing strengths: Maritime power projection, special operations.

Key vulnerabilities: Logistics, rigid command structure, joint warfare.

Key Elements of the People's Liberation Army in 2021



Source: Joel Wuthnow and Phillip C. Saunders, "Chairman Xi Remakes the PLA," in Phillip C. Saunders et al., eds., *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms* (Washington, DC: National Defense University Press), 2019, p. 6.

Changing Role of Key Force Elements in PLA – I

China has already achieved parity with—or even exceeded—the United States in several military modernization areas, including:

- **Shipbuilding:** The PRC has the largest navy in the world, with an overall battle force of approximately 350 ships and submarines including over 130 major surface combatants. In comparison, the U.S. Navy’s battle force is approximately 293 ships as of early 2020. China is the top ship-producing nation in the world by tonnage and is increasing its shipbuilding capacity and capability for all naval classes.
- **Land-based conventional ballistic and cruise missiles:** The PRC has developed its conventional missile forces unrestrained by any international agreements. The PRC has more than 1,250 ground-launched ballistic missiles (GLBMs) and ground-launched cruise missiles (GLCMs) with ranges between 500 and 5,500 kilometers. The United States currently fields one type of conventional GLBM with a range of 70 to 300 kilometers and no GLCMs.
- **Integrated air defense systems:** The PRC has one of the world’s largest forces of advanced long-range surface-to-air systems—including Russian-built S-400s, S-300s, and domestically produced systems—that constitute part of its robust and redundant integrated air defense system (IADS) architecture.

Changes by PLA Force Element

- > **The People’s Liberation Army Army (PLAA)** is the largest standing ground force in the world. In 2019, the PLAA continued to transition into a modern, mobile, and lethal ground force by fielding upgraded combat systems and communications equipment and enhancing its ability to conduct and manage complex combined-arms and joint operations.
- > **The People’s Liberation Army Navy (PLAN)**—the largest navy in the world—is an increasingly modern and flexible force that has focused on replacing previous generations of platforms with limited capabilities in favor of larger, modern multi-role combatants. As of 2019, the PLAN is largely composed of modern multi-role platforms featuring advanced anti-ship, anti-air, and anti-submarine weapons and sensors.
 - **Naval Shipbuilding and Modernization:** The PLAN remains engaged in a robust shipbuilding and modernization program that includes submarines, surface combatants, amphibious warfare ships, aircraft carriers, and auxiliary ships as well as developing and fielding advanced weapons, sensors, and command and control capabilities.
- > **The People’s Liberation Army Air Force (PLAAF)** and PLAN Aviation together constitute the largest aviation forces in the region and the third largest in the world, with over 2,500 total aircraft and approximately 2,000 combat aircraft. The PLAAF is rapidly catching up to Western air forces across a broad range of capabilities and competencies.
- > **The People’s Liberation Army Rocket Force (PLARF)** is responsible for the PRC’s strategic land-based nuclear and conventional missile forces. The PLARF develops and fields a wide variety of conventional mobile ground-launched ballistic missiles and cruise missiles. The PRC is developing new intercontinental ballistic missiles (ICBMs) that will significantly improve its nuclear-capable missile forces. The number of warheads on the PRC’s land-based ICBMs capable of threatening the United States is expected to grow to roughly 200 in the next five years.
 - The PRC is expanding its inventory of the multi-role DF-26, a mobile, ground-launched intermediate-range ballistic missile system capable of rapidly swapping conventional and nuclear warheads.
 - The PRC’s robust ground-based conventional missile forces compliment the growing size and capabilities of its air- and sea-based precision strike capabilities.

Changing Role of Key Force Elements in PLA – II

> **The PLA Strategic Support Force (SSF)** is a theater command-level organization established to centralize the PLA’s strategic space, cyber, electronic, and psychological warfare missions and capabilities. The SSF Network Systems Department is responsible for cyberwarfare, technical reconnaissance, electronic warfare, and psychological warfare. Its current major target is the United States.

- **The PRC’s Space Enterprise.** The PRC’s space enterprise continues to mature rapidly. Beijing has devoted significant resources to growing all aspects of its space program, from military space applications to civil applications such as profit-generating launches, scientific endeavors, and space exploration.
- The PLA has historically managed the PRC’s space program. The SSF Space Systems Department is responsible for nearly all PLA space operations.
- In 2019, the PRC described space as a “critical domain in international strategic competition” and stated the security of space provided strategic assurance to the country’s national and social development.

- **Military Readiness:** In recent years, CCP leaders have directed the PLA to improve its combat readiness. This guidance is increasingly evident in the intensity of the PLA’s training and the complexity and scale of its exercises.

Capabilities for Counter Intervention and Power Projection

- > The PLA is developing capabilities to provide options for the PRC to dissuade, deter, or, if ordered, defeat third-party intervention during a large-scale, theater campaign such as a Taiwan contingency.
- > The PLA’s anti-access/area-denial (A2/AD) capabilities are currently the most robust within the First Island Chain, although the PRC aims to strengthen its capabilities to reach farther into the Pacific Ocean.
- > The PRC also continues to increase its military capabilities to achieve regional and global security objectives beyond a Taiwan contingency.
- > The PLA is developing the capabilities and operational concepts to conduct offensive operations within the Second Island Chain, in the Pacific and Indian Oceans, and in some cases, globally. In addition to strike, air and missile defense, anti-surface and anti-submarine capabilities improvements, China is focusing on information, cyber, and space and counterspace operations.

Nuclear Deterrence

- > China’s strategic ambitions, evolving view of the security landscape, and concerns over survivability are driving significant changes to the size, capabilities, and readiness of its nuclear forces.
- > China’s nuclear forces will significantly evolve over the next decade as it modernizes, diversifies, and increases the number of its land-, sea-, and air-based nuclear delivery platforms.
- > Over the next decade, China’s nuclear warhead stockpile—currently estimated to be in the low-200s—is projected to at least double in size as China expands and modernizes its nuclear forces.
- > China is pursuing a “nuclear triad” with the development of a nuclear capable air-launched ballistic missile (ALBM) and improving its ground and sea-based nuclear capabilities.
- > New developments in 2019 further suggest that China intends to increase the peacetime readiness of its nuclear forces by moving to a launch-on-warning (LOW) posture with an expanded silo-based force.

Paramilitary and Internal Security Forces

The PRC's internal security forces consist primarily of the Ministry of Public Security (MPS), the Ministry of State Security (MSS), the People's Armed Police (PAP), the PLA, and the militia. The Party relies on these forces to address challenges ranging from protests over political, social, environmental, or economic problems, to terrorism and natural disasters. For example, in 2019, the PRC's internal security forces in Xinjiang oversaw extensive detentions of Uyghurs at detention camps, mass surveillance, suppression of religious activities, and searches of personal property. In 2019, the PRC deployed the PAP in Shenzhen and probably in Hong Kong to bolster PLA Hong Kong Garrison elements positioned to respond to protests. The PRC's 2019 defense white paper claimed that since 2012 it has deployed 950,000 PLA and PAP soldiers and 1.41 million militia personnel for domestic emergency response and disaster relief.

Ministry of Public Security (MPS). The MPS leads the PRC's civilian national police, which serves as the first-line force for public order. The key mission of the MPS is domestic law enforcement and the “maintenance of social security and order” with duties including anti-rioting and anti-terrorism.

Ministry of State Security (MSS). The MSS is the PRC's main civilian intelligence and counterintelligence service. The missions of the MSS are to protect the PRC's national security; secure political and social stability; implement the State Security Law and related laws and regulations; protect state secrets; conduct counterintelligence; and investigate organizations or people inside China who carry out or direct, support, or aid other people perceived to harm national security.

People's Armed Police (PAP). The PAP is a paramilitary component of the PRC's armed forces. Its primary missions include internal security, maintaining public order, maritime security, and assisting the PLA in times of war. As part of a reorganization of China's security structures, in 2018, the CMC assumed direct control of the PAP. The same reform also subordinated the China Coast Guard (CCG) to the PAP.

People's Liberation Army (PLA). In addition to its national defense mission, the PLA has formal and informal roles in the PRC's internal security. As the principal armed wing of the CCP, the PLA is the ultimate guarantor of the CCP's survival and supports other internal security forces as necessary. For example, the PLA may provide transportation, logistics, and intelligence to assist local public security forces with internal security. The PLA's active and reserve forces are authorized under the 1997 National Defense Law to directly “assist in maintaining public order” when CCP leaders consider it necessary.

Militia. The militia is an armed reserve force of civilians available for mobilization. It is distinct from the PLA's reserve forces. Militia units organize around towns, villages, urban sub-districts, and enterprises and vary widely in composition and mission. The PRC's 1997 *National Defense Law* authorizes the militia to assist in maintaining public order. The People's Armed Forces Maritime Militia (PAFMM) is a component of the militia and its tasks include safeguarding maritime claims, which it often performs in conjunction with the PLAN and the CCG.

DoD on PLA Force Development: 2000-2020

DoD's first annual report to Congress in 2000 assessed the PRC's armed forces at that time to be a sizable but mostly archaic military that was poorly suited to the CCP's long-term ambitions. The report recognized the CCP's objective was for the PRC to become a "strong, modernized, unified, and wealthy nation." Despite these great power aspirations, the PLA lacked the capabilities, organization, and readiness for modern warfare. Yet the CCP understood these deficiencies and set long-term goals to strengthen and transform its armed forces in a manner commensurate with its aspirations to strengthen and transform China.

DoD's 2000 report assessed that the PLA was slowly and unevenly adapting to the trends in modern warfare. The PLA's force structure and capabilities focused largely on waging large-scale land warfare along China's borders. The PLA's ground, air, and naval forces were sizable but mostly obsolete. Its conventional missiles were generally of short range and modest accuracy. The PLA's emergent cyber capabilities were rudimentary; its use of information technology was well behind the curve; and its nominal space capabilities were based on outdated technologies for the day. Further, China's defense industry struggled to produce high-quality systems. Even if the PRC could produce or acquire modern weapons, the PLA lacked the joint organizations and training needed to field them effectively. The report assessed that the PLA's organizational obstacles were severe enough that if left unaddressed they would "inhibit the PLA's maturation into a world-class military force."

Two decades later, the PLA's objective is to become a "world-class" military by the end of 2049—a goal first announced by General Secretary Xi Jinping in 2017. Although the CCP has not defined what a "world-class" military means, within the context of the PRC's national strategy it is likely that Beijing will seek to develop a military by mid-century that is equal to—or in some cases superior to—the U.S. military, or that of any other great power that the PRC views as a threat. As this year's report details, the PRC has marshalled the resources, technology, and political will over the past two decades to strengthen and modernize the PLA in nearly every respect. Indeed, as this report shows, China is already ahead of the United States in certain areas such as:

- Shipbuilding: The PRC has the largest navy in the world, with an overall battle force of approximately 350 ships and submarines including over 130 major surface combatants. In comparison, the U.S. Navy's battle force is approximately 293 ships as of early 2020.
- Land-based conventional ballistic and cruise missiles: The PRC has more than 1,250 ground-launched ballistic missiles (GLBMs) and ground-launched cruise missiles (GLCMs) with ranges between 500 and 5,500 kilometers. The United States currently fields one type of conventional GLBM with a range of 70 to 300 kilometers and no GLCMs.
- Integrated air defense systems: The PRC has one of the world's largest forces of advanced long-range surface-to-air systems—including Russian-built S-400s, S-300s, and domestically produced systems—that constitute part of its robust and redundant integrated air defense system architecture.

More striking than the PLA's staggering amounts of new military hardware are the recent sweeping efforts taken by CCP leaders that include completely restructuring the PLA into a force better suited for joint operations, improving the PLA's overall combat readiness, encouraging the PLA to embrace new operational concepts, and expanding the PRC's overseas military footprint.

Despite the PLA's progress over the past 20 years, major gaps and shortcomings remain. The PRC's leaders are aware of these problems, and their strategy envisions the PLA undergoing almost 30 more years of modernization and reform. Of course, the CCP does not intend for the PLA to be merely a showpiece of China's modernity or to keep it focused solely on regional threats. As this report shows, the CCP desires the PLA to become a practical instrument of its statecraft with an active role in advancing the PRC's foreign policy, particularly with respect to the PRC's increasingly global interests and its aims to revise aspects of the international order.

Given the continuity in the PRC's strategic objectives, the past 20 years offer a harbinger for the future course of the PRC's national strategy and military aspirations. Certainly, many factors will determine how this course unfolds. What is certain is that the CCP has a strategic end state that it is working towards, which if achieved and its accompanying military modernization left unaddressed, will have serious implications for U.S. national interests and the security of the international rules-based order.

DoD Summary of Chinese Force Developments 2020 – I

MISSIONS, TASKS, & MODERNIZATION OF CHINA’S ARMED FORCES IN THE “NEW ERA”

- > The PRC’s strategy includes advancing a comprehensive military modernization program that aims to “basically” complete military modernization by 2035 and transform the PLA into a “world- class” military by the end of 2049.
- The PLA’s evolving capabilities and concepts continue to strengthen the PRC’s ability to counter an intervention by an adversary in the Indo-Pacific region and project power globally.

THE PLA’S GROWING GLOBAL PRESENCE

- > CCP leaders believe that the PRC’s global activities, including the PLA’s growing global presence, are necessary to create a “favorable” international environment for China’s national rejuvenation.
- The CCP has tasked the PLA to develop the capability to project power outside China’s borders and immediate periphery to secure the PRC’s growing overseas interests and advance its foreign policy goals.

China’s Global Military Activities

- > The PRC has increasingly recognized that its armed forces should take a more active role in advancing its foreign policy goals.
- > As the PRC’s overseas interests have grown over the past two decades, the Party’s leaders have increasingly pushed the PLA to think about how it will operate beyond China’s borders and its immediate periphery to advance and defend these interests.
- > In 2019, the PLA continued to expand its participation in bilateral and multilateral military exercises, normalize its presence overseas, and build closer ties to foreign militaries.

PLA Overseas Basing and Access

- > The PRC is seeking to establish a more robust overseas logistics and basing infrastructure to allow the PLA to project and sustain military power at greater distances.
- > Beyond its current base in Djibouti, the PRC is very likely already considering and planning for additional overseas military logistics facilities to support naval, air, and ground forces. The PRC has likely considered locations for PLA military logistics facilities in Myanmar, Thailand, Singapore, Indonesia, Pakistan, Sri Lanka, United Arab Emirates, Kenya, Seychelles, Tanzania, Angola, and Tajikistan. The PRC and Cambodia have publicly denied having signed an agreement to provide the PLAN with access to Cambodia’s Ream Naval Base.
- A global PLA military logistics network could interfere with U.S. military operations and provide flexibility to support offensive operations against the United States.

The PRC’s Influence Operations

- The PRC conducts influence operations to achieve outcomes favorable to its strategic objectives by targeting cultural institutions, media organizations, business, academic, and policy communities in the United States, other countries, and international institutions.
- The CCP seeks to condition domestic, foreign, and multilateral political establishments and public opinion to accept Beijing’s narratives.
- CCP leaders probably consider open democracies, including the United States, as more susceptible to influence operations than other types of governments.

DoD Summary of Chinese Force Developments 2020 – II

RESOURCES AND TECHNOLOGY FOR FORCE MODERNIZATION

- > The PRC's long-term goal is to create an entirely self-reliant defense-industrial sector—fused with a strong civilian industrial and technology sector—that can meet the PLA's needs for modern military capabilities.
- > The PRC has mobilized vast resources in support of its defense modernization, including the implementation of its MCF Development Strategy, as well as espionage activities to acquire sensitive, dual-use, and military-grade equipment.
- > In 2019, the PRC announced its annual military budget would increase by 6.2 percent, continuing more than 20 years of annual defense spending increases and sustaining its position as the second- largest military spender in the world. The PRC's published military budget omits several major categories of expenditures and its actual military-related spending is higher than what it states in its official budget.

Science and Technology Goals Supporting Military Modernization

- > China seeks to become a leader in key technologies with military potential, such as AI, autonomous systems, advanced computing, quantum information sciences, biotechnology, and advanced materials and manufacturing.
- > China has invested significant resources to fund research and subsidize companies involved in strategic S&T fields while pressing private firms, universities, and provincial governments to cooperate with the military in developing advanced technologies.
- > China continues to undermine the integrity of the U.S. science and technology research enterprise through a variety of actions such as hidden diversions of research, resources, and intellectual property.

Foreign Technology Acquisition

- > The PRC pursues many vectors to acquire foreign technologies, including both licit and illicit means. The PRC's efforts include a range of practices and methods to acquire sensitive and dual- use technologies and military-grade equipment to advance its military modernization goals.
- > The PRC leverages foreign investments, commercial joint ventures, mergers and acquisitions, and state-sponsored industrial and technical espionage, and the manipulation of export controls for the illicit diversion of dual-use technologies to increase the level of technologies and expertise available to support military research, development, and acquisition.
- > In 2019, the PRC's efforts included efforts to acquire dynamic random access memory, aviation, and anti-submarine warfare technologies.

DoD Summary of Chinese Approach to “Informatization” and “Intelligentization”, Including Artificial Intelligence and JADO

The People’s Liberation Army (PLA) sees emerging technologies as driving a shift to “intelligentized” warfare from today’s “informatized” way of war. PLA strategists broadly describe intelligentized warfare as the operationalization of artificial intelligence (AI) and its enabling technologies, such as cloud computing, big data analytics, quantum information, and unmanned systems, for military applications. These technologies, according to PRC leaders—including Chairman Xi Jinping—represent a “Revolution in Military Affairs” for which China must undertake a whole-of-government approach to secure critical economic and military advantages against advanced militaries.

China seeks to lead the shift to “intelligentized warfare” through its Military-Civil Fusion (MCF) Development Strategy and by reforming both its research and development (R&D) as well as strategy and doctrine organizations. In 2015, the PRC elevated MCF to a national strategy, and it continues to establish new organizations and promulgate policies to drive development of dual-use technologies and further integrate civilian and military administration. In 2017, the PLA reorganized its military research and education institutes to synchronize advances in emerging technologies with the development of new operational concepts. The Academy of Military Science (AMS), which has traditionally been responsible for writing new doctrine, now oversees several PLA science and technology institutes.

The PLA argues that the implementation of “intelligentized” capabilities will increase the speed of future combat, necessitating more rapid processing and fusing of information to support quick and efficient command decision making. Victory in future warfare, according to PLA strategists, will depend upon which side can more quickly and effectively observe, orient, decide, and act in an increasingly dynamic operating environment. As a result, China is pursuing new technologies like AI to support future military capabilities, such as autonomous command and control (C2) systems, more sophisticated and predictive operational planning, and intelligence, surveillance, and reconnaissance (ISR) fusion. In addition, the PLA is developing more capable command information systems and decision aids for battlefield commanders. Future command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) systems will seek to use AI to collect, fuse, and transmit big data for more effective battlespace management and to generate optimal courses of action.

PLA strategists recognize the importance of information superiority during a conflict. The PLA has emphasized the need for the capabilities to target and degrade adversary command and control systems and future AI systems. As such, the PLA plans to employ technologies associated with intelligentized warfare to support the deployment of autonomous unmanned systems and conduct information operations (IO). PRC weapons developers are researching new unmanned aerial, surface, sub-surface, and ground vehicles that will enable new operational concepts and require new C2 models. The PLA is pursuing greater autonomy for unmanned platforms, to include swarm intelligence manned-unmanned teaming capabilities, to provide more lethal kinetic and nonkinetic strike options that can saturate adversary defenses as well as more survivable and long-distance ISR capabilities, among other applications. The PLA also intends to improve its cyber and electronic warfare (EW) capabilities through AI-assisted network vulnerability analysis, countermeasure identification, and electromagnetic spectrum management.

PLA discussions of “intelligentized warfare” also acknowledge the difficulties of developing future technologies and implementing new capabilities. The delegation of decision-making authorities to lower echelons may run counter to the PLA’s traditionally hierarchical and centralized C2 structure. The PLA’s ability to leverage big data will depend upon its ability to obtain large quantities of high-quality data on foreign militaries. Additionally, the complexity of future conflict probably will challenge the PLA to recruit, train, and retain the highly competent and technically proficient personnel necessary to understand and operate future “intelligentized” systems.

CRS Estimate of Key Trends in China's PLA

Since 1978, China has engaged in a sustained and broad effort to transform the PLA from an infantry-heavy, low-technology, ground forces-centric force into a leaner, more networked, high-technology force with an emphasis on joint operations and power projection. In 2015 and 2016, Xi publicly launched the most ambitious reform and reorganization of the PLA since the 1950s. The reforms have two overarching objectives: reshaping and improving the PLA's command and control structure to enable joint operations among the services and ensuring the PLA is loyal and responsive to the Party and Xi. Although the reforms were originally slated to conclude by 2020, officials have more recently suggested they will be ongoing through 2021-2022. Institutionalizing the reforms' sweeping changes will likely take even longer.

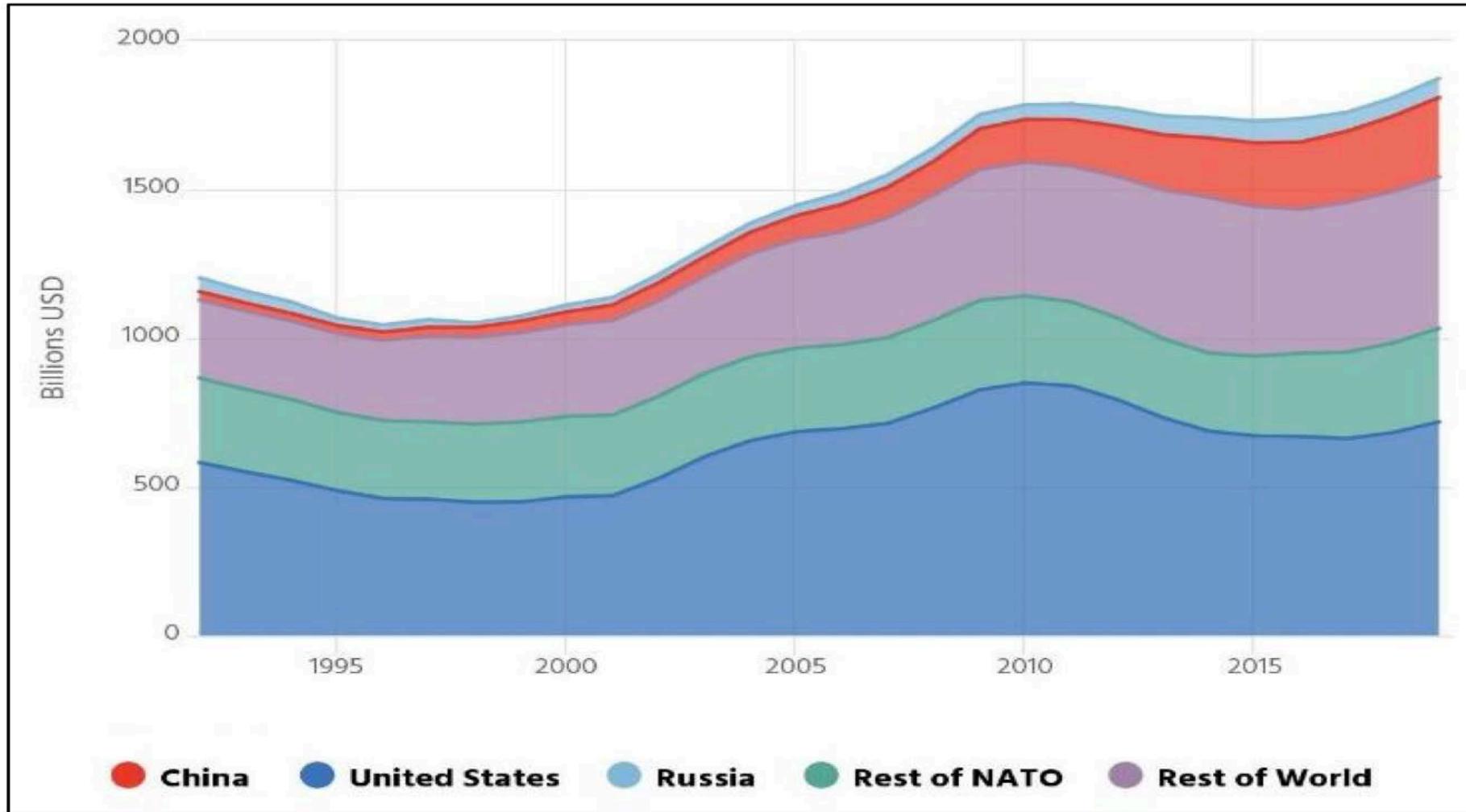
In 2017, Xi set goals for the PLA to “generally achieve mechanization” by 2020, to “basically complete” military modernization by 2035, and to “transform” the PLA into a “world-class” force by 2049—the same year by which Xi envisions China achieving “the great rejuvenation of the Chinese nation.” According to Xi, “To achieve the great revival of the Chinese nation, we must ensure there is unison between a prosperous country and strong military.”

The PLA is expanding its operational reach, strengthening its ability to conduct joint operations, and fielding increasingly modern weapons systems. Key features of PLA modernization include:

- **PLA Navy:** An approximately 350-ship navy that includes advanced platforms such as submarines, aircraft carriers, and large multi-mission surface vessels, giving China blue-water capabilities and the ability to conduct sustained operations and project power increasingly far from China's periphery;
- **PLA Air Force:** An air force increasingly capable of conducting joint and over-water missions, featuring deployments of large numbers of fourth-generation fighters, and fifth-generation fighters becoming operational or in late stages of development;
- **PLA Rocket Force:** A conventional missile force designed to enable China to deter or defeat possible third-party intervention in a regional military conflict and featuring around 100 intercontinental ballistic missiles and hundreds of theater-range conventional missiles, including anti-ship ballistic missiles designed to target adversary aircraft carriers and a nuclear force intended to be small but survivable (DOD estimates China's nuclear stockpile is in the “low-200s” and likely to at least double in the coming decade), with progress toward a “nuclear triad” (including land-, submarine-, and aircraft-launched nuclear weapons);
- **PLA Strategic Support Force:** A force that centralizes cyber and space capabilities (referred to by the PRC as the “new commanding heights in strategic competition”) as well as electronic and psychological warfare; and
- **PLA Joint Logistics Support Force:** A force that facilitates joint logistics across the PLA to enable large- scale military operations.

China's Military Spending

CRS Estimate of Comparative Global Military Spending



Japanese Estimate of Changes in Defense Expenditures in Six Major Countries (logarithmic graph) 1995-2021

(Notes)

1. Regarding the defense expenditures of the five countries, figures officially published by the government of each country were converted into US dollars amounts, using the purchasing

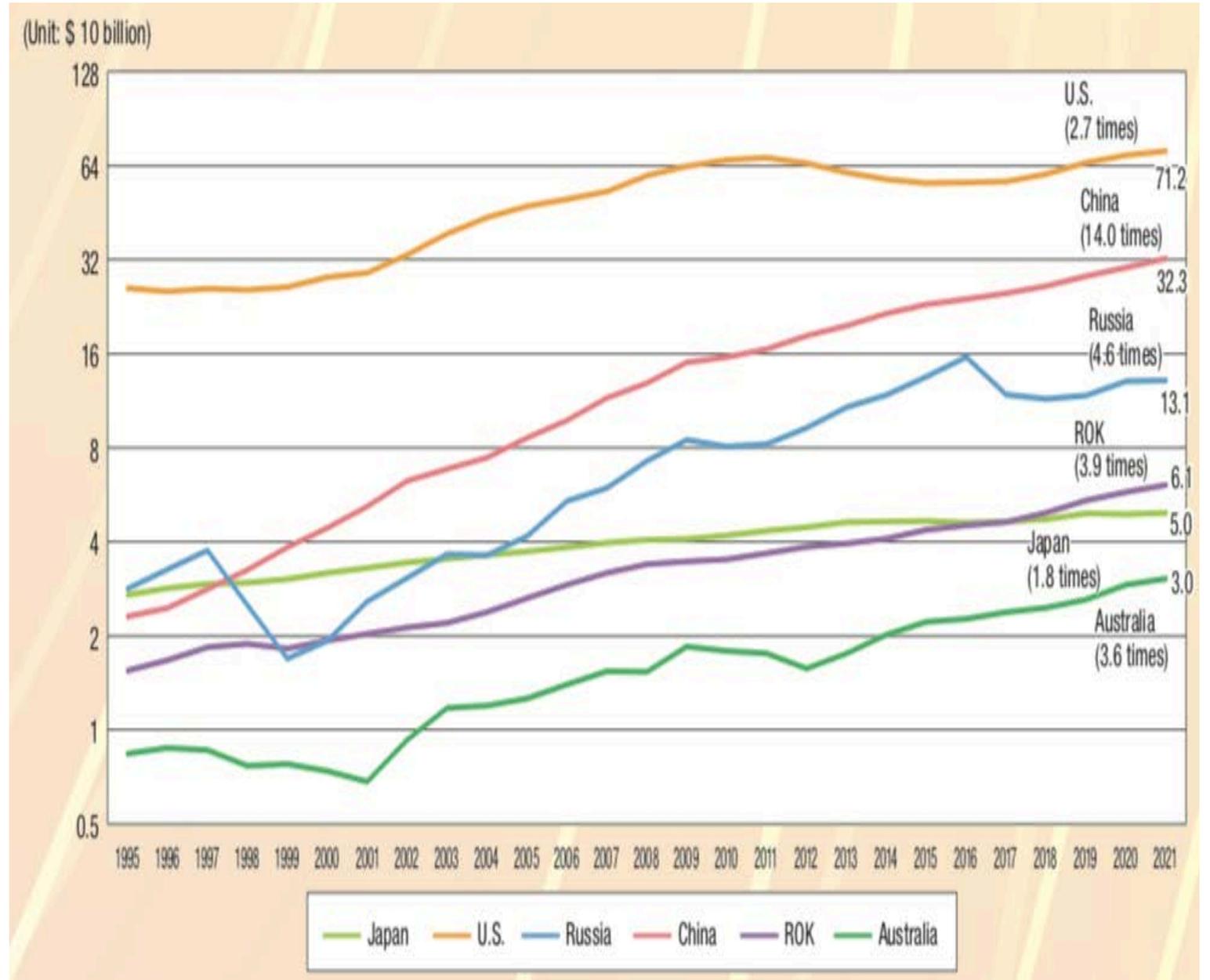
power parity for 2020 (published by the OECD: as of April 2021). The figures for 2021 were converted into US dollars using the purchasing power parity of 2020.

(1 dollar = 103.412076 yen = 4.200808 yuan = 0.740525 rubles = 869.063949 won = 1.461587 Australian dollars = 0.716264 pound = 0.740525 France euros = 0.744679 Germany euros)

2. Japan's defense-related expenditure shows its initial budget (excluding SACO-related expenses, the U.S. Forces realignment-related expenses (the portion allocated for mitigating the impact on local communities), and expenses for the three-year emergency response plan for disaster prevention, disaster mitigation, and building national resilience, etc.)

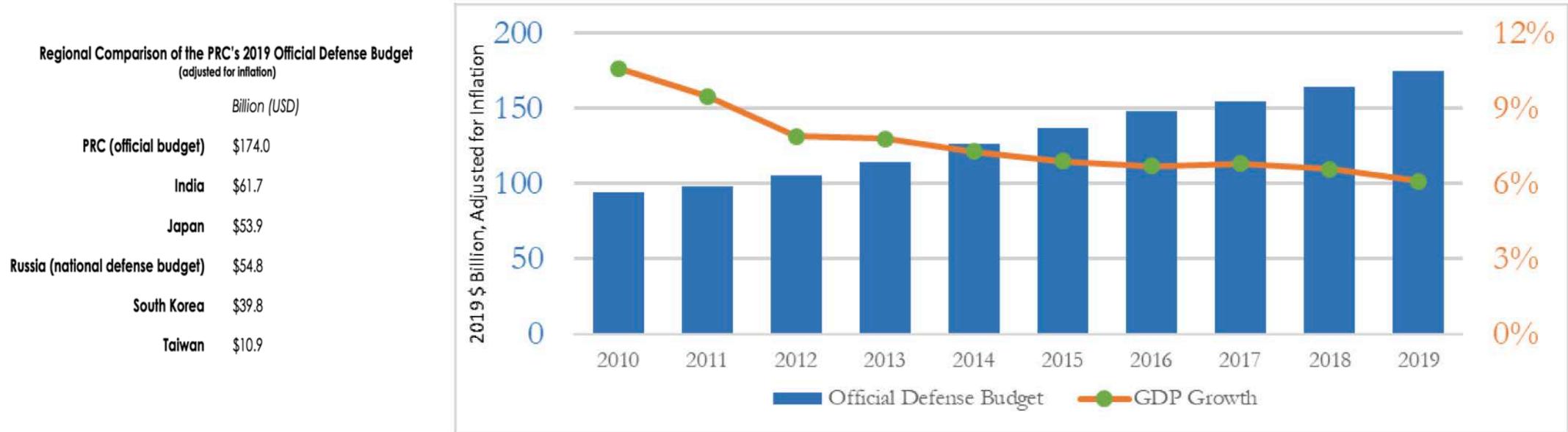
3. Regarding the United States, the figures for FY2021 are estimates.

4. The amount and year-on-year growth rate (figures rounded to one decimal place) for FY1995-FY2021 are indicated.



DoD: China's Official Military Spending 2010-2019

China: Official Defense Budget, 2010–2019



In early 2019, the PRC announced a 6.2-percent inflation-adjusted increase in its annual military budget to \$174 billion, which is approximately 1.3 percent of gross domestic product. This year's budget continues more than 20 years of annual defense spending increases and sustains the PRC's position as the second-largest military spender in the world after the United States. The PRC's defense budget has nearly doubled during the past 10 years—data from 2010 through 2019 indicates China's official military budget grew at an annual average of approximately 8 percent in inflation-adjusted terms. Based on its official defense spending figures, which omit several major categories of expenditures, the PRC can support continued growth in defense spending for at least the next five to ten years, based on economic data and growth projections.

China's Estimated Military Expenditures. The PRC's published military budget omits several major categories of expenditures, including R&D and foreign weapons procurement. In 2019, China's actual military-related spending could be more than \$200 billion, much higher than stated in its official budget. However, actual military expenses are difficult to calculate, largely because of China's poor accounting transparency.

China's Estimated Defense Budget Growth. If China's official defense budget increases annually by an average of 6 percent, growing to \$270 billion by 2023, the PLA can dedicate more money for training, operations, and modernization considering the reduction of the PLA's size by 300,000 people. Economic forecasters project that China's economic growth will slow during the next 10 years, falling from 6.1 percent in 2019 to 3 percent in 2030, which could slow future defense spending growth. Assuming accurate economic projections and a steady defense burden, China will remain the second-largest spender after the United States.

DIA China's Official Military Spending 2007-2018 – I

The official defense budget has remained at 1.2 to 1.4 percent of gross domestic product for the past decade, allowing for steady, sustainable expenditure growth and qualitative improvements throughout the PLA.

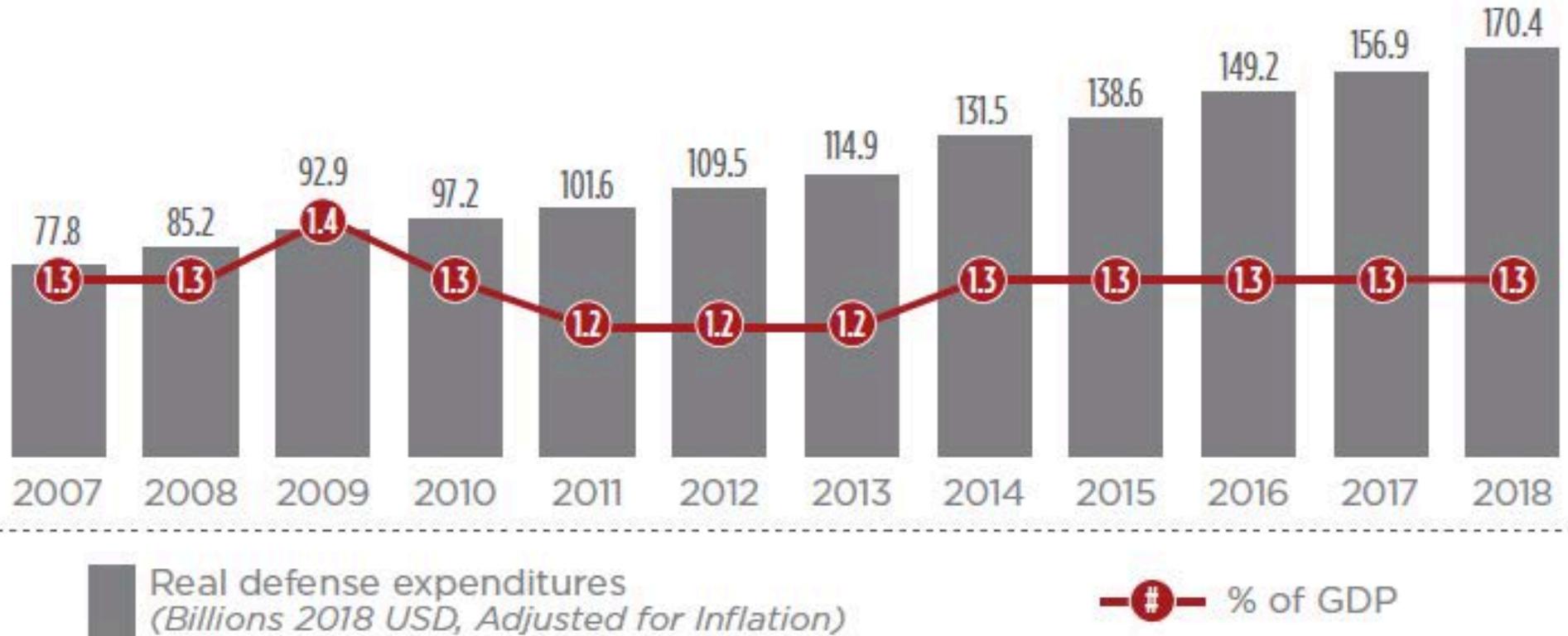
Estimating actual military expenses is difficult because of China's poor accounting in transparency and incomplete transition to a market economy. The formal defense budget process does not include funding for foreign weapons procurement, some research and development (R&D), and certain personnel benefits. Other government ministries distribute defense funds in addition to extra budgetary funds that supplement personnel living subsidies, equipment maintenance, and other budgetary items

China's total military-related spending for 2018 probably exceeded \$200 billion, a threefold increase since 2002. Such spending has been on the rise since the 1990s, when China formally began to emphasize defense-related programs throughout the course of several "Five-Year Plans."

Although the total dollar value of China's defense budget remains significantly below that of the United States, China has benefited from "late-comer advantage." In other words, China has not had to invest in costly R&D of new technologies to the same degree as the United States. Rather, China has routinely adopted the best and most effective platforms found in foreign militaries through direct purchase, retrofits, or theft of intellectual property. By doing so, China has been able to focus on expediting its military modernization at a small fraction of the original cost.

DIA China's Official Military Spending 2007-2018 – II

China's Official Defense Spending 2007-2018 (billions of 2018 dollars)



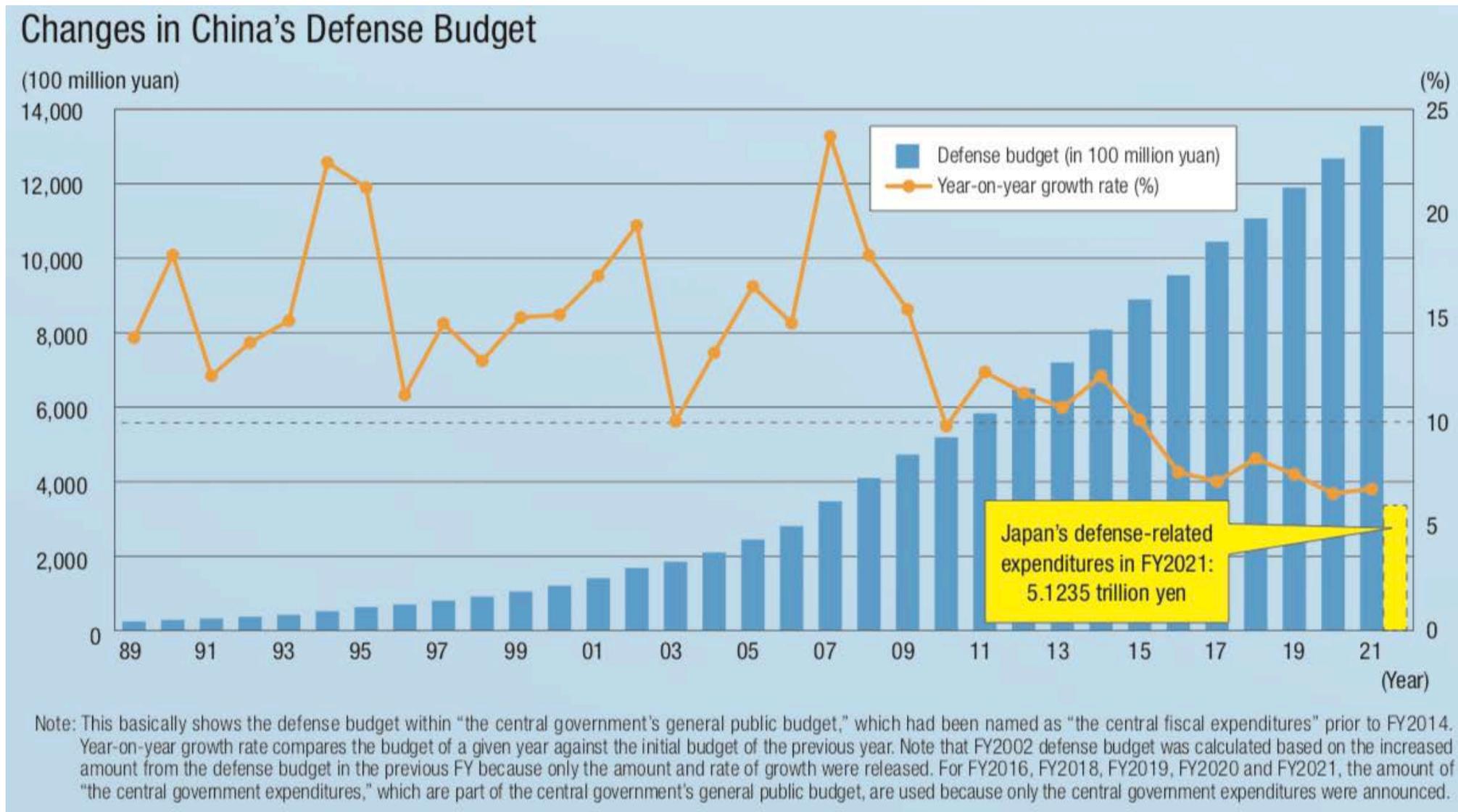
re source: DIA, US Design

China vs. IISS and SIPRI Estimates of Military Spending



Source: Center for Strategic and International Studies China Power Project, “What Does China Really Spend on Its Military?” 2021; Members of Center for Strategic and International Studies China Power Project, interview with Commission staff, October 15, 2019. Note: All values in nominal U.S. dollars. SIPRI stands for Stockholm International Peace Research Institute. IISS stands for International Institute for Strategic Studies. Estimated figures from IISS for 2018 and 2019 and from SIPRI for 2019 are not available. Adapted from *China’s National Defense in a New Era*, July 2019, <http://www.xinhuanet.com/english/download/whitepaperonnationaldefenseinnewera.doc>.

Japanese Estimate of Long-Term Trends in Chinese Spending: 1991-2021



Military Technology and Arms Transfers

Chinese Defense Technology and Industry – I

Key Takeaways

- The PRC's long-term goal is to create an entirely self-reliant defense-industrial sector—fused with a strong civilian industrial and technology sector—that can meet the PLA's needs for modern military capabilities.
- The PRC has mobilized vast resources in support of its defense modernization, including the implementation of its Military-Civil Fusion (MCF) Development Strategy, as well as espionage activities to acquire sensitive, dual-use, and military-grade equipment.
- >In 2019, the PRC announced its annual military budget would increase by 6.2 percent, continuing more than 20 years of annual defense spending increases and sustaining its position as the second- largest military spender in the world. The PRC's published military budget omits several major categories of expenditures and its actual military-related spending is higher than what it states in its official budget.

In spite of forecast difficulties for China's economic growth in the 2020s, the Party has the political will and fiscal strength to sustain a steady increase in defense spending over the next decade, which will help support People's Liberation Army (PLA) modernization, develop a fused military-civilian defense industry, and explore new technologies with defense applications. The PRC draws from diverse sources to support PLA modernization, including domestic defense investments, domestic defense-industrial development, a growing R&D and S&T base, dual-use technologies conveyed in part through its MCF strategy, and the acquisition of foreign technology and expertise.

The PRC's long-term goal is to create an entirely self-reliant defense-industrial sector—fused with a strong civilian industrial and technology sector—that can meet the PLA's needs for modern capabilities. However, the PLA still looks to import foreign equipment, technologies, and knowledge to fill some critical, near-term capability gaps and accelerate its modernization. The PRC leverages foreign investments, commercial joint ventures, mergers and acquisitions, academic exchanges, the foreign experience that students and researchers from the PRC gain from studying in foreign nations, and state-sponsored industrial and technical espionage, and the manipulation of export controls for the illicit diversion of dual-use technologies to increase the level of technologies and expertise available to support military research, development, and acquisition.

S&T Industry and Innovation: China has substantially reorganized its defense-industrial sector to improve weapon system research, development, acquisition, testing, evaluation, and production. As part of the 13th Five-Year Plan (2016–2020), China implemented a number of critical reforms with the objective of increasingly its competitiveness in key defense industries. Focus areas include aerospace engines—including turbofan technology—and gas turbines; quantum communications and computing; innovative electronics and software; automation and robotics; special materials and applications; nanotechnology; neuroscience, neural research, and artificial intelligence (AI); and deep- space exploration and on-orbit servicing and maintenance systems. China also is applying substantial R&D resources to nuclear fusion, hypersonic weapons technology, and the deployment and hardening of its expanding multipurpose satellite constellation.

- > In 2016, the Central Military Commission (CMC) established the Science and Technology Commission, an independent high-level defense research body subordinated to the CMC. The Science and Technology Commission organizes and guides cutting-edge technological innovation in military technology and seeks to increase the pace of military technology development to modernize the PLA using both civilian and military S&T resources.
- > In early 2017, the PLA set up the Scientific Research Steering Committee, which is subordinate to the CMC, consisting of scientists and engineers that have experience with cutting-edge technologies. Modeled on the U.S. Defense Advanced Research Projects Agency, this agency seeks to fuel technological innovations with military applications. Along with the Science and Technology Commission, the steering committee will spearhead S&T innovation by advising the CMC on early-stage research projects.
- > In July 2017, China reorganized the PLA's top three academic institutes—the PLA Academy of Military Science (AMS), National Defense University, and National University of Defense Technology—as part of its PLA reform initiative. Under the new structure, AMS will focus on

Chinese Defense Technology and Industry – II

Two of the most influential proponents in promoting and enforcing China's, S&T initiatives are the State Administration for Science, Technology, and Industry for National Defense and the CMC's Equipment Development Department, which monitor and guide the state and military sides of China's defense-industrial apparatus, respectively. The Equipment Development Department and its military service counterparts cooperate with China's 10 state-owned defense-industrial corporations through a network of military representative bureaus and offices to supervise quality control and defense contract compliance.

The National Science Foundation of China (NSFC), the China Academy of Sciences (CAS), and the Ministry of Science and Technology are key to S&T decision making and funding and to promoting basic and applied research, scientific innovation, and high-tech integration throughout China's scientific, engineering, and civil-military industrial complex. CAS is China's highest academic institution for comprehensive R&D in the natural and applied sciences, and it reports directly to the State Council in an advisory capacity. CAS works closely with NSFC, and much of its work contributes to products for military use. The NSFC and CMC Science and Technology Commission are key advisers on emerging and disruptive technologies and signed a five-year strategic cooperation agreement in August 2016 to collaborate on civil-military innovation and basic research for national defense.

Artificial Intelligence. China views AI as critical to its future military and industrial power. China is making strategic investments worldwide in AI to reap national security and economic benefits. AI is a central component in many of China's publicly released national plans. The Next Generation AI Plan details China's AI strategy and outlines China's goals of using commercial and military entities to gain parity with the world leaders in AI by 2020, achieving major breakthroughs in AI by 2025, and establishing China as the global leader in AI by 2030. The PRC is pursuing a whole-of-society effort to become a global leader in AI, which includes designating select private AI companies in China as "AI champions" to emphasize R&D in specific dual-use technologies. Many of these "AI champions," including Huawei and Hikvision, are major suppliers of AI surveillance technology worldwide. In 2019, the private PRC-based company Ziyuan UAV exhibited armed swarming drones that it claimed use AI.

...Key Takeaways

- China's effort to build national corporate champions that achieve rapid market dominance across a range of technologies directly complements the PLA's modernization efforts. The PRC intends to leverage its commercial sector to realize the PLA's modernization goals.
- China seeks to become a leader in key technologies with military potential, such as AI, autonomous systems, advanced computing, quantum information sciences, biotechnology, and advanced materials and manufacturing. China's implementation of AI and a quantum communication network demonstrates the speed and scale with which it intends to deploy certain emerging technologies.
- China has mobilized vast resources to fund research and subsidize companies involved in strategic S&T fields while pressing private firms, universities, and provincial governments to cooperate with the military in developing advanced technologies. China has also reorganized its military research institutions and key military think tanks to provide the PLA advanced capabilities and a modern warfighting doctrine.
- The PRC continues to undermine the integrity of the U.S. S&T research enterprise through a variety of actions such as hidden diversions of research, resources, and intellectual property.
- The PRC pursues many vectors to acquire foreign technologies, including both licit and illicit means. The PRC's efforts include a range of practices and methods to acquire sensitive and dual-use technologies and military-grade equipment to advance its military modernization goals.
- > The PRC leverages foreign investments, commercial joint ventures, mergers and acquisitions, and state-sponsored industrial and technical espionage, and the manipulation of export controls for the illicit diversion of dual-use technologies to increase the level of technologies and expertise available to support military research, development, and acquisition.
- > In 2019, the PRC's efforts included efforts to acquire dynamic random access memory, aviation, and anti-submarine warfare (ASW) technologies.

China's Expanding Defense Industrial Base

Global defense company rankings based on assessments of defense revenues for 2019

Company	Defense News ranking (out of 100)	Stockholm International Peace Research Institute ranking (out of 25)
Aviation Industry Corporation of China (AVIC)	6	6
China North Industries Group Corporation Limited (NORINCO)	8	9
China Aerospace Science and Industry Corporation (CASIC)	11	Not ranked
China Shipbuilding Industry Corporation (CSIC)	14	Not ranked
China Electronics Technology Group Corporation (CETC)	15	8
China South Industries Group Corporation (CSGC)	18	24
China Aerospace Science and Technology Corporation (CASC)	20	Not ranked
China State Shipbuilding Corporation (CSSC)	24	Not ranked
China National Nuclear Corporation (CNNC)	Not ranked	Not ranked

Source: Defense News, “Top 100 for 2019”; Lucie Béraud-Sudreau et al., “Mapping the International Presence of the World’s Largest Arms Companies,” Stockholm International Peace Research Institute, December 2020.

Notes: Both Defense News and SIPRI ranked companies by reported defense revenue. China’s two largest shipbuilding companies, China Shipbuilding Industry Corporation and China State Shipbuilding Corporation, merged to become China State Shipbuilding Corporation Limited in November 2019, although they are listed separately here.

China's Arms Trade: 2007-2019

Notes: (1) An asterix (*) indicates a value between \$0.00003 and \$0.05 billion

(2) World exports and imports, based chiefly on World Bank and UN Statistical Division data, are not equal

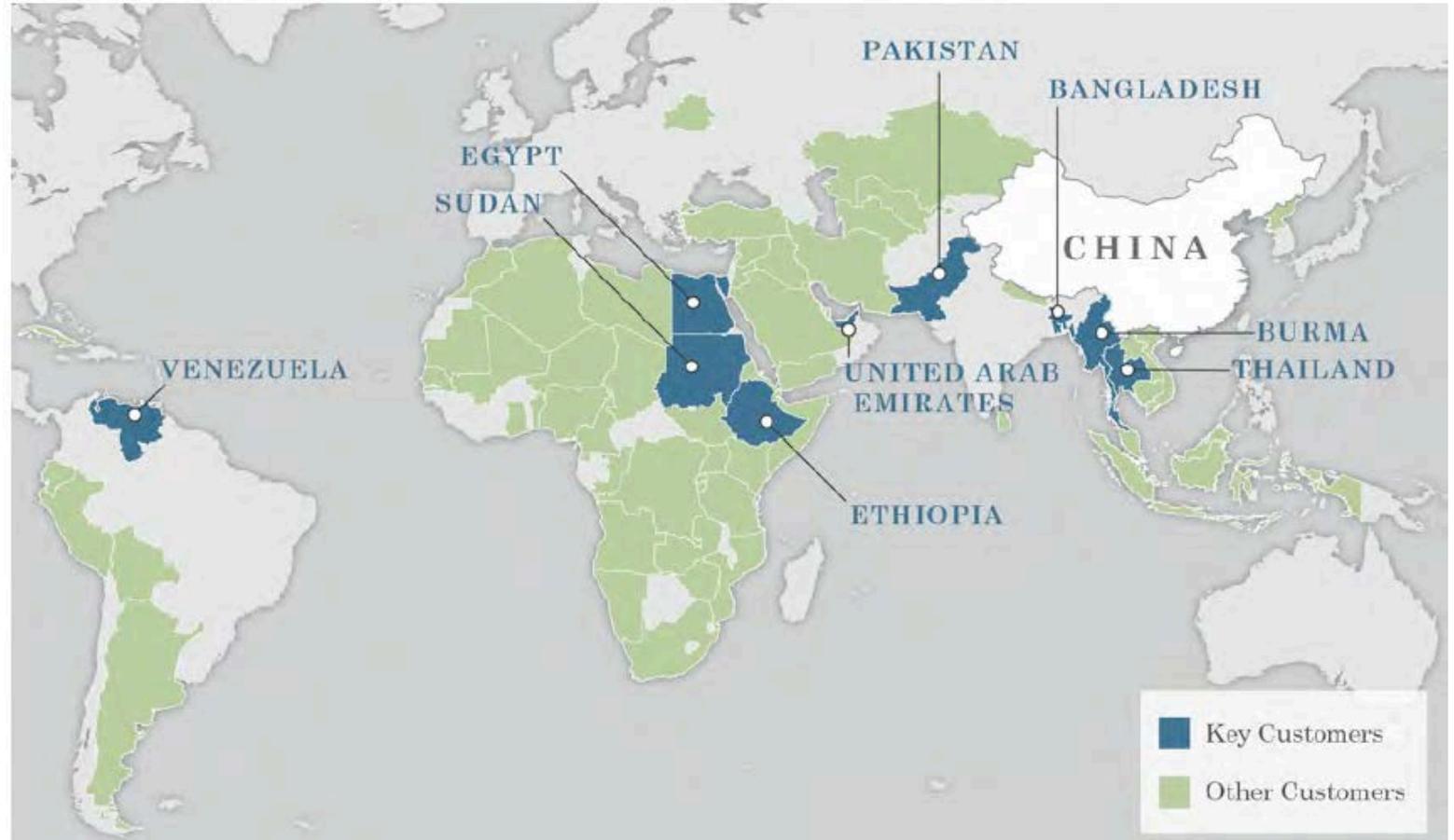
(3) Arms trade values include only trade among countries covered by WMEAT and unspecified or multinational entities

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	Mean
China	Arms exports (goods & services)	1.8	2.2	1.6	3.4	1.8	2.0	2.6	2.1	5.0	2.8	4.0	-
China	Arms imports (goods & services)	0.8	1.5	1.1	1.2	0.7	1.1	1.0	1.2	0.6	0.7	1.1	-
China	All exports (goods & services)	1,666.1	1,936.2	1,648.0	2,098.1	2,571.1	2,781.2	3,013.3	3,131.0	3,001.6	2,832.5	3,114.6	-
China	All imports (goods & services)	1,330.5	1,558.2	1,401.6	1,846.1	2,358.3	2,521.4	2,745.2	2,879.6	2,618.5	2,550.6	2,870.2	-
China	Arms exports as % of all exports	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	0.1%	0.1%	0.2%	0.1%	0.1%	-
China	Arms imports as % of all imports	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	-
China	Arms balance as % of trade balance	0.3%	0.2%	0.2%	0.9%	0.5%	0.3%	0.6%	0.3%	1.2%	0.8%	1.2%	-

China's Key Arms Customers 2002-2007

Other Customers				
Algeria	Congo, Republic of	Kuwait	North Korea	Timor-Leste
Angola	Cuba	Laos	Peru	Turkey
Argentina	Djibouti	Lebanon	Qatar	Turkmenistan
Belarus	Ecuador	Libya	Rwanda	Uganda
Benin	Equatorial Guinea	Malaysia	Saudi Arabia	Uzbekistan
Bolivia	Eritrea	Mali	Senegal	Vietnam
Burundi	Ghana	Mauritania	Seychelles	Yemen
Cambodia	Indonesia	Morocco	Somalia	Zambia
Cameroon	Iran	Mozambique	South Africa	Zimbabwe
Chad	Iraq	Namibia	South Sudan	
Congo, Democratic Republic of	Jordan	Nepal	Sri Lanka	
	Kazakhstan	Niger	Syria	
	Kenya	Nigeria	Tanzania	

Over 65 countries have been recipients of Chinese arms since 2002.

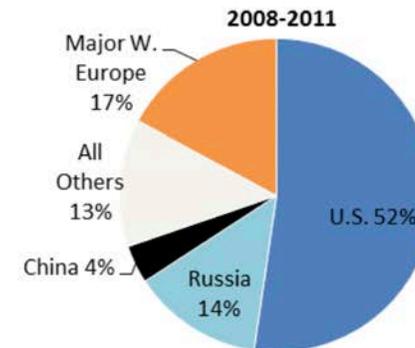
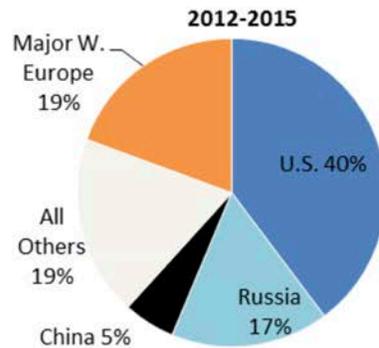


Source: Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 353.

China's Worldwide Arms Exports: 2008-2015

(Figures are based on CRS Estimates of Market Value in \$US millions)

Arms Transfer Agreements Worldwide
(supplier percentage of value)



Supplier	Worldwide Deliveries Value 2012-2015	Percentage of Total to Developing World
United States	64,640	69.63%
Russia	38,100	91.60%
France	20,400	68.14%
United Kingdom	10,900	50.46%
China	9,600	98.96%
Germany	6,800	57.35%
Italy	6,800	63.24%
All Other European	25,500	46.27%
All Others	16,700	39.52%
TOTAL	199,440	67.89%

China's Weapons Imports: 2010-2020

(Figures are SIPRI Trend Indicator Values (TIVs) expressed in Nominal \$US millions)

SIPRI has developed a unique pricing system to measure the volume of deliveries of major conventional weapons and components using a common unit—the SIPRI trend-indicator value (TIV). **The TIV of an item being delivered is intended to reflect its military capability rather than its financial value. This common unit can be used to measure trends in the flow of arms between particular countries and regions over time—in effect, a military capability price index.** Therefore, it is important to ensure that the pricing system remains consistent across both the weapon systems covered and over time, and that any changes introduced are backdated.

Each weapon that falls within the SIPRI definition of major conventional arms (see box 1) is given a TIV. The TIV is derived from the known unit production costs of a core set of weapons. The TIV for a weapon whose unit production cost is unknown is calculated by making a comparison with core weapons based on the following elements: size and performance characteristics (i.e. weight, speed, range and payload); types of electronics, loading or unloading arrangements, engine, tracks or wheels, armament, and materials; and finally the era in which the weapon was produced.

Weapons that have previously been used by another armed force (i.e. surplus weapons) are given a value equal to 40 per cent of that of a new weapon. Used weapons that have been significantly refurbished or modified by the supplier before delivery are given a value of 66 per cent of the value when new. The overall volume of arms exports from a particular state in any given year is then calculated by adding together the TIVs for the weapons and components delivered. Since year-on-year deliveries can fluctuate, SIPRI uses 5-year moving averages to provide a more stable measure for trends in international arms transfers.

The SIPRI TIV is often misinterpreted as a financial value. However, it neither reflects the actual price paid for weapons nor represents current dollar values for arms transfers. The TIV should therefore not be compared directly with gross national product (GNP), gross domestic product (GDP), military expenditure, sales values or the financial value of arms export licenses. However, TIVs can be used as the raw data for calculating trends in international arms transfers over periods of time; indicative global percent-ages for suppliers and recipients; and percentages for the volume of transfers to or from particular states.

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Belarus				170								170
France	158	171	204	214	179	201	158	140	121	126	98	1770
Germany	3	3	3	11	11	15	7	11	15	15	15	109
Russia	685	746	598	694	602	780	691	1011	1696	1108	600	9209
Switzerland	65	65	65	65	65	65	65	33	33			520
Ukraine			632	66	150	96	90	103	78	78	78	1370
United Kingdom	70	70	70	70	70	70	60	40	20	20	20	580
Uzbekistan						34	68					102
Total	981	1055	1571	1289	1077	1262	1139	1338	1962	1347	811	13831

China's Comparative Weapons Deliveries to the Developing World: 2008-2015

Source: U.S. government.

Note: Developing nations category excludes the United States, Russia, Europe, Canada, Japan, Australia, and New Zealand. All data are for calendar years given. * Major West European includes France, United Kingdom, Germany, and Italy totals as an aggregate figure. Data relating to surface-to-surface and anti-ship missiles by foreign suppliers are estimates based on a variety of sources having a wide range of accuracy. As such, individual data entries in these two weapons delivery categories are not necessarily definitive.

Weapons Category	U.S.	Russia	China	Major West European*	All Other European	All Others
2008-2011						
Tanks and Self-Propelled Guns	348	630	490	360	550	50
Artillery	155	110	340	140	600	190
APCs and Armored Cars	188	570	620	420	1,630	580
Major Surface Combatants	0	2	3	5	5	4
Minor Surface Combatants	0	8	113	64	52	118
Guided Missile Boats	0	2	0	0	0	4
Submarines	0	2	0	4	1	0
Supersonic Combat Aircraft	58	170	30	40	130	50
Subsonic Combat Aircraft	0	0	20	50	20	80
Other Aircraft	62	20	130	50	160	40
Helicopters	35	270	20	150	70	50
Surface-to-Air Missiles	1,088	8,160	2,080	360	650	500
Surface-to-Surface Missiles	1,285	70	0	0	0	10
Anti-Ship Missiles	133	260	80	80	10	50
2012-2015						
Tanks and Self-Propelled Guns	76	430	130	80	390	10
Artillery	232	130	250	40	630	430
APCs and Armored Cars	1	680	760	960	920	460
Major Surface Combatants	0	3	6	13	2	4
Minor Surface Combatants	0	8	19	67	67	86
Guided Missile Boats	0	0	2	2	0	7
Submarines	0	4	0	8	0	2
Supersonic Combat Aircraft	45	100	20	20	20	40
Subsonic Combat Aircraft	0	0	0	20	10	30
Other Aircraft	35	20	50	130	260	50
Helicopters	2	280	40	140	30	50
Surface-to-Air Missiles	346	6,300	1,310	1,130	240	630
Surface-to-Surface Missiles	163	80	10	0	0	0
Anti-Ship Missiles	116	40	110	210	0	20

Source: Catherine A. Theohary, *Conventional Arms Transfers to Developing Nations, 2008-2015*, Congressional Research Service, p. 51, December 19, 2021, <https://fas.org/sgp/crs/weapons/R44716.pdf>.

China's Weapons Exports: 2010-2020

(Figures are SIPRI Trend Indicator Values (TIVs) expressed in Nominal \$ US millions)

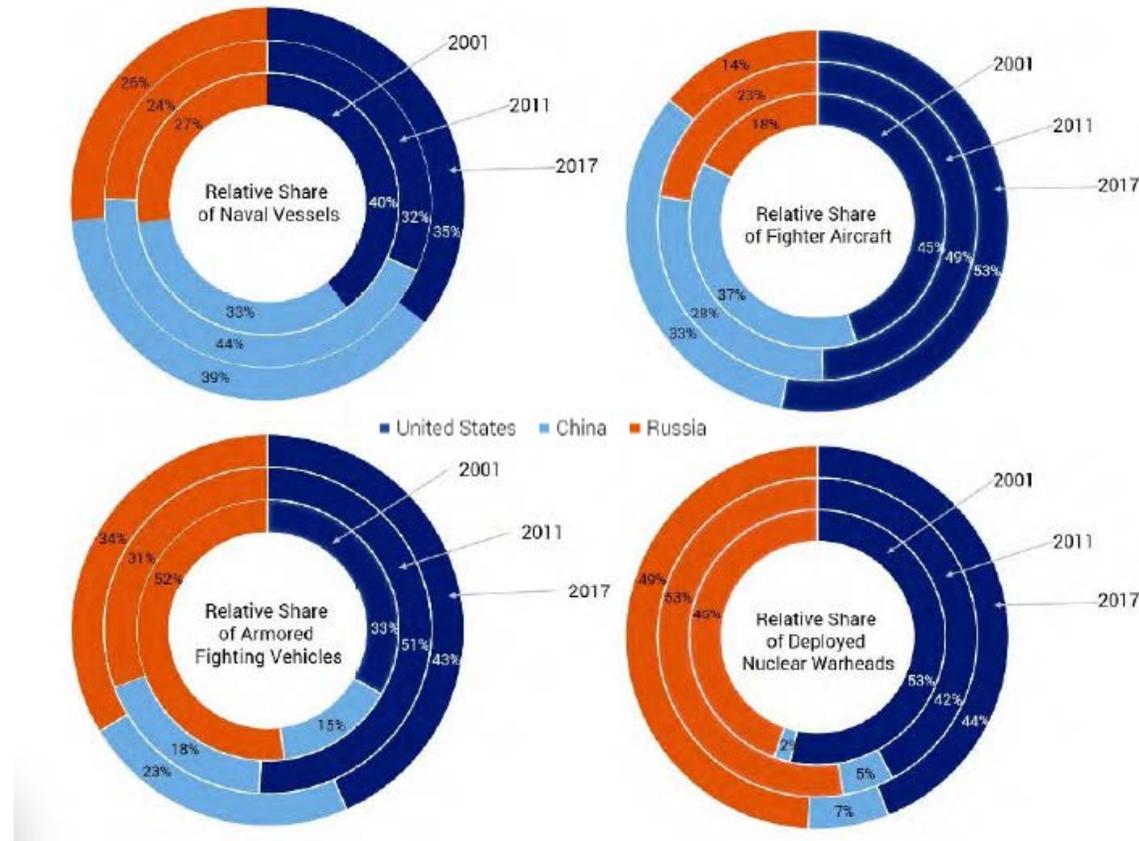
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Afghanistan								1				1
Algeria	18				68	245	496	17	57	24	3	928
Angola						1	15			15	42	72
Argentina	1											1
Bahamas								0				0
Bahrain							4					4
Bangladesh	13	81	151	488	201	450	262	205	92	637	27	2605
Belarus							2	1	1			4
Benin	0			0								0
Bolivia		21			20		4		1			46
Burundi			5									5
Cambodia			15	39					2	1		57
Cameroon			9	118	85							212
Central African Republic									1			1
Chad	16			39								55
Cote d'Ivoire								4				4
Djibouti					8	1	4			0		13
DR Congo						1						1
Ecuador	8											8
Egypt	35		1	1	1		6	18	18			81
Ethiopia			2	50	2				2	2		57
Gabon										25		25
Ghana	2	56		22		13	8					102
Indonesia	2	8	64	73	34	38	40	34	16	21	16	347
Iran	60	50	29	9	9	9						168
Iraq						27	27					54
Jordan	2				1		24					27
Kazakhstan							9		23			32
Kenya	13				7	10	11					40
Kyrgyzstan										1		1
Laos			15	15		1		2	51	9		93

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total	
Malaysia													
Mali								4				4	
Mauritania							34			25		59	
Morocco	221	34	34									289	
Mozambique					4		2					5	
Myanmar	5	277	251	189	63	180	215	119	94	47		1439	
Namibia			52	9			3	34				98	
Nepal								8	1	14		23	
Niger								3				3	
Nigeria	156				57	22	36					57	328
Pakistan	745	599	602	735	469	548	719	644	436	416	543	6455	
Peru	1					13						14	
Qatar								29	88			118	
Rwanda								1	3			4	
Saudi Arabia						35	15	35	40	40	40	205	
Senegal							16	20				36	
Serbia												11	11
Seychelles		4			10							14	
Sierra Leone		2				0	1					4	
Slovakia								13				13	
Somalia								2				2	
South Sudan					12							12	
Sri Lanka	4								1	59		65	
Sudan	17	18	29	28	32	35	20	44	32			254	
Syria	15				5							20	
Tajikistan									3	1		4	
Tanzania		76	113	118	14	20		2				342	
Thailand		2	18	22	7	1	77	131	52	97	9	415	
Timor-Leste	18											18	
Trinidad and Tobago						16						16	
Turkey	35	35	35									105	
Turkmenistan							230	4				234	
UAE				15	15	15	15	37	46	12	11	166	
United Wa State (Myanmar)*					2							2	
Uzbekistan					15				107			122	
Venezuela	89	8	51	97	74	100	76					494	
Zambia			51				33	33				1	117
Total	1475	1271	1526	2067	1212	1780	2410	1438	1169	1472	760	16580	

Source: Stockholm International Peace Research Institute (SIPRI), Arms Transfer Database, https://armstrade.sipri.org/armstrade/html/export_values.php, accessed June 6, 2021.

Total Chinese, Russian, and U.S. Military Forces

Comparative Size of U.S., Chinese, and Russian Active Military Forces : Relative Force Size: 2001-2017



Source: International Institute for Strategic Studies (IISS) Military Balance, 2002, 2012, 2018. See United States Institute of Peace, “Providing for the Common Defense: The Assessments and Recommendations of the National Defense Strategy Commission,” November 13, 2018, p.13, <https://www.usip.org/publications/2018/11/providing-common-defense>.

Comparative Size of U.S., Chinese, and Russian Conventional Military Forces in 2020

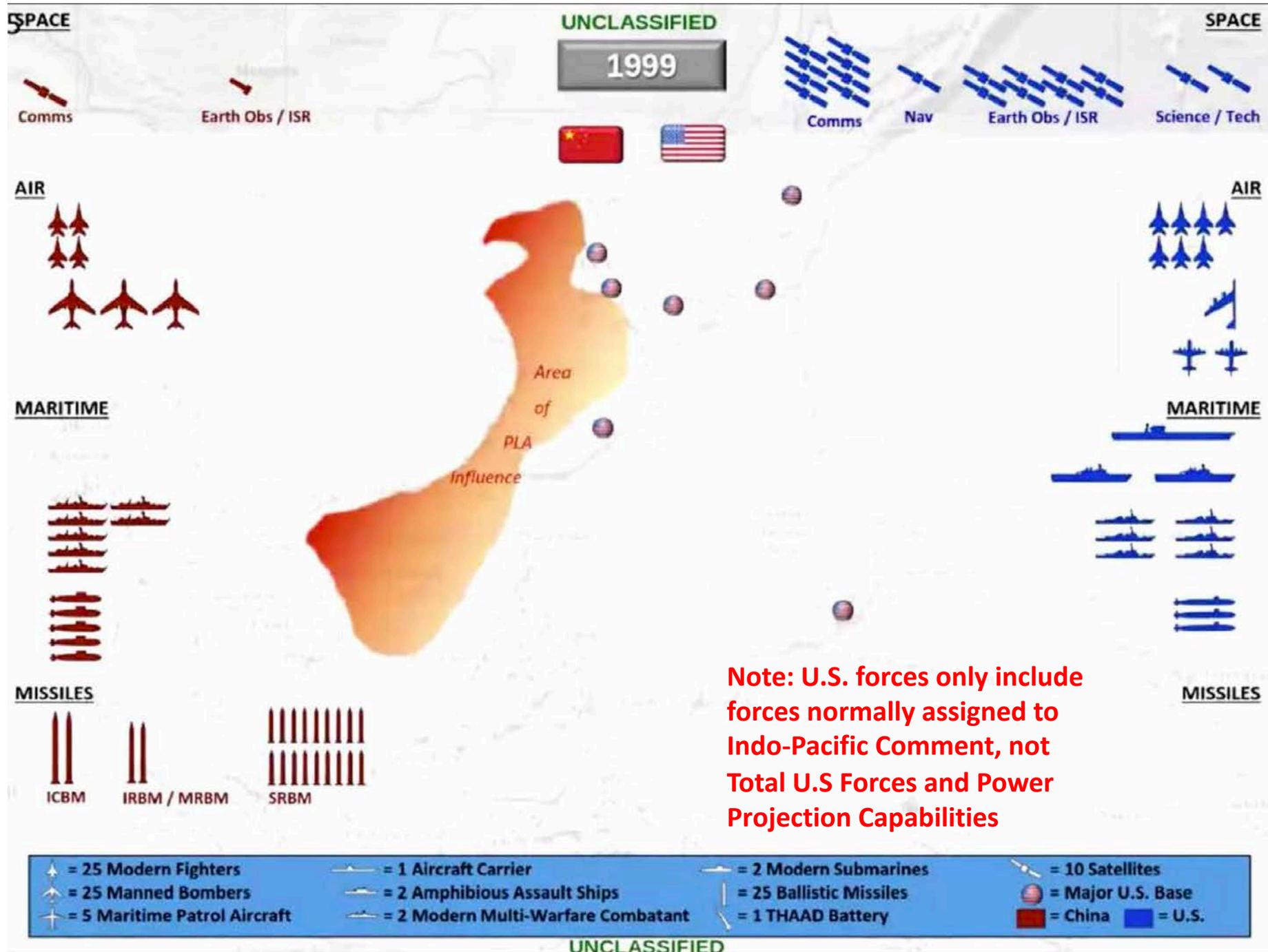
Category	U.S.	China	Russia	U.S.	China	Russia	
Defense Expenditures (\$US billions)	730	225+	61.6				
Defense Budget (\$US billions)	685	181	48.2				
Active Military Personnel	1,379,800	2,035,000	900,000	Marine Active Personnel	186,300	25,000	35,000
Reserve Military Personnel	849,850	510,000	2,000,000	Tanks	447	?	300
SSBN	16	4	10	AFVs, and APCs	1,895	237+	1,461
ICBMs	400	98	340	Artillery	1,452	40+	383
IRBM	-	72	-	Combat Capable Aircraft	432	-	-
MRBM	0	174	76	Attack Helicopters	145	-	-
Nuclear Bombers	112			Air Force Active Personnel	332,650	395,000	165,000
Army Active Personnel	481,750	975,000	280,000	Combat Capable Aircraft	1,522	2,517	1,183
Main Battle Tanks	2,389	5,850	2,800	Bomber	139	176	138
Other Armored Fighting Vehicles (AFVs)	4,810	6,950	6,860	Fighter Ground Attack (FGA)	969	794+	444
Armor Personnel Carriers	10,547	3,950	6,100+	Fighter	-	759	180
Artillery (Towed, SP, MRL)	5,444	6,194+	2,802+	Attack	143	140	264
Surface-to-Surface Missiles (MLRS)	140?	?	140?	EW, IS&R, ELINT	75	69	43
Attack Helicopters	714	270+	393+	AE&W	31	13	9
Navy Active Personnel	337,100	250,000	150,000	Tanker	178	13	15
Tactical Nuclear Submarines (SSGN.SSN)	53	6	10	Transport/Airlift	331	336+	439
Tactical Conventional Submarines	0	48	22	Long Range-Surface-to-Air Missile Launch units	480+	516+	186-226
Principal Surface Combatants	121	82	33				
Aircraft Carriers	11	1	1				
Combat Capable Aircraft	981	404	217				
ASW Helicopters	269	28	83				
Cruisers	24	1	1				
Destroyers & Frigates	86	80	28				
Patrol and Coastal Combatants	84	209	118				
Principal Amphibious Ships & Landing Ships	40	6	20				
Mine Warfare	11	54	43				

Source: Relevant country sections of the IISS, *Military Balance*, 2020.

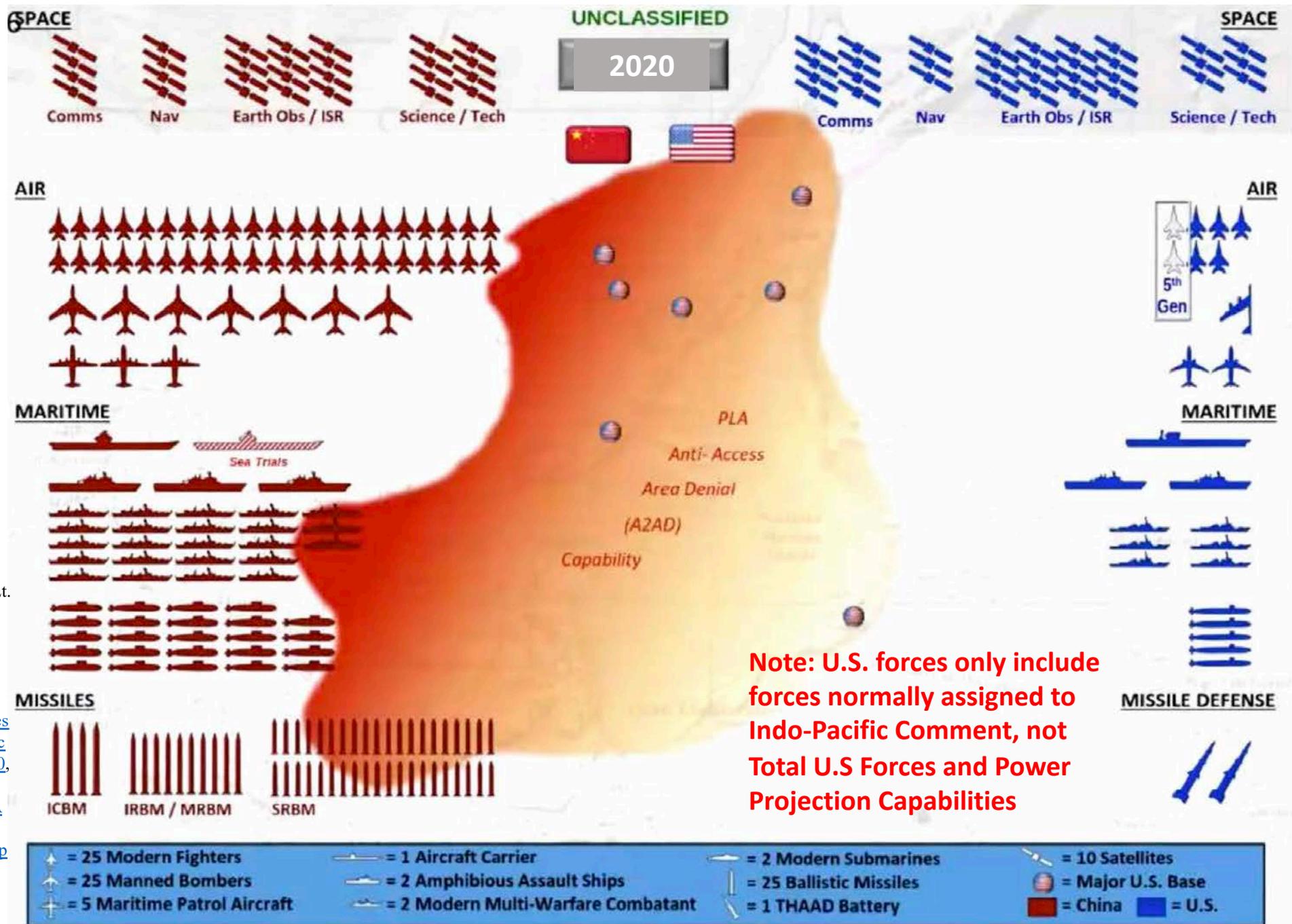
**Growth of Chinese Forces in
the Asia-Pacific Region
Relative to US Forces Assigned
to the Indo-Pacific Command:
1999-2025**

Chinese Forces and Area of Influence in 1999

Source: Reformatted from Lt. General Mike Minihan, "United States Indo Pacific Command," NDU WMD, July 7, 2020, <https://us-tti.bbcollab.com/collab/ui/session/playback/load/7cf6bb5c7aaa4aa9930d7bd7b8df0b00>, and FAS https://fas.org/wp-content/uploads/2020/09/PACOM2020_NDU-WMD-Brief2020_Minihan070720.pdf.



Chinese and U.S. Forces and Areas of Influence in 2020

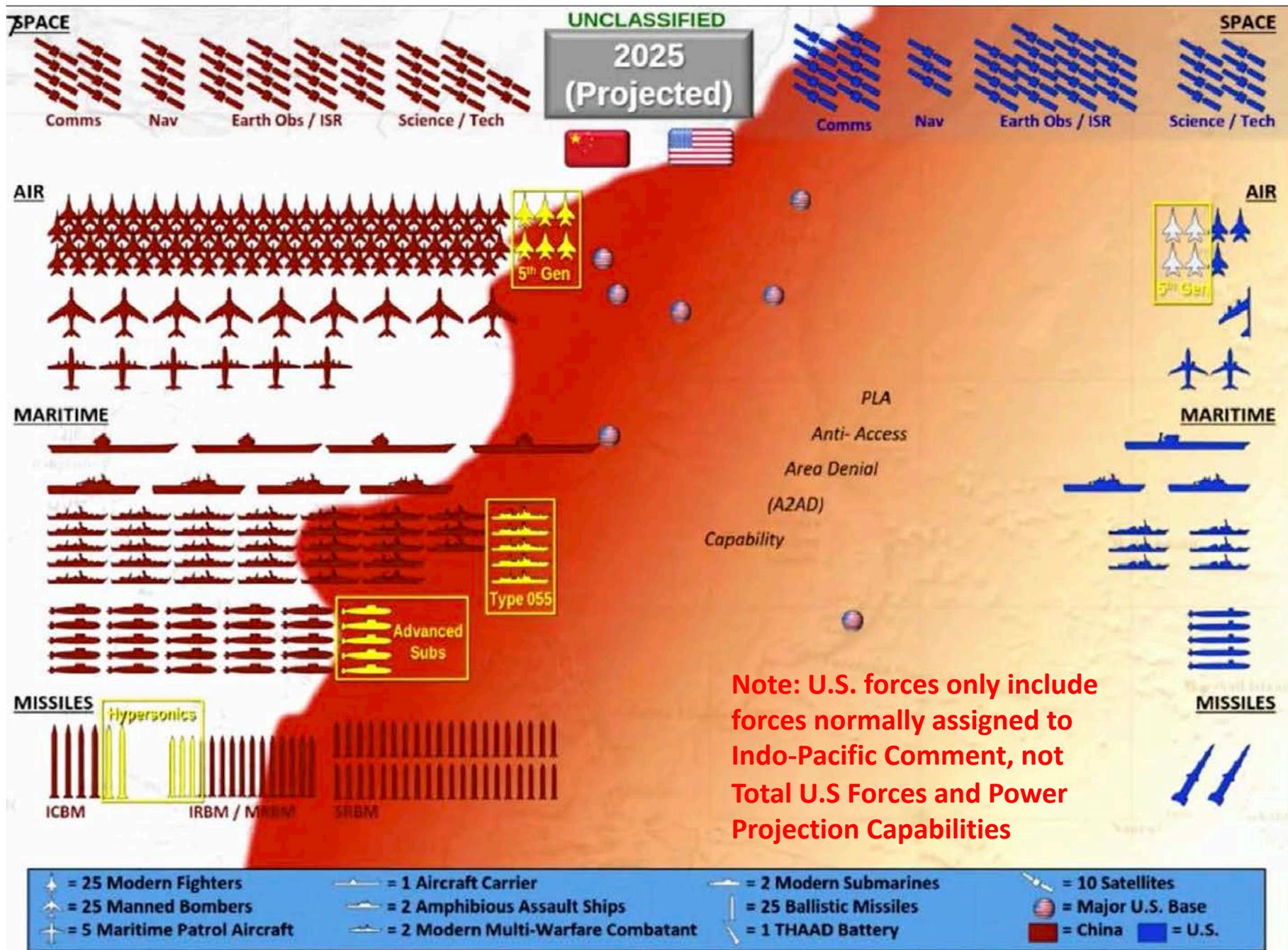


Source: Reformatted from Lt. General Mike Minihan, "United States Indo Pacific Command," NDU WMD, July 7, 2020, <https://us-iti.bbcollab.com/collab/ui/session/playback/load/7cf6bb5c7aaa4aa9930d7bd7b8df0b00>, and FAS https://fas.org/wp-content/uploads/2020/09/PACOM2020_NDU-WMD-Brief2020_Minihan070720.pdf.

Note: U.S. forces only include forces normally assigned to Indo-Pacific Command, not Total U.S Forces and Power Projection Capabilities

Chinese and U.S. Forces and Areas of Influence in 2025

Source: Reformatted from Lt. General Mike Minihan, "United States Indo Pacific Command," NDU WMD, July 7, 2020, <https://us-tti.bbcollab.com/collab/ui/session/playback/load/7cf6bb5c7aaa4aa9930d7bd7b8df0b00>, and FAS https://fas.org/wp-content/uploads/2020/09/PACOM2020_NDU-WMD-Brief2020_Minihan070720.pdf.



U.S. Bases, Facilities, and Commands in the Pacific and Indian Ocean



Source: Reformatted from Lt. General Mike Minihan, "United States Indo Pacific Command," NDU WMD, July 7, 2020, <https://us-iti.bbcollab.com/collab/ui/session/playback/load/7cf6bb5c7aaa4aa9930d7bd7b8df0b00>, and FAS https://fas.org/wp-content/uploads/2020/09/PACOM2020_NDU-WMD-Brief2020_Minihan070720.pdf.

China's Strategic Geography and Military Activity in Asia and the Pacific

Burke Chair
In Strategy

China's Military Theaters of Operation

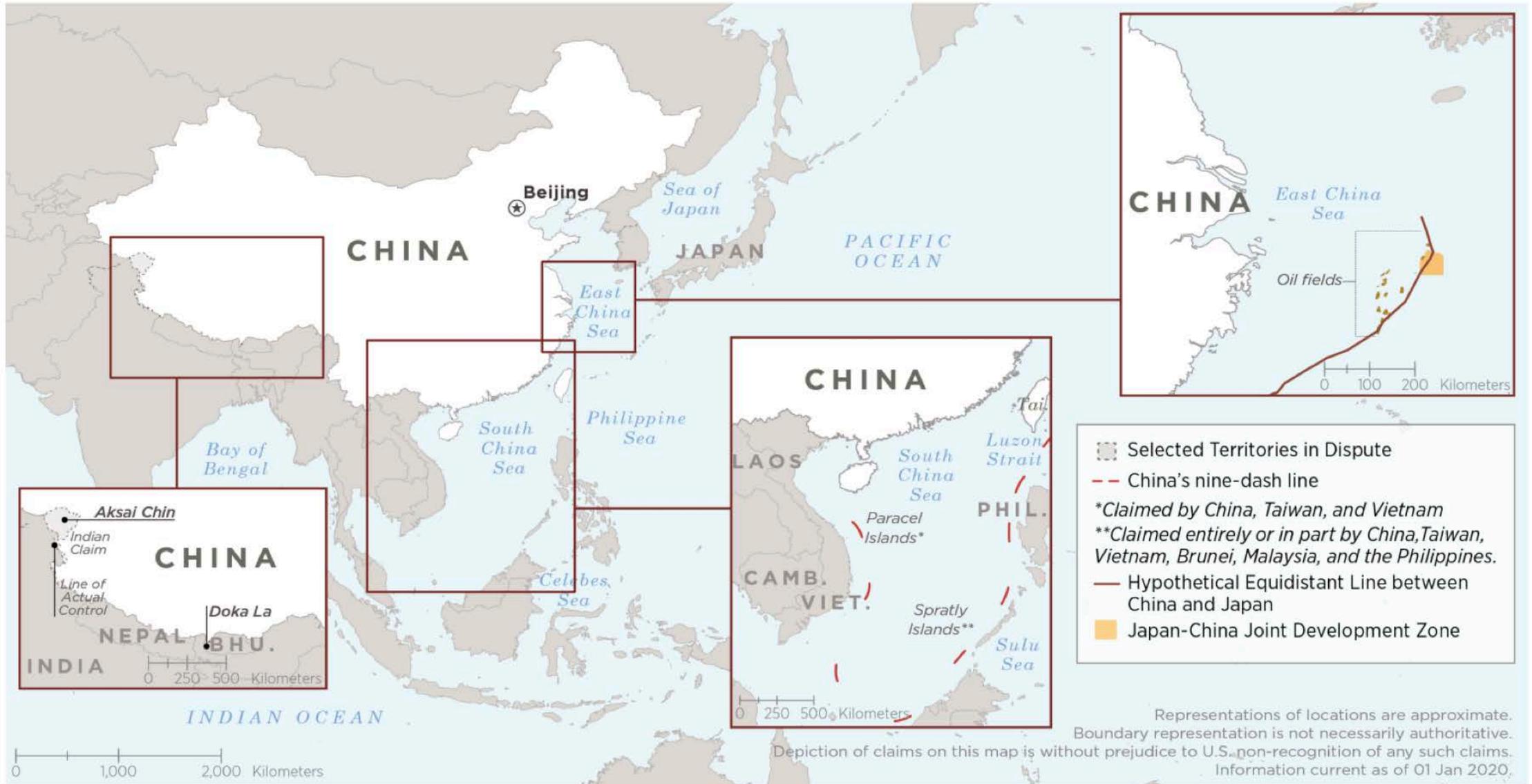
Source: Source: Caitlin Campbell, *China's Military: The People's Liberation Army*, CRS, R46808, June 4, 2021, p. 12.



Source: Created by CRS. Map generated by CRS Visual Information Specialist Amber Wilhelm.

Note: China reorganized the seven military regions into five theater commands in 2016.

Selected Chinese Territorial Claims



Overseas Basing and Access

The PRC is seeking to establish a more robust overseas logistics and basing infrastructure to allow the PLA to project and sustain military power at greater distances. Beijing may assess that a mixture of military logistics models, including preferred access to commercial infrastructure abroad, exclusive PLA logistics facilities with prepositioned supplies co-located with commercial infrastructure, and bases with stationed forces, most closely aligns with the PRC's overseas military logistics needs. Currently, the PRC uses commercial infrastructure to support all of its military operations abroad, including the PLA's presence in other countries' territories, including its base in Djibouti. Some of the PRC's OBOR projects could create potential military advantages, such as PLA access to selected foreign ports to pre-position the necessary logistics support to sustain naval deployments in waters as distant as the Indian Ocean, Mediterranean Sea, and Atlantic Ocean to protect its growing interests.

PRC official sources assert that military logistics facilities, to include its Djibouti base, will be used to provide international public goods like support to U.N. operations and HA/DR, and to secure China's lines of communication, citizens and assets abroad. Regardless, a global PLA military logistics network could both interfere with U.S. military operations and support offensive operations against the United States as the PRC's global military objectives evolve. Host nations can perform an essential role in regulating the PRC's military operations, as PRC officials very likely recognize that a stable long-term relationship with the host nation is critical to the success of their military logistics facilities.

> PRC military academics assert that bases abroad can enable forward deployment of PLA forces and support military conflict, diplomatic signaling, political change, bilateral and multilateral cooperation, and training. They also suggest that a military logistics network could enable intelligence monitoring of the U.S. military.

> In August 2017, the PRC officially opened its first PLA base in Djibouti. PLA Navy Marines are stationed at the base with wheeled armored vehicles and artillery but are currently dependent on nearby commercial ports due to the lack of a pier on base. PLA personnel at the facility have interfered with U.S. flights by lasing pilots and flying drones, and the PRC has sought to restrict Djiboutian sovereign airspace over the base.

Beyond its base in Djibouti, the PRC is very likely already considering and planning for additional military logistics facilities to support naval, air, and ground forces projection. The PLA's approach likely includes consideration of many different sites and outreach to many countries, but only some will advance to negotiations for an infrastructure agreement, status of forces or visiting forces agreement, and/or basing agreement. Critical organizations involved in planning and negotiating for military logistics facilities are the Central Military Commission (CMC) Joint Staff Department, CMC Logistic Support Department, and service headquarters. China's overseas military basing will be constrained by the willingness of potential host nations to support a PLA presence.

> The PRC has likely considered Myanmar, Thailand, Singapore, Indonesia, Pakistan, Sri Lanka, United Arab Emirates, Kenya, Seychelles, Tanzania, Angola, and Tajikistan as locations for PLA military logistics facilities. The PRC has probably already made overtures to Namibia, Vanuatu, and the Solomon Islands. Known focus areas of PLA planning are along the SLOCs from China to the Strait of Hormuz, Africa, and the Pacific Islands.

> Cambodia declined a U.S. offer to pay to renovate a U.S.-donated building on Ream Naval Base in Cambodia. Cambodia may have instead accepted assistance from China or another country to develop Ream Naval Base. If China is able to leverage such assistance into a presence at Ream Naval Base, it suggests that China's overseas basing strategy has diversified to include military capacity-building efforts. Both the PRC and Cambodia have publicly denied having signed an agreement to provide the PLAN access to Ream Naval Base.

Global Military Cooperation and Security Assistance – I

As the PRC's overseas interests have grown over the past two decades, the Party's leaders have increasingly pushed the PLA to think about how it will operate beyond China's borders and its immediate periphery to advance and defend these interests. More recently, the PRC has recognized that its armed forces should take a more active role in advancing its foreign policy goals. The PRC's 2019 defense white paper notably described its armed forces as responding, "faithfully to the call for a community with a shared future for mankind" and called on its military to "actively participate in the reform of global security governance system." In line with this direction, the PLA in 2019 continued to expand its participation in bilateral and multilateral military exercises, normalize its presence overseas, and build closer ties to foreign militaries. The PLA is increasingly likely to couch the purpose of its external activities in terms of providing direct support to the PRC's foreign policy goals, such as advancing China's strategic partnerships through greater military cooperation.

The PLA's Evolving Missions and Tasks. In 2004, one of the "new historic missions" given to the PLA by then-President Hu Jintao was to support China's overseas interests and diplomacy. The PLAN's evolving focus—from "offshore waters defense" to a mix of "offshore waters defense" and "open seas protection"—reflects the PLAN's interest in a wider operational reach. The PLAAF's missions and tasks have similarly evolved towards conducting operations beyond China and its immediate periphery and supporting the PRC's interests by becoming a "strategic" air force. Additionally, the PLA has embraced its concept of non-war military activities (NWMA) as an effective way for it lend support to and safeguard China's development, expand the PRC's global interests, and gain valuable operational experience.

The PLAN, PLAAF, PLAA, and SSF have deployed abroad for counterpiracy, humanitarian assistance and disaster relief (HA/DR), peacekeeping, training exercises, and space support operations. Within the PLA, the PLAN may have the most experience operating abroad due to its far seas deployments and counterpiracy missions, the PLAAF likely has the most experience conducting rapid response HA/DR operations abroad, and the PLAA has the most experience conducting PKO. The SSF runs tracking, telemetry, and command stations in Namibia, Pakistan, and Argentina. The SSF also has a handful of Yuan Wang space support ships to track satellite and intercontinental ballistic missile (ICBM) launches.

- > Since 2008, PLAN ships have visited the Middle East, Europe, Africa, South Asia, Southeast Asia, Oceania, and Latin America. The PLAN has also conducted submarine deployments to the Indian Ocean, demonstrating its increasing familiarity with operating in that region and underscoring China's interest in protecting sea lines of communication (SLOCs) beyond the South China Sea. In 2015, three PLAN ships from a Gulf of Aden naval escort task force evacuated 629 PRC citizens from Yemen to Djibouti and Oman.
- Since 2002, the PLAAF has delivered aid after natural disasters throughout Southeast Asia and South Asia, assisted with evacuation from Libya in 2015, and searched for Malaysian aircraft MH370 in 2014.

Counterpiracy Efforts. In 2019, China continued to conduct counterpiracy operations in the Gulf of Aden by deploying its 31st, 32nd, and 33rd naval escort task forces to the area since 2008. The 32nd Task Force escorted 42 Chinese and foreign ships during its deployment and participated in the China-France military exchange and the Russian Navy Day festival celebrations. At the conclusion of deployments, these task groups conduct port calls and held bilateral engagements with host country militaries and local Chinese communities, providing additional opportunities for PLA military diplomacy. The 32nd Task Force conducted port calls to Mozambique and Malaysia.

Peacekeeping Operations. In 2019, China remained the largest troop contributor to UN peacekeeping missions among the permanent members of the UN Security Council. China uses its participation in UN PKO to highlight its role as a "responsible" global actor and to obtain operational experience for the PLA. The PLA uses its participation in PKO to refine its ability to operate beyond the PRC's borders. The PLA highlighted its peacekeeping contributions in the PRC's 70th anniversary parade in October 2019.

- > China provides personnel to UN operations in Sudan, South Sudan, Mali, the Democratic Republic of the Congo, Western Sahara, Cyprus, Lebanon and elsewhere in the Middle East. PRC personnel deployed to PKO consist of troops, police, staff officers, and experts including engineers, medical professionals, and logisticians. In August 2019, the PLAA sent its third helicopter detachment to Sudan, transported by PLAAF heavy-lift transport aircraft, and in November 2019, sent its sixth peacekeeping infantry battalion to South Sudan.

Global Military Cooperation and Security Assistance – II

- As of December 2019, China was the tenth-largest contributor to UN PKOs with approximately 2,545 personnel among eight UN PKO missions in Africa, Europe and the Middle East. China's personnel contributions have decreased slightly since 2018 from 2,634 personnel in January 2018 to 2,545 personnel in December 2019. China is the second largest contributor to UN PKO and funded 15.21 percent of the total \$6.5 billion annual UN peacekeeping budget in 2019, an increase from 10.24 percent in 2018.

Military Cooperation. Recognizing the PLA's role in defending China's overseas interests and supporting its foreign policy, the PRC's 2019 defense white paper noted that the PLA "promotes international security and military cooperation and refines relevant mechanisms for protecting China's overseas interests." As the PRC's regional and international interests grow more complex, the PLA's international engagements will likely continue to expand. For example, senior-level military visits and exchanges provide the PLA with opportunities to increase its officers' international exposure, advance the PRC's foreign policy goals through military assistance programs, and develop professional relationships. Expanding travel abroad for PLA officers enables the PLA to better observe and study foreign military command structures, unit formations, and operational training and shape approaches to shared security concerns. In 2019, PRC Defense Minister General Wei Fenghe attended the Shangri-La Dialogue for the first time since 2011 and spoke on the PRC's role in the Indo-Pacific region.

The PRC continues to expand the PLA's participation in bilateral and multilateral military exercises, normalizing the PLA's presence overseas and establishing ties to foreign militaries. For example, in 2019 the PLA participated in Russia's national-level exercise TSENTR-19 along with forces from India, Pakistan, Kyrgyzstan, Kazakhstan, Tajikistan, and Uzbekistan. To participate in the exercise, the PLA deployed 1,600 personnel from the Western Theater Command and nearly 30 fixed-wing aircraft and helicopters.

...In addition to providing PLA forces and other personnel to several UN PKOs in Africa, the PRC provides support to AU- sanctioned operations including the African Union Mission in Somalia (AMISOM) to which it has provided equipment and \$1.2 million in annual funding. China also provided \$100 million dollars of military equipment to the AU-supported African Standby Force's strategic stockpile at the Continental Logistics Base in Douala, Cameroon. In July 2019, the PRC Ministry of National Defense hosted the first China-Africa Peace and Security Forum in Beijing. Attended by defense and military representatives from 50 African countries, the forum sought to deepen China's role in African security issues and more broadly promote the PRC's foreign policy objectives to strengthen its strategic partnerships with African countries and further its concept of building a "community with a shared future for mankind."

In 2011, China and Tajikistan settled their border dispute in this region by Tajikistan ceding more than 300 sq. miles of land to China. Since 2016, China has also agreed to build guard outposts and a training facility in the tri-border region, with some reports suggesting the new outposts could number as high as 40.

PRC technology companies may also be collecting facial recognition data on Tajikistanis with the citywide facial recognition supplied since at least 2013, similar to the surveillance equipment installed in Xinjiang.

U.S. Freedom of Navigation Operations (FONOPS) Since 2016

Date	Location in SCS	U.S. Navy Ship
May 25, 2017	Mischief Reef in Spratly Islands	<i>Dewey</i> (DDG-105)
July 2, 2017	Triton Island in Paracel Islands	<i>Stethem</i> (DDG-63)
August 10, 2017	Mischief Reef in Spratly Islands	<i>John S. McCain</i> (DDG-56)
October 10, 2017	Paracel Islands	<i>Chaffee</i> (DDG-90)
January 7, 2018	Paracel Islands	<i>McCampbell</i> (DDG-85)
January 17, 2018	Scarborough Shoal	<i>Hopper</i> (DDG-70)
March 23, 2018	Mischief Reef in Spratly Islands	<i>Mustin</i> (DDG-89)
May 27, 2018	Tree, Lincoln, Triton, and Woody islands in Paracel Islands	<i>Antietam</i> (CG-54) and <i>Higgins</i> (DDG-76)
September 30, 2018	Gaven and Johnson Reefs in Spratly Islands	<i>Decatur</i> (DDG-73)
November 26, 2018	Paracel Islands	<i>Chancellorsville</i> (CG-62)
January 7, 2019	Tree, Lincoln, and Woody islands in Paracel Islands	<i>McCampbell</i> (DDG-85)
February 11, 2019	Mischief Reef in Spratly Islands	<i>Spruance</i> (DDG-111) and <i>Preble</i> (DDG-88)
May 6, 2019	Gaven and Johnson Reefs in Spratly Islands	<i>Preble</i> (DDG-88) and <i>Chung Hoon</i> (DDG-93)
May 19, 2019	Scarborough Shoal in Spratly Islands	<i>Preble</i> (DDG-88)
August 28, 2019	Fiery Cross Reef and Mischief Reef in Spratly Islands	<i>Wayne E. Meyer</i> (DDG-108)
September 13, 2019	Paracel Islands	<i>Wayne E. Meyer</i> (DDG-108)
November 20, 2019	Mischief Reef in Spratly Islands	<i>Gabrielle Giffords</i> (LCS-10)
November 21, 2019	Paracel Islands	<i>Wayne E. Meyer</i> (DDG-108)
January 25, 2020	Spratly Islands	<i>Montgomery</i> (LCS-8)
March 10, 2020	Paracel Islands	<i>McCampbell</i> (DDG-85)
April 28, 2020	Paracel Islands	<i>Barry</i> (DDG-52)
April 29, 2020	Gaven Reef in Spratly Islands	<i>Bunker Hill</i> (CG-52)

Date	Location in SCS	U.S. Navy Ship
May 28, 2020	Woody Island and Pyramid Rock in Paracel Islands	<i>Mustin</i> (DDG-89)
July 14, 2020	Cuarteron Reef and Fiery Cross Reef in Spratly Islands	<i>Ralph Johnson</i> (DDG-114)
August 27, 2020	Paracel Islands	<i>Mustin</i> (DDG-89)
October 9, 2020	Paracel Islands	<i>John S. McCain</i> (DDG-56)
December 22, 2020	Spratly Islands	<i>John S. McCain</i> (DDG-56)
December 24, 2020	Con Dao Islands	<i>John S. McCain</i> (DDG-56)
February 5, 2021	Paracel Islands	<i>USS John S. McCain</i> (DDG-56)
February 17, 2021	Spratly Islands	<i>USS Russell</i> (DDG-59)
May 20, 2021	Paracel Islands	<i>USS Curtis Wilbur</i> (DDG-54)
July 12, 2021	Paracel Islands	<i>USS Benfold</i> (DDG-65)

Reported Numbers of U.S. Navy SCS FONOPs and Taiwan Strait Transits

Year	SCS FONOPs	Taiwan Strait transits
2012	5	9
2013	2	12
2014	3	4
2015	2	1
2016	3	12
2017	6	3
2018	5	3
2019	7	9
2020	8	13

EEZs Overlapping Zone Enclosed by Map of Nine-Dash Line

Source: Eurasia Review, September 10, 2012.

Notes: (1) The red line shows the area that would be enclosed by connecting the line segments in the map of the nine-dash line. Although the label on this map states that the waters inside the red line are “China’s claimed territorial waters,” China has maintained ambiguity over whether it is claiming full sovereignty over the entire area enclosed by the nine line segments.

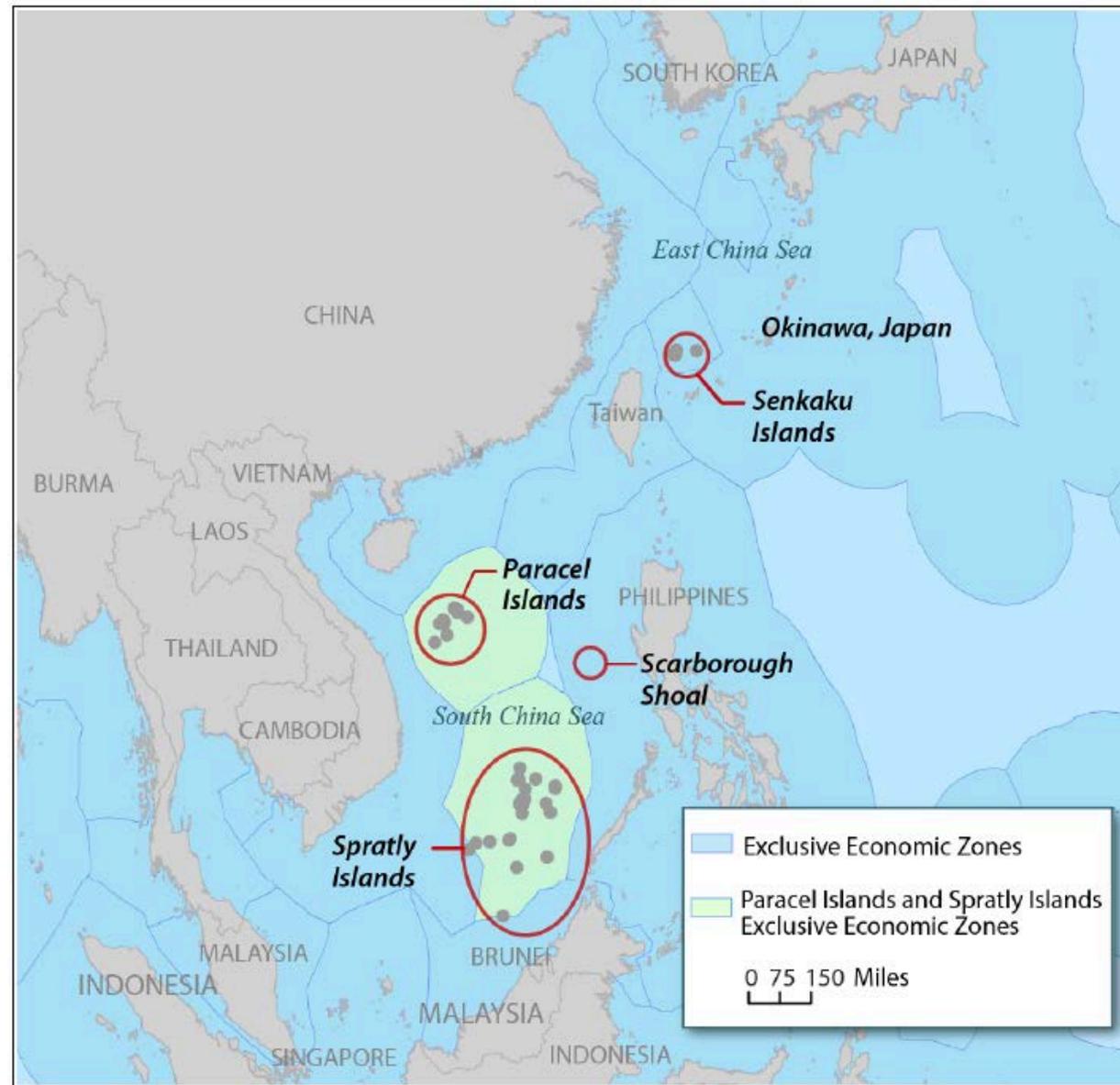
(2) The EEZs shown on the map do not represent the totality of maritime territorial claims by countries in the region. Vietnam, to cite one example, claims all of the Spratly Islands, even though most or all of the islands are outside the EEZ that Vietnam derives from its mainland coast.



EEZs in the South China Sea and East China Sea

Source: Map prepared by CRS using basemaps provided by Esri. EEZs are from the Flanders Marine Institute (VLIZ) (2011). Maritime Boundaries Geodatabase, version 6. Available at <http://www.vliz.be/vmdecddata/marbound>.

Note: Disputed islands have been enlarged to make them more visible. M derives from its mainland coast.



China's Western Theater and Role in the Indian Ocean and the Gulf

China's Western Theater Forces

The Western Theater Command is geographically the largest theater command within China and is likely responsible for responding to conflict with India and terrorist and insurgent threats to and within western China. PLA units located within the Western Theater Command include two group armies, other Army units under the region's two military districts (Xinjiang and Tibet), three Air Force bases, and one Rocket Force base. PAP units responsible for Xinjiang operations are also likely under the control of the Western Theater Command.

Within China, the Western Theater Command focuses on the Xinjiang and Tibet Autonomous Regions where the CPP perceives a high threat of separatism and terrorism, particularly among Uyghur populations.

According to the U.S. Department of State's *2019 Country Reports on Human Rights Practices*, the PRC in 2019 "continued its campaign of mass detention of members of Muslim minority groups in the Xinjiang Uyghur Autonomous Region (Xinjiang). Authorities were reportedly to have arbitrarily detained more than one million Uyghurs, ethnic Kazakhs, Kyrgyz, and other Muslims in extrajudicial internment camps designed to erase religious and ethnic identities. Chinese government officials justified the camps under the pretense of combatting terrorism, separatism, and extremism."

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 106.

Western Theater



Shanghai Cooperation Organization – I

The **Shanghai Cooperation Organization (SCO)**, or **Shanghai Pact**, is a Eurasian political, economic, and security alliance, the creation of which was announced on 15 June 2001 in Shanghai, China by the leaders of China, Kazakhstan, Kyrgyzstan, Russia, Tajikistan, and Uzbekistan; the Shanghai Cooperation Organization Charter, formally establishing the organization, was signed in June 2002 and entered into force on 19 September 2003. The original five members, with the exclusion of Uzbekistan, were previously members of the Shanghai Five group, founded on 26 April 1996. Since then, the organization has expanded its membership to eight states when India and Pakistan joined SCO as full members on 9 June 2017 at a summit in Astana, Kazakhstan. The Heads of State Council (HSC) is the supreme decision-making body in the SCO, it meets once a year and adopts decisions and guidelines on all important matters of the organization. Military exercises are also regularly conducted among members to promote cooperation and coordination against terrorism and other external threats, and to maintain regional peace and stability. The SCO is the largest regional organization in the world in terms of geographical coverage and population, covering three-fifths of the Eurasian continent and nearly half of the human population.

Source: Wikipedia, accessed June 18, 2021,
https://en.wikipedia.org/wiki/Shanghai_Cooperation_Organization.



Shanghai Cooperation Organization – II

Shanghai Cooperation Organization

The Shanghai Cooperation Organization (SCO) is an intergovernmental organization founded in Shanghai on 15 June 2001. The SCO currently comprises eight Member States (China, India, Kazakhstan, Kyrgyzstan, Russia, Pakistan, Tajikistan and Uzbekistan), four Observer States interested in acceding to full membership (Afghanistan, Belarus, Iran, and Mongolia) and six “Dialogue Partners” (Armenia, Azerbaijan, Cambodia, Nepal, Sri Lanka and Turkey).

Since its inception in 2001, the SCO has mainly focused on regional security issues, its fight against regional terrorism, ethnic separatism and religious extremism. To date, the SCO’s priorities also include regional development.

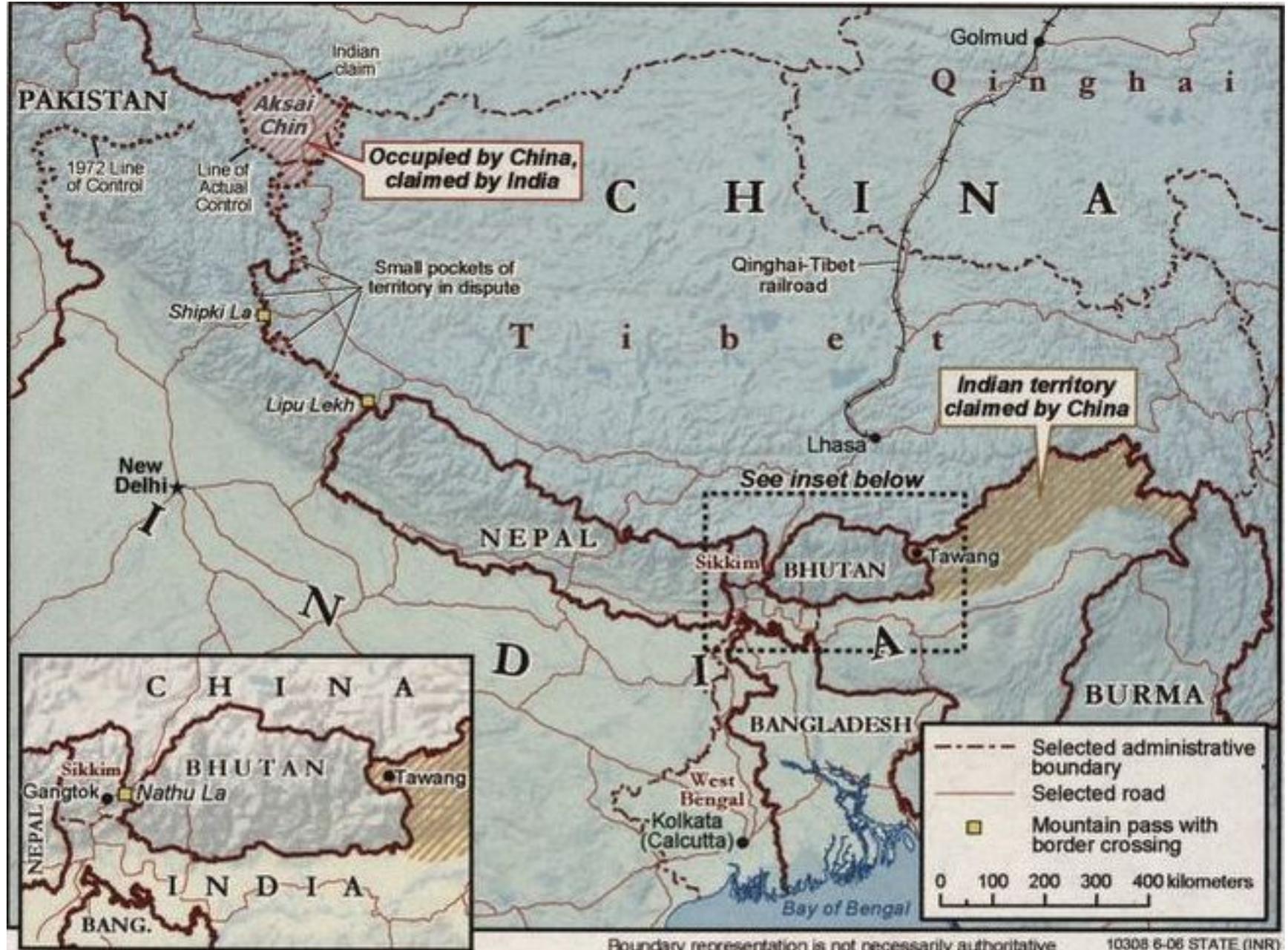
The SCO has been an observer in the UN General Assembly since 2005. In April 2010, the UN and SCO Secretariats signed a Joint Declaration on Cooperation. SCO Secretariat has also established partnerships with the UN Educational, Scientific and Cultural Organization (UNESCO), the World Tourism Organization (UNWTO), and the International Organization for Migration (IOM), in addition to its ongoing cooperation with the UN Office on Drugs and Crime (UNODC), United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the UN Office on Counter-Terrorism (UNCT).

The Department of Political and Peacebuilding Affairs (DPPA), as well as UNRCCA (United Nations Centre for Preventive Diplomacy for Central Asia) maintain regular contacts with the SCO officials. The cooperation activities focus on security developments in the region and key issues related to counterterrorism and prevention of violent extremism.

In July 2017, DPPA deployed a Liaison Officer to the SCO in Beijing.



Chinese and Indian Border Claims



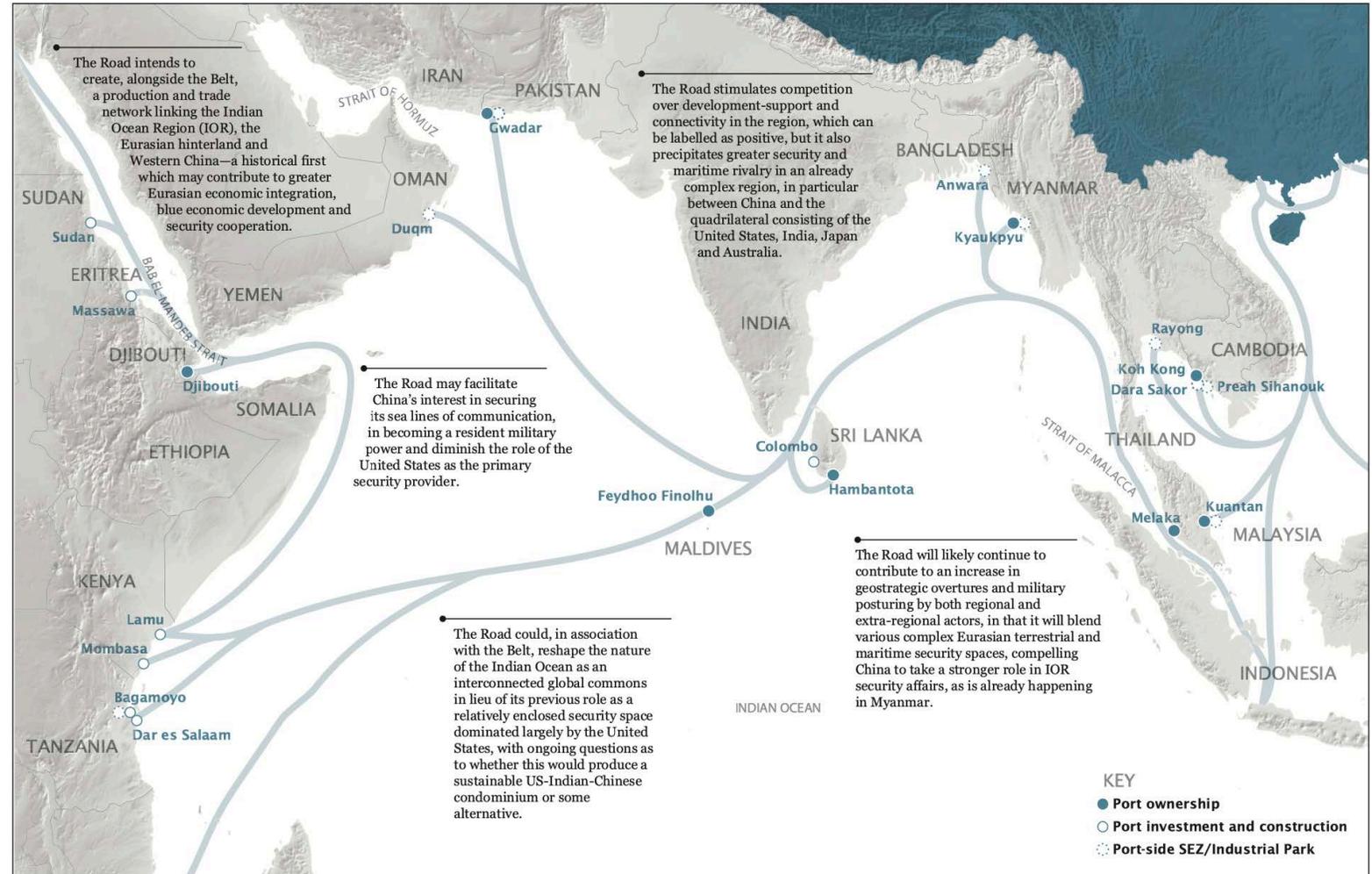
Source: State/INR, 6-2006.

The “Belt and Road” in the Indian Ocean Area

Table 1.1. Chinese sea port ownership in the South China Sea and Indian Ocean Region since October 2013

Year	Region	Host state	Port	Lease period
2015	Indian Ocean	Pakistan	Gwadar	40 years
2015	Indian Ocean	Myanmar	Kyaukpyu	50 years
2015	South China Sea	Malaysia	Kuantan	60 years
2016	Indian Ocean	Djibouti	Obock	10 years
2016	South China Sea	Malaysia	Melaka Gateway	99 years
2017	Indian Ocean	Sri Lanka	Hambantota	99 years
2017	South China Sea	Brunei	Muara	60 years
2017	Indian Ocean	Maldives	Feydhoo Finolhu	50 years

Note: Transparency issues mean that data on the year of agreement and lease period may be inaccurate.



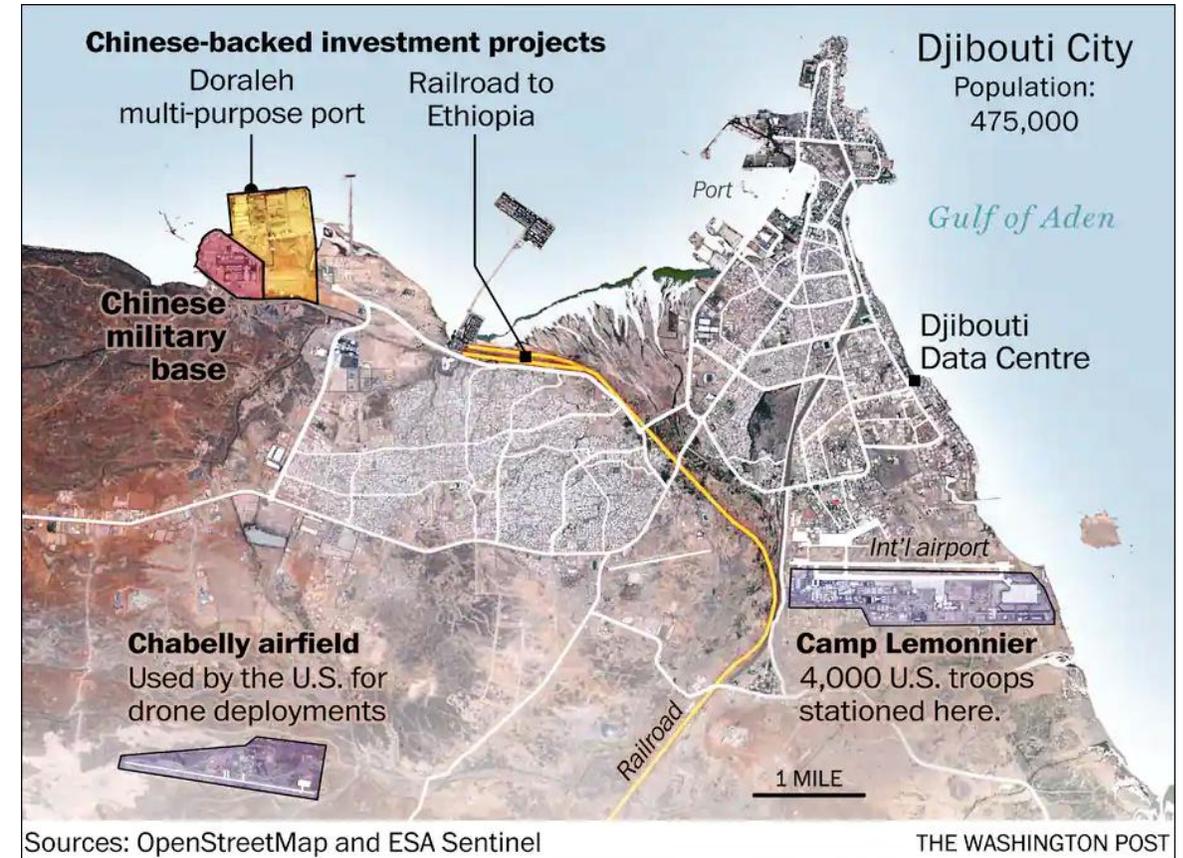
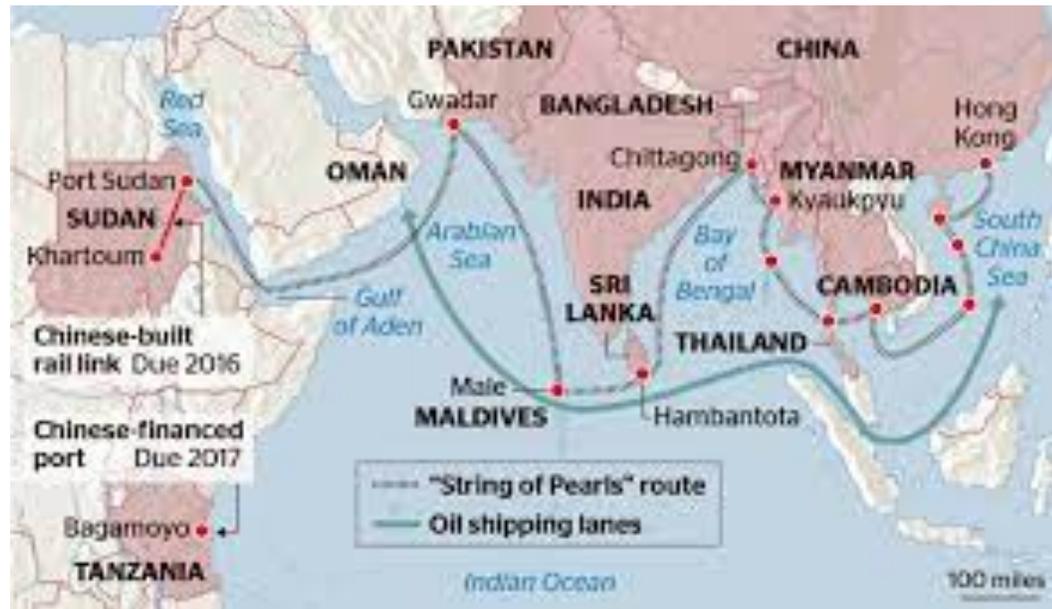
Source: Richard Ghiassy, Fei Su and Lora Saalman, *The Maritime Silk Road, Security Implications*, SIPRI, 2018, pp. 6, 29; <https://www.sipri.org/sites/default/files/2019-10/the-21st-century-maritime-silk-road.pdf>. Map by Christian Dietrich.

China's Dependence on Gulf and Other Crude Imports in 2019

China's Top Crude Suppliers 2019		
Country	Volume (1,000 barrels/day)	Percentage of Imported Crude Oil
Saudi Arabia	1,669	16
Russia	1,555	15
Iraq	1,037	10
Angola	949	9
Brazil	804	8
Oman	678	7
Kuwait	454	4
UAE	306	3
Iran	296	3
Colombia	263	3
Others	2,120	21
Total	10,131	99

Numbers may not equal 100, as figures have been rounded.

Chinese Port Access and Bases in Indian Ocean/Red Sea



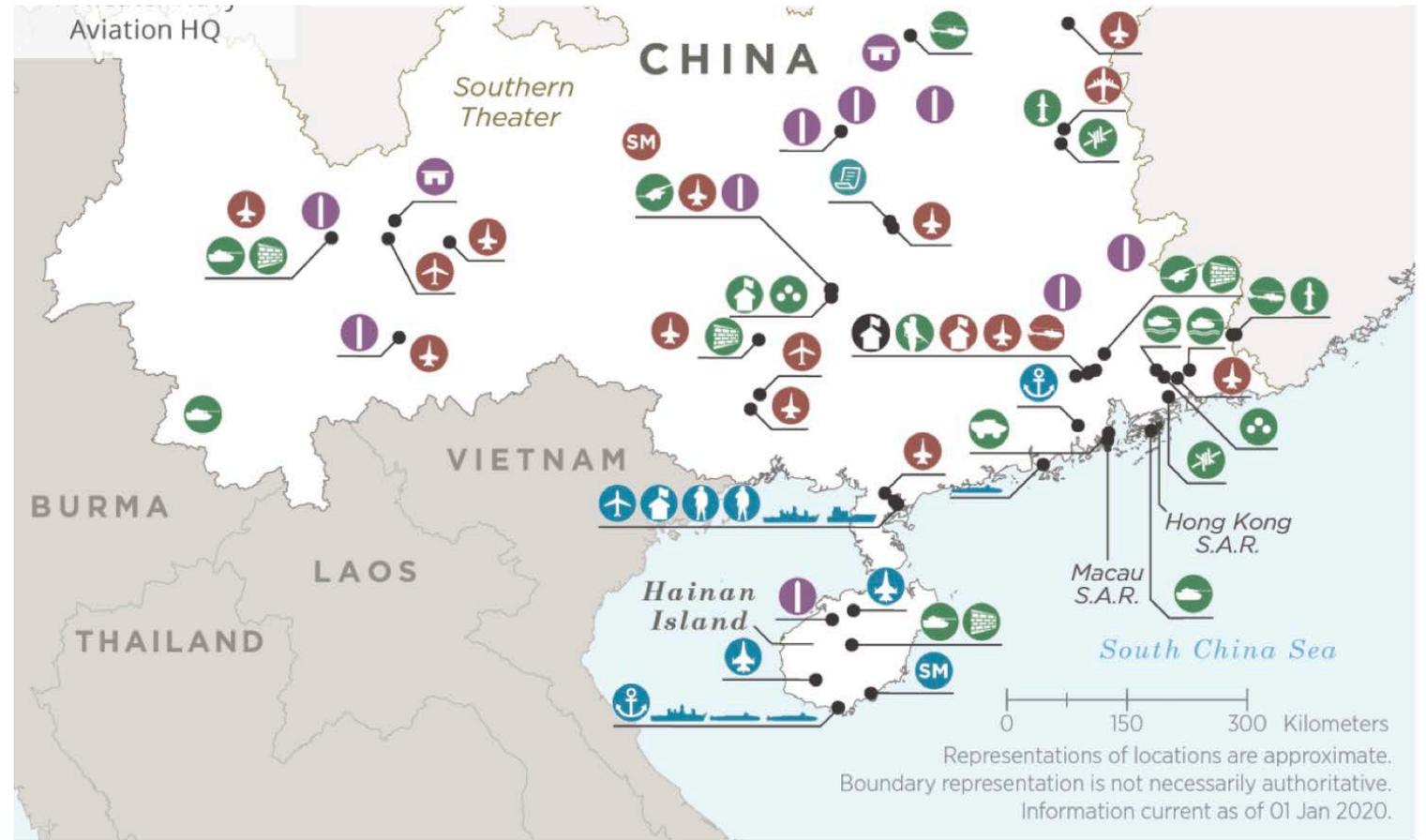
Source: Open street Map; ESA Sentinel; *Washington Post*; and Juan Cole, "The Dragon Arrives: 1st Chinese overseas Military Base in Djibouti," *Informed Comment*, August 2, 2017.

China's Southern Theater and Role in the South China Sea and Pacific

China's Southern Theater Forces

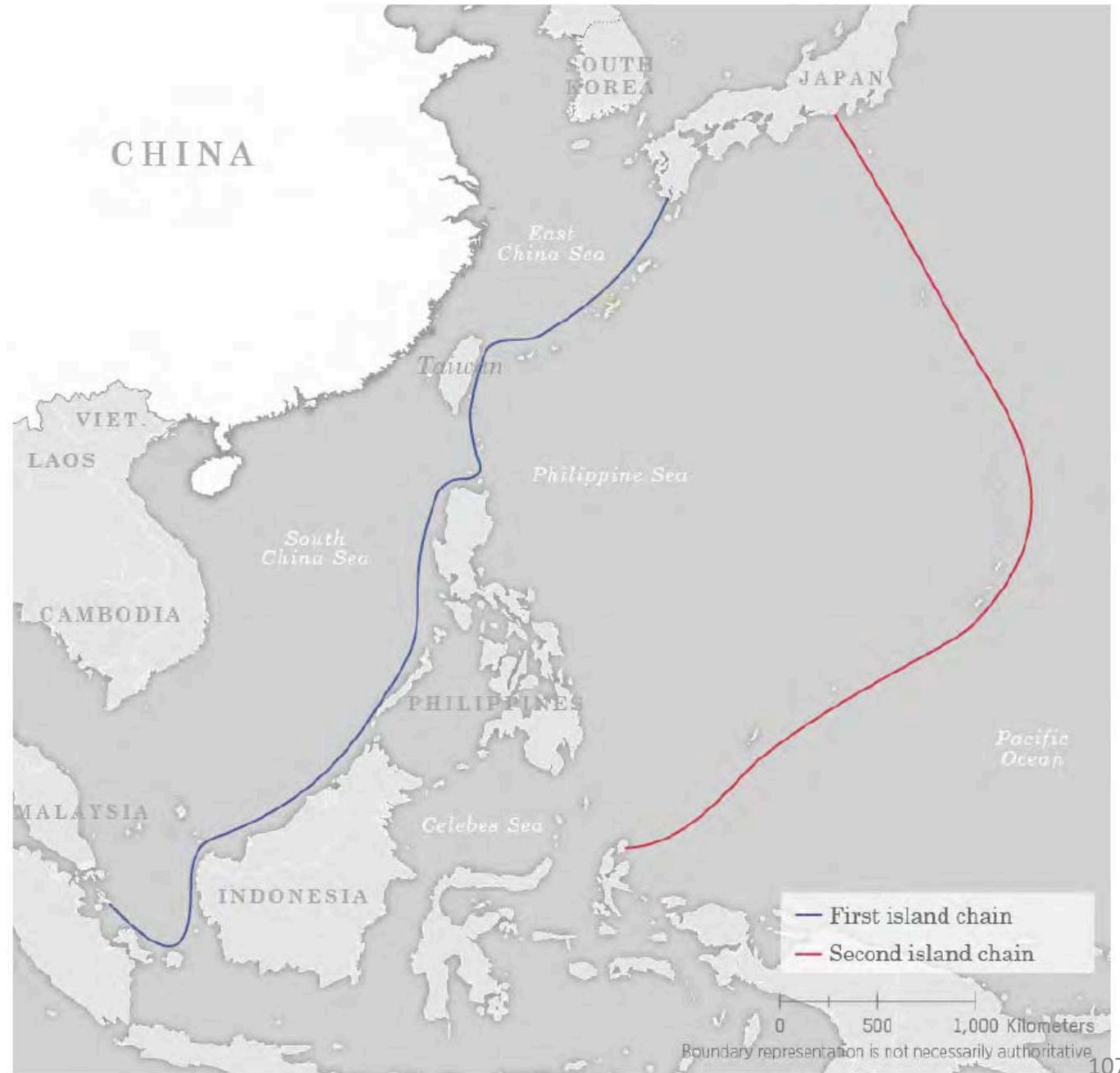


Unlocated Units
8 Combined Arms Brigades
2 Service Support Brigades
1 Special Operations Brigade
1 Theater Navy Aviation HQ



Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 103.

China's First and Second Island Chain



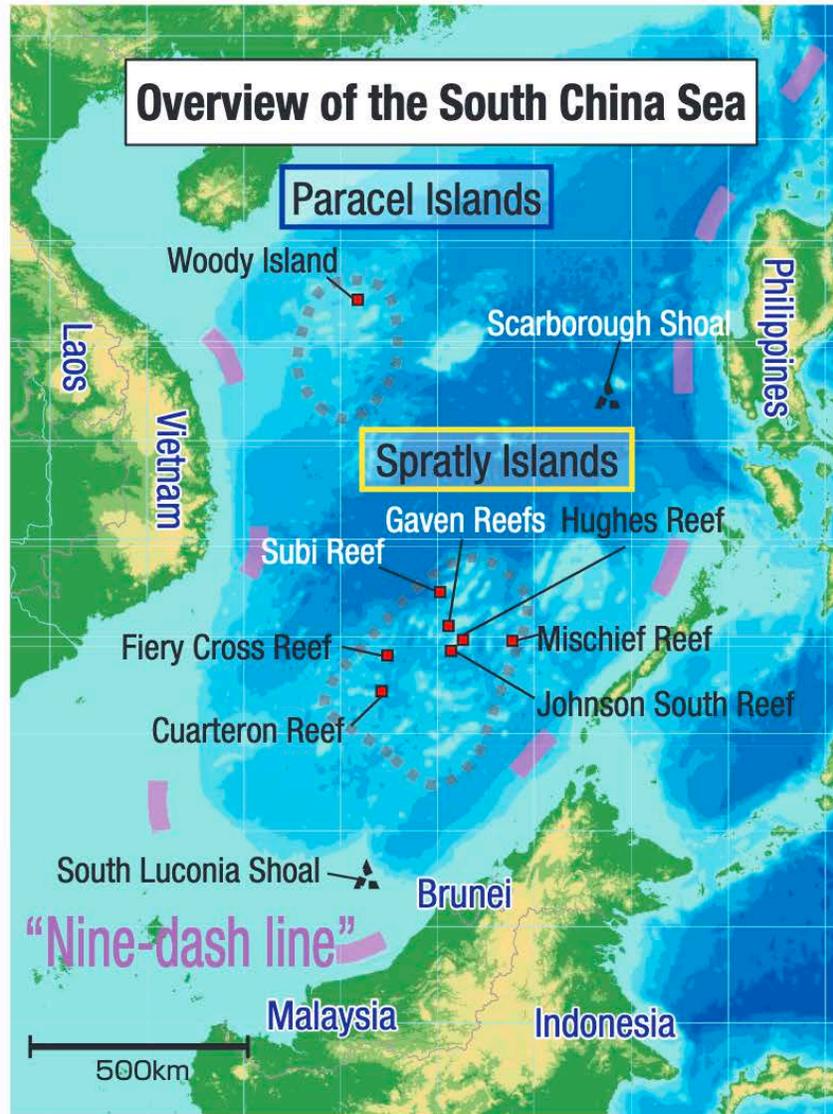
Source: Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 35.

China's Posture in the South China Sea

Source: globalita.com via Ahn Sung Kyoo, Choi Kang, Kweon Eun Yul, "Implications of China's Ballistic Missiles for Korean National Security, *The Asian Institute for Policy Studies*, November 10, 2015, <http://en.asaninst.org/contents/implications-of-chinas-ballistic-missiles-for-korean-national-security/>.



Japanese View of Chinese Militarization of South China Sea



※Image

Example of militarization

This section illustrates the progression of militarization on two reefs:

- Hughes Reef:**
 - February 2010: Initial satellite view showing a small structure.
 - February 2016: Shows expanded infrastructure, including a building labeled 'November 21, 2016 Artillery batteries'.
 - February 2016: A note states 'Aircraft identified on Subi Reef, which was allegedly a Chinese Navy patrol aircraft (2018)'.
- Fiery Cross Reef:**
 - August 2014: Shows a long, narrow structure.
 - March 2017: Shows significant development, including 'Radar and communications facilities' and 'Aircraft hangars and runway'.

(Photo sources) CSIS Asia Maritime Transparency Initiative / Digital Globe

Source: Japanese Ministry of Defense, *Defense of Japan*, 2020, p. 76.

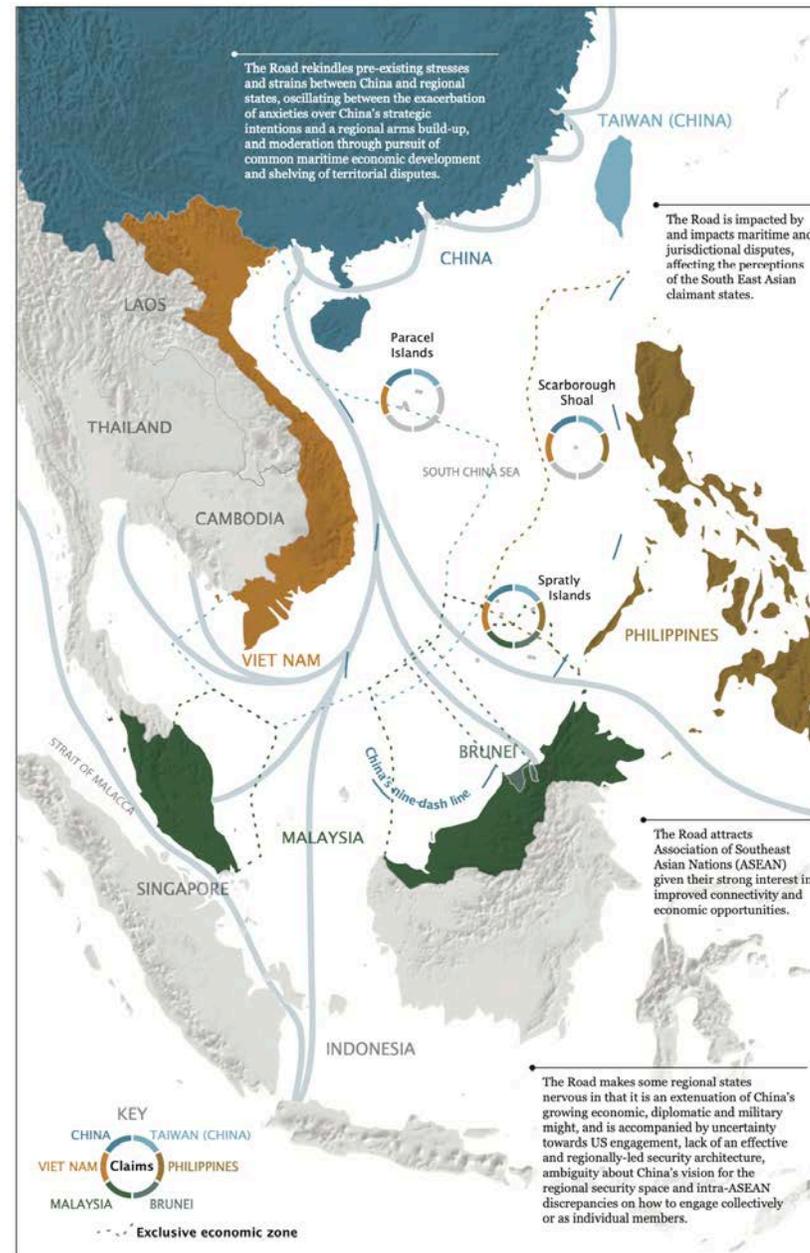
14 According to the statement by U.S. Chief of Naval Operation John Richardson in March 2016.

The South China Sea and Key Strategic Routes in Southeast Asia

Note: Dotted lines indicate an exclusive economic zone (EEZ), the blue line represents the Road.

Credit: Map by Christian Dietrich.

Source: Richard Ghiasy, Fei Su and Lora Saalman, *The Maritime Silk Road, Security Implications*, SIPRI, 2018, p. 18; <https://www.sipri.org/sites/default/files/2019-10/the-21st-century-maritime-silk-road.pdf>.



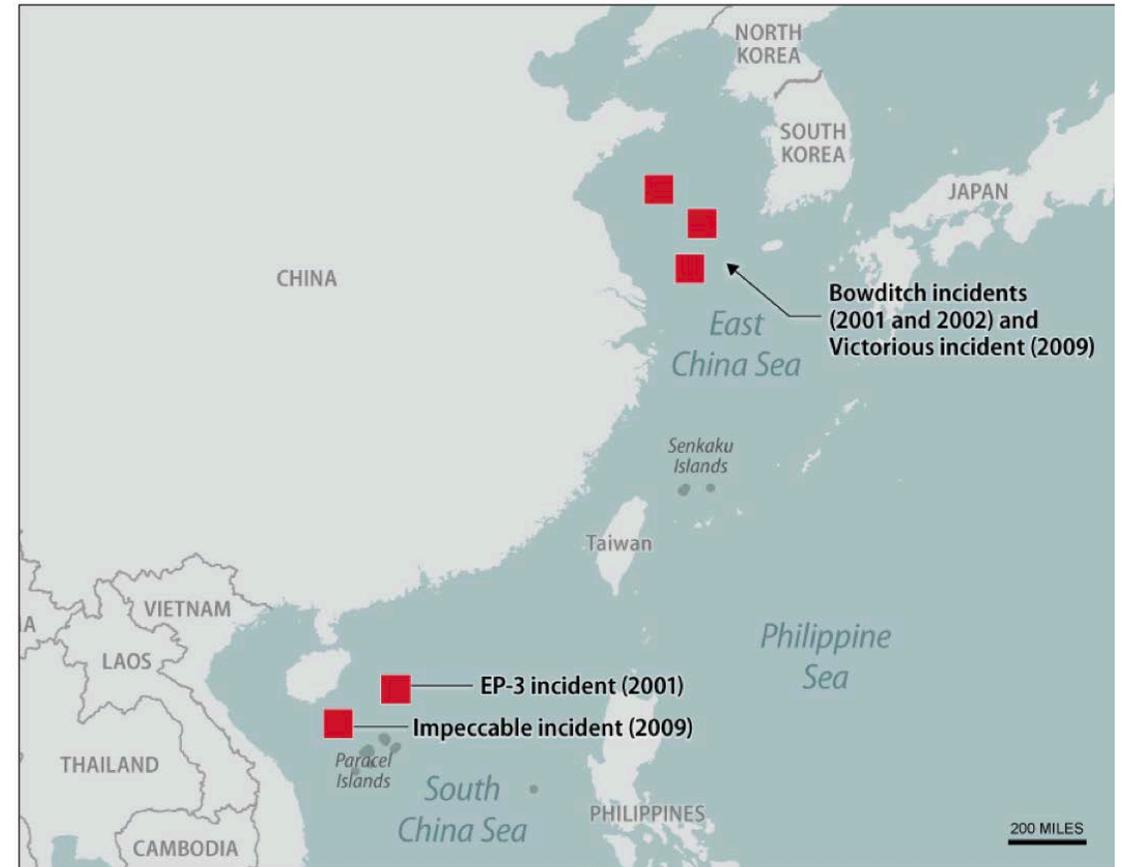
Disputed Claims in South China Sea

Figure A-1. Maritime Territorial Disputes Involving China
Island groups involved in principal disputes



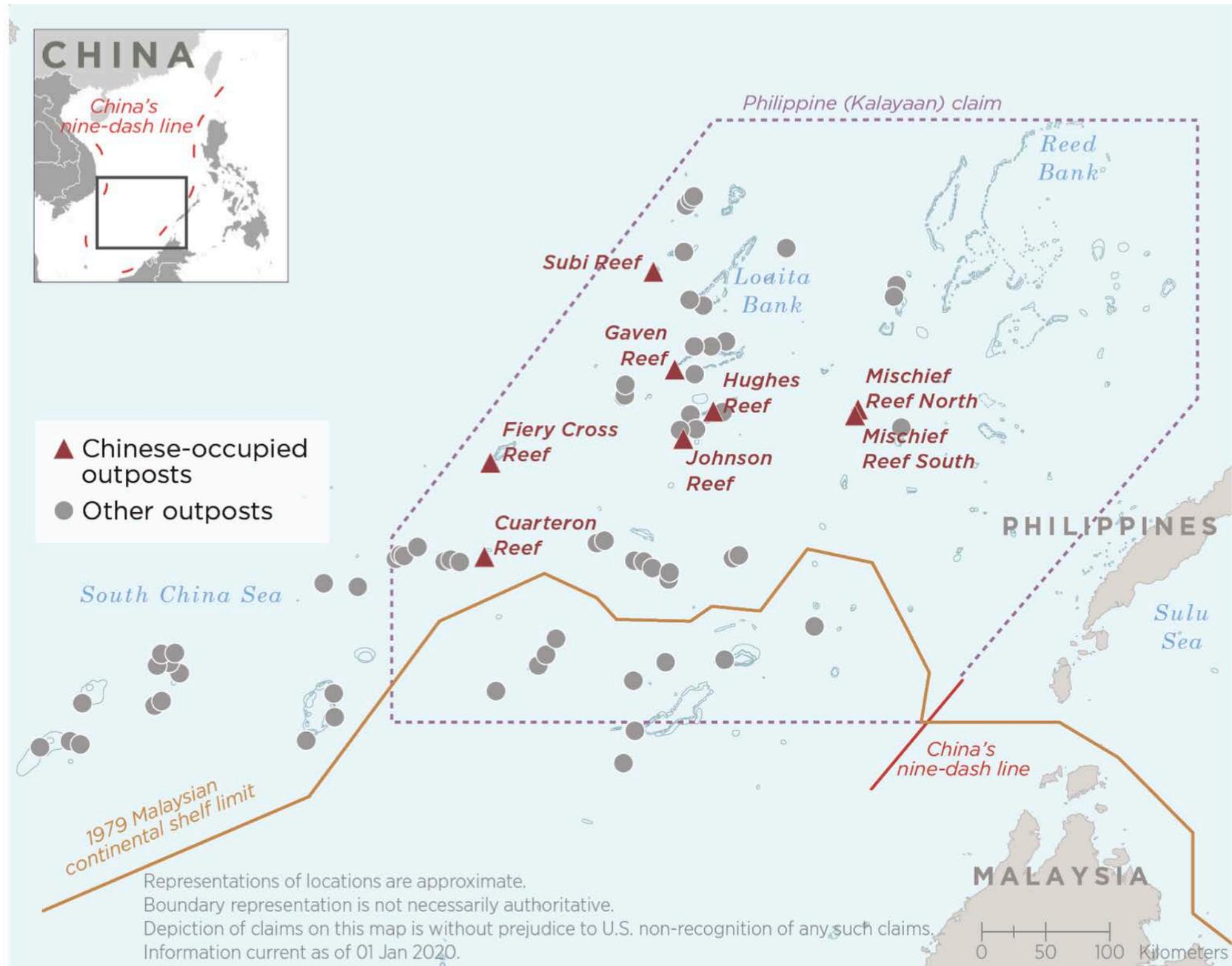
Source: Map prepared by CRS using U.S. Department of State boundaries.

Figure A-2. Locations of 2001, 2002, and 2009 U.S.-Chinese Incidents at Sea and In Air



Source: Map prepared by CRS based on map shown on page 6 of Mark E. Redden and Phillip C. Saunders, *Managing Sino-U.S. Air and Naval Interactions: Cold War Lessons and New Avenues of Approach*, Washington, Center for the Study of Chinese Military Affairs, Institute for National Strategic Studies, National Defense University, September 2012.

China's Armed and Other Outposts in the Spratly Islands



Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China* 2020, August 21, 2020, p. 102.

Military Facilities at SCS Sites Occupied by China

Source: Illustration accompanying Karen Leigh, Peter Martin and Adrian Leung, "Troubled Waters: Where the U.S. and China Could Clash in the South China Sea," *Bloomberg*, December 17, 2020; and Ronald O'Rourke, U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress, Congressional Research Service, March 18, 2021, <https://crsreports.congress.gov/product/pdf/R/R42784/129>.

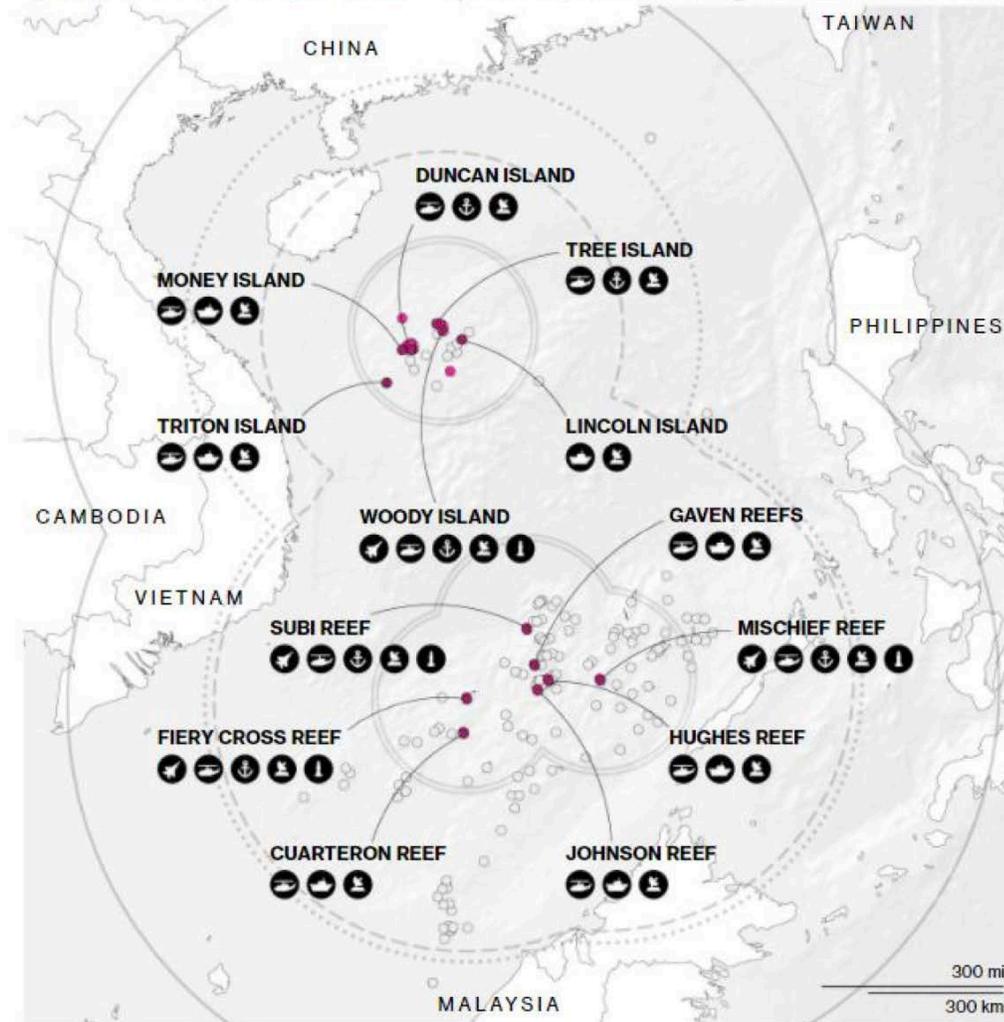
Contested Features

Chinese military facilities:

✈ Airfield 🚁 Helipad 🚢 Large harbor 🚤 Small harbor 📡 Radar 🚀 Missile platform

Range:

🕸 SAM missile 🚢 Anti-Ship cruise missile 📡 Radar targets at sea level 📡 Radar targets at 25,000 feet

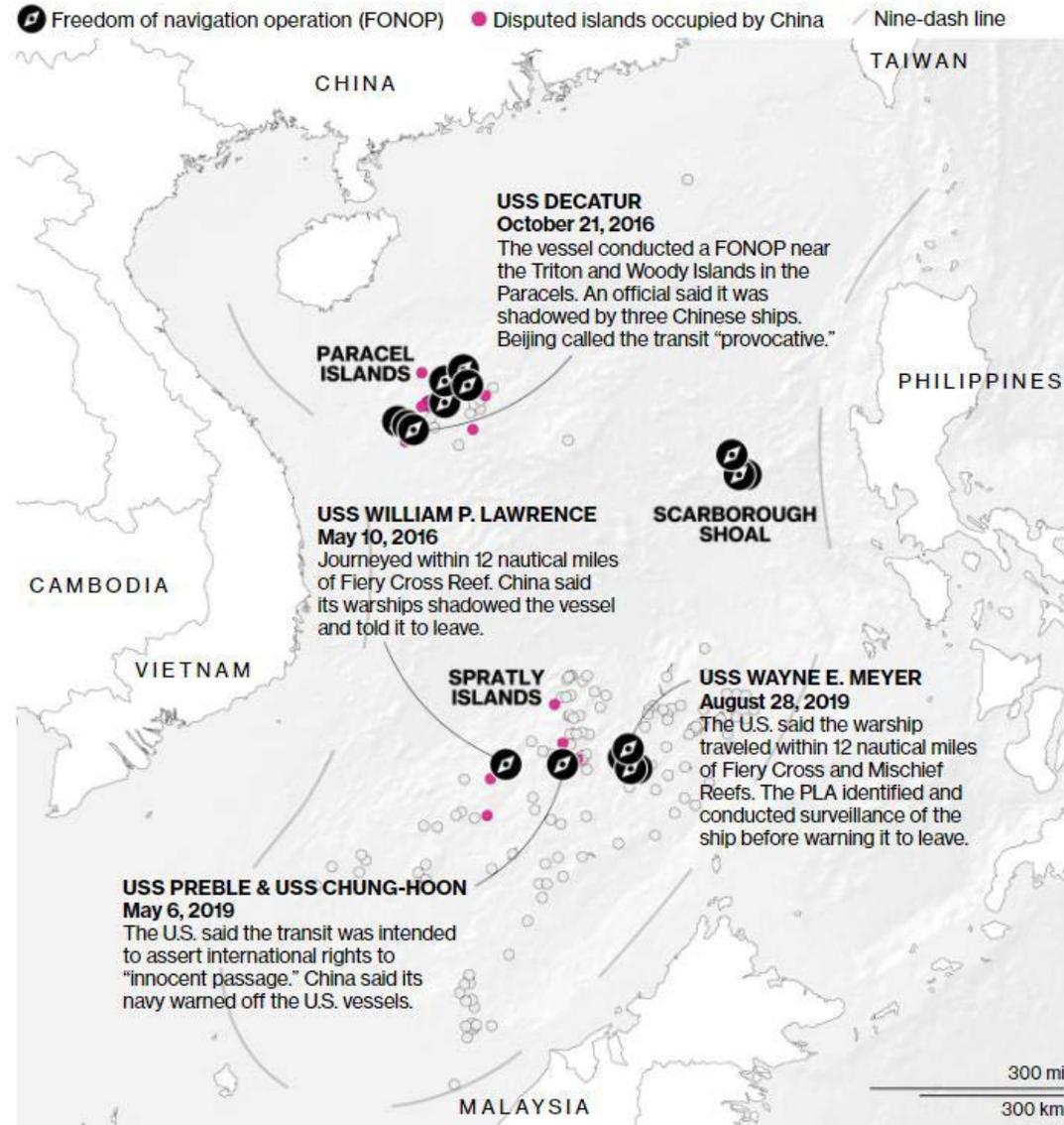


Note: Geographical classification of features based on publicly available descriptions, satellite analysis.
Source: Asia Maritime Transparency Initiative and The Center for Strategic and International Studies

Major U.S. Freedom of Navigation Operations (FONOPS) Since 2016

Source: Illustration accompanying Karen Leigh, Peter Martin and Adrian Leung, "Troubled Waters: Where the U.S. and China Could Clash in the South China Sea," *Bloomberg*, December 17, 2020; and U.S.-China Strategic Competition in South and East China Seas: Background and Issues for Congress, Updated July 13, 2021, p 39.

Near Misses



Note: Locations are approximated based on publicly available information.
Sources: Maritime Awareness Project, Institute for China-America Studies, Bloomberg News, Reuters

China and Taiwan

DoD Assessment of War Between Taiwan and China in 2020 – I

The PRC appears willing to defer the use of military force as long as it considers that unification with Taiwan could be negotiated over the long-term and the costs of conflict outweigh the benefits. China argues that the credible threat of force is essential to maintaining the conditions for political progress and preventing Taiwan from making moves toward independence. In January 2019, President Xi Jinping publicly reiterated China’s long-standing refusal to renounce the use of force to resolve the Taiwan issue. In the same speech, Xi also reaffirmed China’s longstanding position for peaceful unification under the principle of “one country, two systems.”

The circumstances under which the PRC has historically warned it would use force have evolved over time. These circumstances have included:

- > Formal declaration of Taiwan independence;
- > Undefined moves toward Taiwan independence;
- > Internal unrest in Taiwan;
- > Taiwan’s acquisition of nuclear weapons;
- > Indefinite delays in the resumption of cross-Strait dialogue on unification;
- > Foreign intervention in Taiwan’s internal affairs; and,
- > Foreign forces stationed on Taiwan.

Article 8 of China’s March 2005 *Anti-Secession Law* states China may use “non-peaceful means” if “secessionist forces . . . cause the fact of Taiwan’s secession from China,” if “major incidents entailing Taiwan’s secession” occur, or if “possibilities for peaceful reunification” are exhausted. China’s use of such non-specific conditions increases their policy flexibility through deliberate strategic ambiguity.

China continues to view the Taiwan issue as the most important and sensitive issue between the United States and China.

CHINA’S COURSES OF ACTION AGAINST TAIWAN

The PRC continues to signal its willingness to use military force against Taiwan. The PLA has a range of options to coerce Taipei based on its increasing capabilities in multiple domains. China could pursue a measured approach by signaling its readiness to use force or conduct punitive actions against Taiwan. The PLA could also conduct a more comprehensive campaign designed to force Taiwan to capitulate to unification, or unification dialogue under China’s terms. Notably, China would seek to deter potential U.S. intervention in any Taiwan contingency campaign – capabilities that the PRC highlighted during its October 2019 military parade celebrating its 70th anniversary. Failing that, China would attempt to delay and defeat intervention in an asymmetric, limited war of short duration. In the event of a protracted conflict, China might choose to escalate cyberspace, space, or nuclear activities in an attempt to end the conflict, or it might choose to fight to a stalemate and pursue a political settlement. The PLA could initiate the military options listed below individually or in combination.

Air and Maritime Blockade. PLA writings describe a Joint Blockade Campaign in which China would employ kinetic blockades of maritime and air traffic, including a cut-off of Taiwan’s vital imports, to force Taiwan’s capitulation. Large-scale missile strikes and possible seizures of Taiwan’s offshore islands would accompany a Joint Blockade in an attempt to achieve a rapid Taiwan surrender, while at the same time, posturing air and naval forces to conduct weeks or months of blockade operations if necessary. China will also likely complement its air and maritime blockade operations with concurrent electronic warfare (EW), network attacks, and information operations (IO) to further isolate Taiwan’s authorities and populace and to control the international narrative of the conflict.

DoD Assessment of War Between Taiwan and China in 2020 – II

Limited Force or Coercive Options. China could use a variety of disruptive, punitive, or lethal military actions in a limited campaign against Taiwan, probably in conjunction with overt and clandestine economic and political activities supported by a variety of IO to shape perceptions or undercut the effectiveness or legitimacy of the Taiwan authorities. Such a campaign could include computer network or limited kinetic attacks against Taiwan’s political, military, and economic infrastructure to induce fear in Taiwan and degrade the Taiwan population’s confidence in their leaders. Similarly, PLA special operations forces (SOF) could infiltrate Taiwan and conduct attacks against infrastructure or leadership targets.

Air and Missile Campaign. China could use missile attacks and precision air strikes against air defense systems, including air bases, radar sites, missiles, space assets, and communications facilities to degrade Taiwan’s defenses, neutralize Taiwan’s leadership, or break the Taiwan people’s resolve **Invasion of Taiwan.** Publicly available Chinese writings describe different operational concepts for an amphibious invasion of Taiwan. The most prominent of these, the Joint Island Landing Campaign, envisions a complex operation relying on coordinated, interlocking campaigns for logistics, air, and naval support, and EW. The objective would be to break through or circumvent shore defenses, establish and build a beachhead, transport personnel and materiel to designated landing sites in the north or south of Taiwan’s western coastline, and launch attacks to seize and occupy key targets or the entire island. In 2019, the PLA conducted joint amphibious assault exercises near Taiwan. Furthermore, China continues to build capabilities that would contribute to a full-scale invasion; in 2019, the PLA completed construction of its first helicopter dock amphibious assault ship (LHA).

Large-scale amphibious invasion is one of the most complicated and difficult military operations. Success depends upon air and maritime superiority, the rapid buildup and sustainment of supplies onshore, and uninterrupted support. An attempt to invade Taiwan would likely strain China’s armed forces and invite international intervention. These stresses, combined with China’s combat force attrition and the complexity of urban warfare and counterinsurgency, even assuming a successful landing and breakout, make an amphibious invasion of Taiwan a significant political and military risk.

The PLA is capable of accomplishing various amphibious operations short of a full-scale invasion of Taiwan as well. With few overt military preparations beyond routine training, China could launch an invasion of small Taiwan-occupied islands in the South China Sea such as Pratas or Itu Aba. A PLA invasion of a medium-sized, better-defended island such as Matsu or Jinmen is within China’s capabilities. Such an invasion would demonstrate military capability, political resolve, and achieve tangible territorial gain while simultaneously showing some measure of restraint. However, this kind of operation involves significant, and possibly prohibitive, political risk because it could galvanize pro-independence sentiment on Taiwan and generate international opposition.

Effect of PLA Reform on a Taiwan Contingency

One of the overarching goals of the structural reforms to reshape the PLA was to construct a military capable of conducting complex joint operations, including those that would be involved in a Taiwan contingency. PLA reforms seek to clarify command authorities, improving joint integration, and facilitating the transition from peace to war. The abolishment of military regions in favor of military theaters – in this case, the PLA’s Eastern Theater Command – has also likely streamlined and improved the PLA’s ability to conduct yearlong planning and preparation for joint military operations across the Taiwan Strait. PLA combat units are likely experiencing temporary decreases in readiness and proficiency to conduct large-scale joint operations as they reorganize units, integrate new capabilities, and adjust to new command structures.

A significant addition to the overall structure of the PLA is the establishment of the Strategic Support Force (SSF) and the Joint Logistic Support Force (JLSF). During a Taiwan contingency, the JLSF, in conjunction with subordinate joint logistics support centers, would coordinate joint logistics and the delivery of materiel as well as oversee various civil-military support systems to sustain the campaign. The creation of the SSF likely improves the PLA’s ability to execute and coordinate IO (particularly cyber, EW, and counterspace) in a Taiwan contingency. It may also improve the PLA’s ability to manage and provide space-based reconnaissance to the CMC and the Eastern Theater Command, improving PLA command staffs’ situational awareness of Taiwan’s military units and facilities. The PLA is likely still exploring how to reform its joint command processes to integrate IO and ISR capabilities more fully at the theater-level, but structural reforms have removed the biggest barriers to integrating these strategic capabilities at the theater-level.

Structural reforms within the military and paramilitary forces also have implications on resources and operational capabilities available to the PLA for a future Taiwan contingency.

DoD Assessment of War Between Taiwan and China in 2020 – III

THE PLA'S CURRENT POSTURE FOR A TAIWAN CONFLICT

PLA Army (PLAA). The PLAA continues to enhance its readiness to prevent Taiwan independence and execute an invasion if necessary. Through their design and training, the PLAA's restructured and improved combined-arms brigades prioritize maneuver, flexibility, and ability to deploy in different terrain environments while bringing ample firepower in combat scenarios beyond China's borders. The PLA Eastern Theater Command and Southern Theater Command field multiple amphibious combined-arms brigades in relatively close proximity to Taiwan. These amphibious combined-arms brigades are outfitted with specialized vehicles and equipment, including Type 05 amphibious infantry fighting vehicles, amphibious assault guns, and other multi-purpose amphibious vehicles.

PLAA units continue to conduct amphibious assault training in both single service and joint environments. Recent training involving PLAA amphibious elements and PLAN landing craft have likely sought to improve the tactical skills necessary to conduct an amphibious assault and provided experience to PLAA and PLAN leaders working together in a joint environment. As new systems proliferate and complex training continues, the PLAA will likely increase its ability to establish, defend, and exploit a beachhead lodgment.

Throughout 2019, the PLAA highlighted training opportunities within their aviation and air assault brigades. The PLAA's two air assault brigades provide increased attack, air assault, and close air support options for a Taiwan invasion. Additionally, the PLAA's ongoing fielding of advanced air defense, EW, and command and control (C2) systems enhances the combat power, force protection, and sustainment capabilities of its brigades, which are essential for successful invasion scenarios.

PLA Navy (PLAN). The PLAN is improving anti-air, anti-surface, and anti-submarine warfare capabilities, developing an at-sea nuclear deterrent, and introducing new multi-mission platforms capable of striking Taiwan's naval forces in a cross-Strait conflict as well as conducting diverse missions in other contingency operations. New attack submarines and modern surface combatants with anti-air capabilities and fourth-generation naval aircraft entering the force are designed to achieve maritime superiority within the First Island Chain as well as to deter and counter any potential third-party intervention in a Taiwan conflict. China's amphibious ship fleet, however, has in recent years focused on acquiring a modest number of ocean-going amphibious transport docks (LPDs) and now LHAs, indicating a near term focus on regional and eventually global expeditionary missions rather than the large number of landing ship transports and medium landing craft that would be necessary for a large-scale direct beach assault. There is also no indication China is significantly expanding its force of LSTs and medium sized landing craft at this time – suggesting a direct beach-assault operation requiring extensive lift is less likely in planning.

...The PLA continues to make modest gains in amphibious warfare by developing additional capabilities to conduct amphibious landings and seize and defend small islands. The PLA has 12 units organized and equipped to conduct amphibious operations. Over the last five years, the PLAA and the PLA Navy Marine Corps (PLANMC) have fielded new equipment designed specifically for amphibious operations such as the ZBD-05 amphibious infantry fighting vehicle and the PLZ-07B amphibious self-propelled howitzer. The PLA has also made efforts to improve its ability to insert forces by air, restructuring the Airborne Corps and establishing Army air assault units, which would seize key terrain and interdict Taiwan counterattacks. Both PLAA and PLANMC units equipped for amphibious operations conduct regular company- to battalion-level amphibious training exercises, and the PLA continues to integrate aerial insertion training into larger exercises, to include dropping airborne troops from the Y-20 heavy-lift aircraft for the first time. However, the PLA rarely conducts amphibious exercises involving echelons above a battalion, though both PLAA and PLANMC units have emphasized the development of combined-arms battalion formations since 2012.

PLA Air Force (PLAAF). The PLAAF has maintained a force posture that provides a variety of capabilities for a Taiwan contingency. It has acquired a large number of advanced aircraft capable of conducting operations against Taiwan without requiring refueling, providing it with a significant capability to conduct air-superiority and ground-attack operations. A number of long-range air defense systems provide a strong layer of defense of China's mainland against counterattack. In addition, China's development of support aircraft provides the PLAAF with improved ISR capability to support PLA operations in a contingency.

DoD Assessment of War Between Taiwan and China in 2020 – IV

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DoD Assessment of War Between Taiwan and China in 2020 – V

PLA Rocket Force (PLARF). The PLARF is prepared to conduct missile attacks against high-value targets, including Taiwan’s C2 facilities, air bases, radar sites, and others in an attempt to degrade Taiwan’s defenses, neutralize Taiwan’s leadership, or break the public’s will to fight.

Strategic Support Force (SSF). PLA doctrinal writings emphasize the importance of space and cyberspace domains in joint operations. The PRC’s 2019 defense white paper states that its armed forces are accelerating the build-up of its cyberspace capabilities, specifically its cyber defenses and its ability to detect and counter network intrusions. PLA writings suggest that the SSF would be responsible for the use of EW and cyber operations during a Taiwan contingency, as one of the missions of the force is “seizing and maintaining battlefield information control in contemporary informatized warfare.” The SSF 311 Base would also be responsible for political and psychological warfare against Taiwan to influence public opinion and promote the PRC’s interests.

Joint Logistic Support Force (JLSF). The JLSF’s primary goal is to provide joint logistics support to the PLA’s strategic and campaign-level operations, such as a Taiwan contingency, by conducting C2 of joint logistics, delivering materiel, and overseeing various support mechanisms.

DoD Assessment of War Between Taiwan and China in 2020 – VI

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DoD Assessment of Taiwan's Defensive Capabilities in 2020

Key Takeaways

- China's multi-decade military modernization effort has eroded or negated many of the military advantages that Taiwan has historically enjoyed in the context of a cross-Strait conflict.
- To counter China's improving capabilities, Taiwan is developing new concepts and capabilities for asymmetric warfare.

Taiwan has historically enjoyed military advantages in the context of a cross-Strait conflict, such as technological superiority and the inherent geographic advantages of island defense, but China's multi-decade military modernization effort has eroded or negated many of these advantages. Although Taiwan is taking important steps to compensate for the growing disparities – building its war reserve stocks, growing its defense-industrial base, improving joint operations and crisis response capabilities, and strengthening its officer and noncommissioned officer corps – these improvements only partially address Taiwan's declining defensive advantages. Taiwan's Ministry of National Defense 2019 *National Defense Report* reflects adjustments to the military's strategy for defending the island, placing greater emphasis on protecting its littorals and near-shore coastal areas. The modified strategy stresses enhanced asymmetric capabilities, as well as suggesting greater reliance on Taiwan's Air Force and Navy. Taiwan's armed forces are authorized to fill approximately 215,000 billets, including 188,000 active duty billets. Reservists and civil defense volunteers support the active duty forces. The Ministry of National Defense has stated that its goal is to fill 90 percent of the billets (or approximately 169,000) by 2020. Taiwan's military modernization program envisions a continued decrease in Taiwan's active duty force to approximately 175,000 personnel as part of a transition to an all-volunteer force. This transition has slowed due to severe difficulties recruiting volunteers. The cost savings from manpower reductions provides some margin to improve individual pay and benefits, housing, and incentive pay; however, these savings have been insufficient to cover the full increase in manpower-related costs needed to attract and retain personnel under the new system. The unanticipated magnitude of transition costs has led Taiwan to divert funds from foreign and indigenous defense acquisition programs, as well as near-term training and readiness. Taiwan also faces considerable equipment and readiness challenges.

In addition, Taiwan's military spending remains at approximately two percent of its gross domestic product. In August 2019, Taiwan said it would increase the island's defense budget by 5.2 percent to NT \$358 billion (\$11.6 billion). Meanwhile, China's official defense budget continues to grow, and for 2019, is roughly 15 times that of Taiwan, with much of it focused on developing the capability to unify Taiwan with the PRC by force. Recognizing the growing disparity between their respective defense expenditures, Taiwan has stated that it is working to develop new concepts and capabilities for asymmetric warfare. Some specific areas of emphasis include offensive and defensive information and EW, high-speed stealth vessels, shore-based mobile missiles, rapid mining and minesweeping, unmanned aerial systems, and critical infrastructure protection.

The United States maintains a "one-China" policy that is based on the Taiwan Relations Act (TRA) and the three Joint Communiqués. The United States opposes unilateral actions aimed at altering the status quo. The United States continues to support the peaceful resolution of cross-Strait issues in a manner, scope, and pace acceptable to both sides.

Consistent with the TRA, the United States contributes to peace, security, and stability in the Taiwan Strait by providing defense articles and services to enable Taiwan to maintain a sufficient self-defense capability. In May 2020, the White House publicly released a report to Congress entitled, *United States Strategic Approach to the People's Republic of China*. The report states, "Beijing's failure to honor its commitments under the communiqués, as demonstrated by its massive military buildup, compels the United States to continue to assist the Taiwan military in maintaining a credible self-defense, which deters aggression and helps to ensure peace and stability in the region. In a 1982 memorandum, President Ronald Reagan insisted 'that the quantity and quality of the arms provided Taiwan be conditioned entirely on the threat posed by the PRC.'" In October 2019, Taiwan announced the purchase of F-16V fighter aircraft for \$8 billion. Since 2010, the United States has announced more than \$23 billion in arms sales to Taiwan.

U.S. Data on Chinese vs. Taiwan Military Balance in 2020 – I

Taiwan Strait Military Balance, Ground Forces

	China		Taiwan
	Total	Eastern and Southern Theaters	Total
Total Ground Force Personnel	1,030,000	412,000	88,000**
Group Armies	13	5	3
Combined Arms Brigades	78	30 (6 amphibious)	N/A
Mechanized Infantry Brigades	N/A		3
Motorized Infantry Brigades			6
Armor Brigades			4
Air Assault/Army Aviation Brigades	15	5	2
Artillery Brigades	15	5	3
Airborne Brigades	7*	7	0
Marine Brigades	8*	4	3
Tanks	6,300		800
Artillery Pieces	6,300		1,100

Note: For the purposes of this document, the “Taiwan Strait Area” includes the PLA’s Eastern and Southern Theater Commands.

*Although counted as ground forces for the purposes of this chart, China’s airborne brigades belong to the PLA Air Force (PLAAF) Airborne Corps and the marine brigades to the PLA Navy Marine Corps (PLANMC).

**Counts only active-duty Army personnel.

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2020*, August 21, 2020, p. 164.

U.S. Data on Chinese vs. Taiwan Military Balance in 2020 – II

Taiwan Strait Military Balance, Naval Forces

	China		Taiwan
	Total	Eastern and Southern Theater	Total
Aircraft Carriers	2	1	0
Cruisers	1	0	0
Destroyers	32	23	4
Frigates	49	37	22
Corvettes	49	39	0
Tank Landing Ships/ Amphibious Transport Dock	37	35	14
Medium Landing Ships	21	16	0
Diesel Attack Submarines	46	32	2
Nuclear Attack Submarines	6	2	0
Ballistic Missile Submarines	4	4	0
Coastal Patrol (Missile)	86	68	44
Coast Guard Ships	255*	N / A	23

Note: In the event of a major Taiwan conflict, the PLA's Eastern and Southern Theater Navies would participate in direct action against the Taiwan Navy. The Northern Theater Navy (not shown) would be responsible primarily for protecting the sea approaches to China, but could provide mission-critical assets to support the other fleets. In conflict, China may also employ China Coast Guard (CCG) and People's Armed Forces Maritime Militia (PAFMM) ships to support military operations.

*China's coast guard ships belong to the China Coast Guard (CCG), which is subordinate to the People's Armed Police (PAP).

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 165.

U.S. Data on Chinese vs. Taiwan Military Balance in 2020 – III

Taiwan Strait Military Balance, Air Forces

	China		Taiwan
	Total	Eastern and Southern Theater	Total
Fighters	1,500 (2,700*)	600 (750*)	400 (500*)
Bombers/Attack	450	250	0
Transport	400	20	30
Special Mission Aircraft	150	100	30

Note: This chart displays estimated totals of operational military aircraft from both PLAAF and PLAN Aviation. However, the PLAAF may supplement its military transports with civilian aircraft in a combat scenario. Note that approximately 800 of the PLAAF/PLAN Aviation's total fighters are at least modern fourth-generation aircraft.

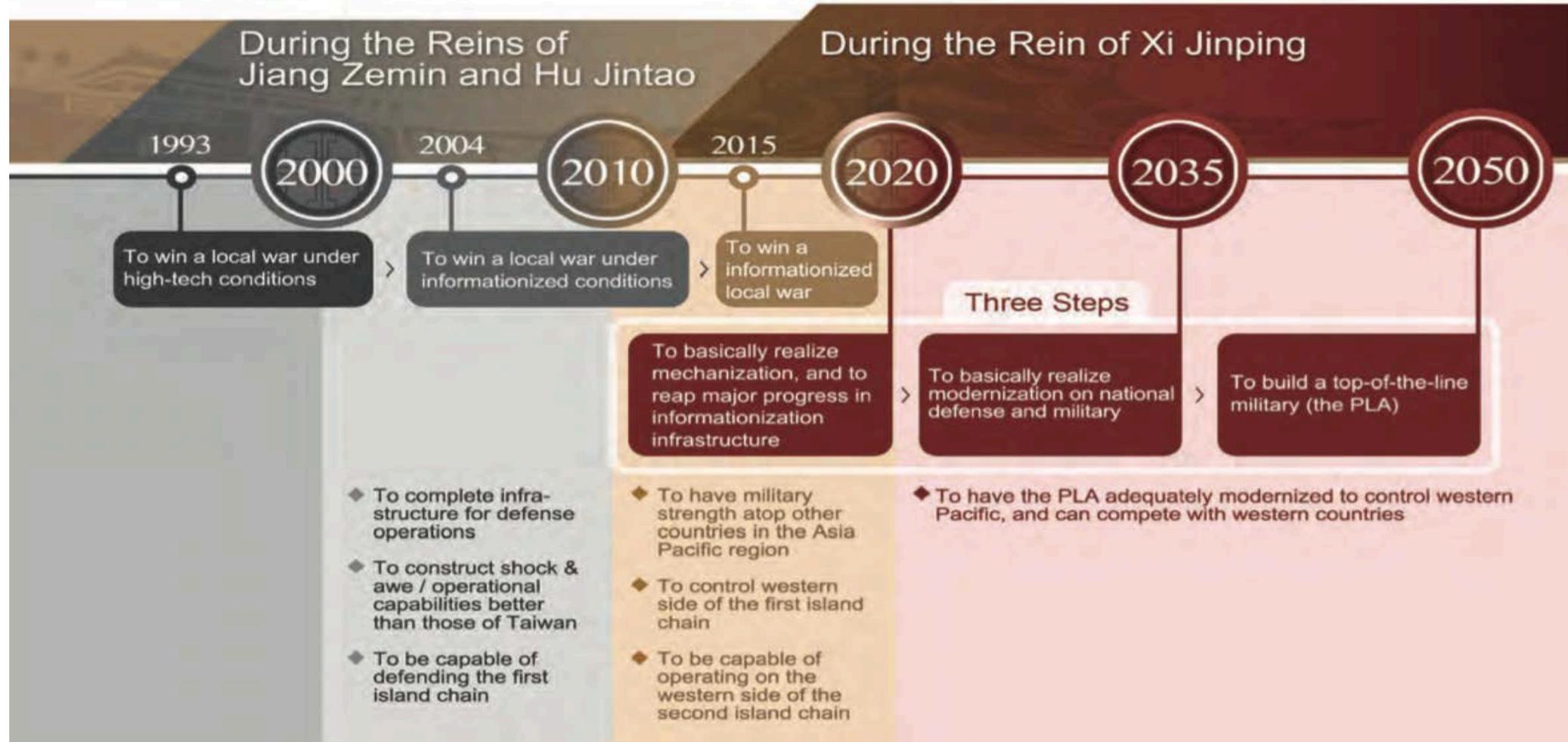
*The totals in parentheses include fighter trainers.

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 166.

China's Rocket Force

System	Launchers	Missiles	Estimated Range
ICBM	100	100	>5,500km
IRBM	200	200+	3,000-5,500km
MRBM	150	150+	1,000-3,000km
SRBM	250	600+	300-1,000km
GLCM	100	300+	>1,500km

Taiwanese View of PRC's Three-step Modernization of Defense and Military: 1990-2050

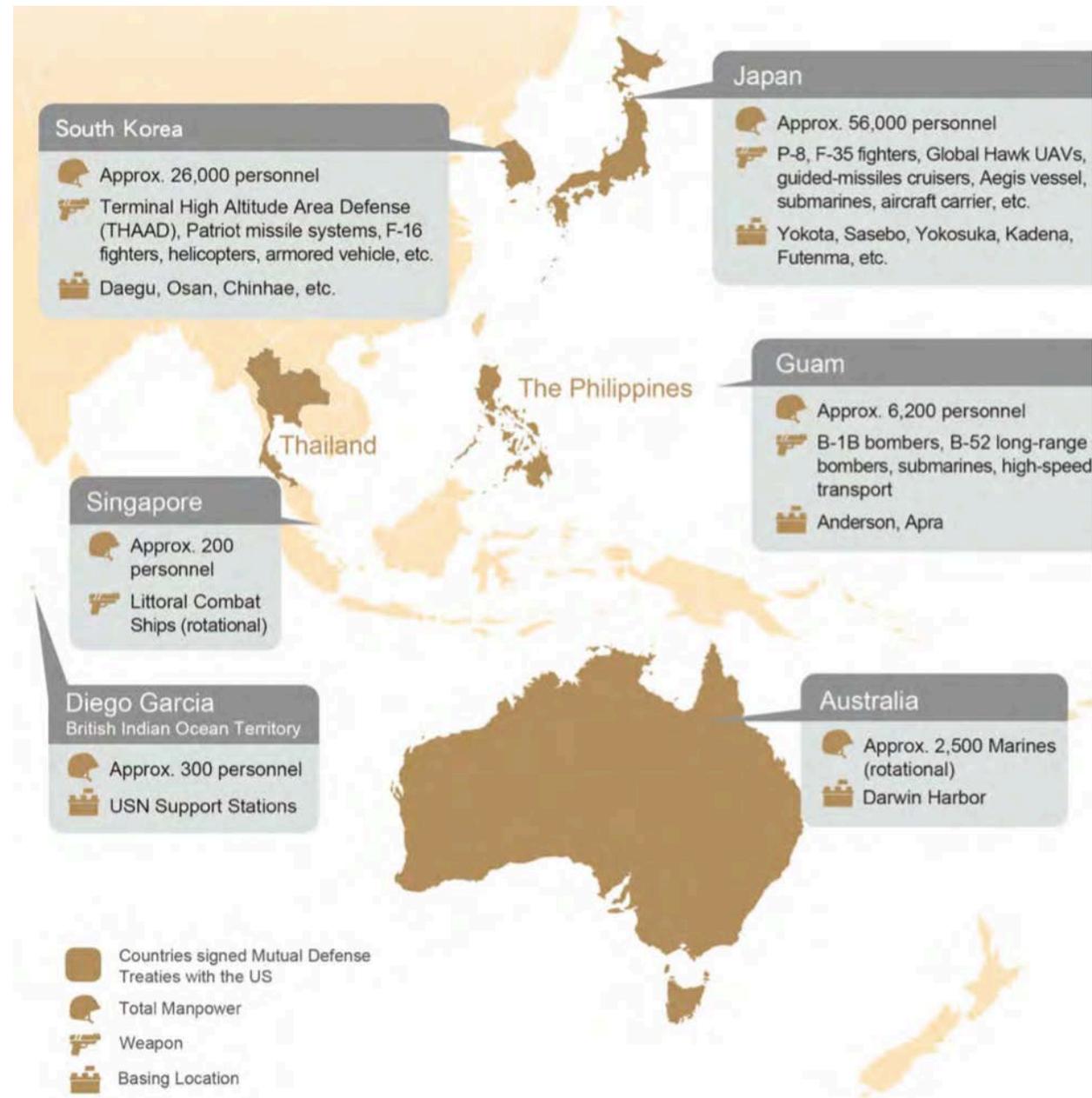


Source: Taiwan, National Defense Report, Ministry of Defense, R.O.C., 2019, p. 26 <https://www.ustaiwandefense.com/tdnswp/wp-content/uploads/2020/02/Taiwan-National-Defense-Report-2019.pdf>. Also see 2021 Taiwan Quadrennial Defense Review (QDR), March 2021, <https://www.ustaiwandefense.com/taiwan-ministry-of-national-defense-reports/> for narrative data.

Taiwanese View of U.S., Military Forces in the Pacific

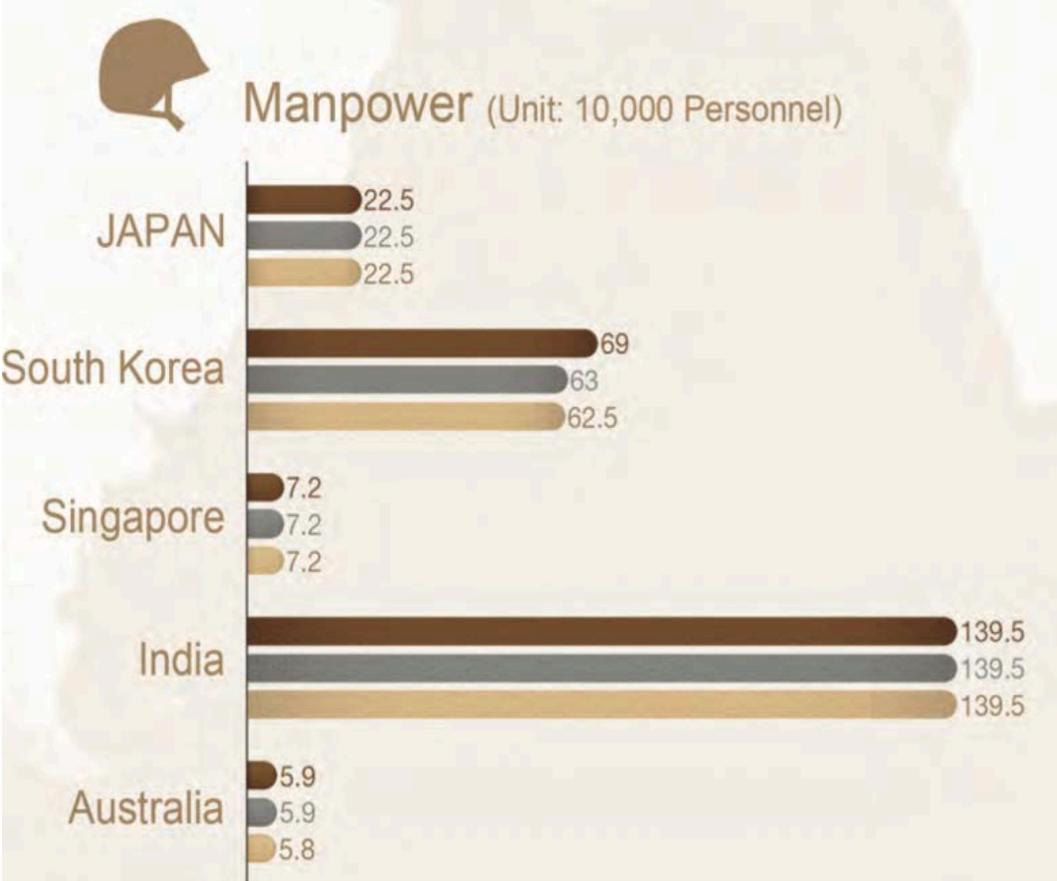
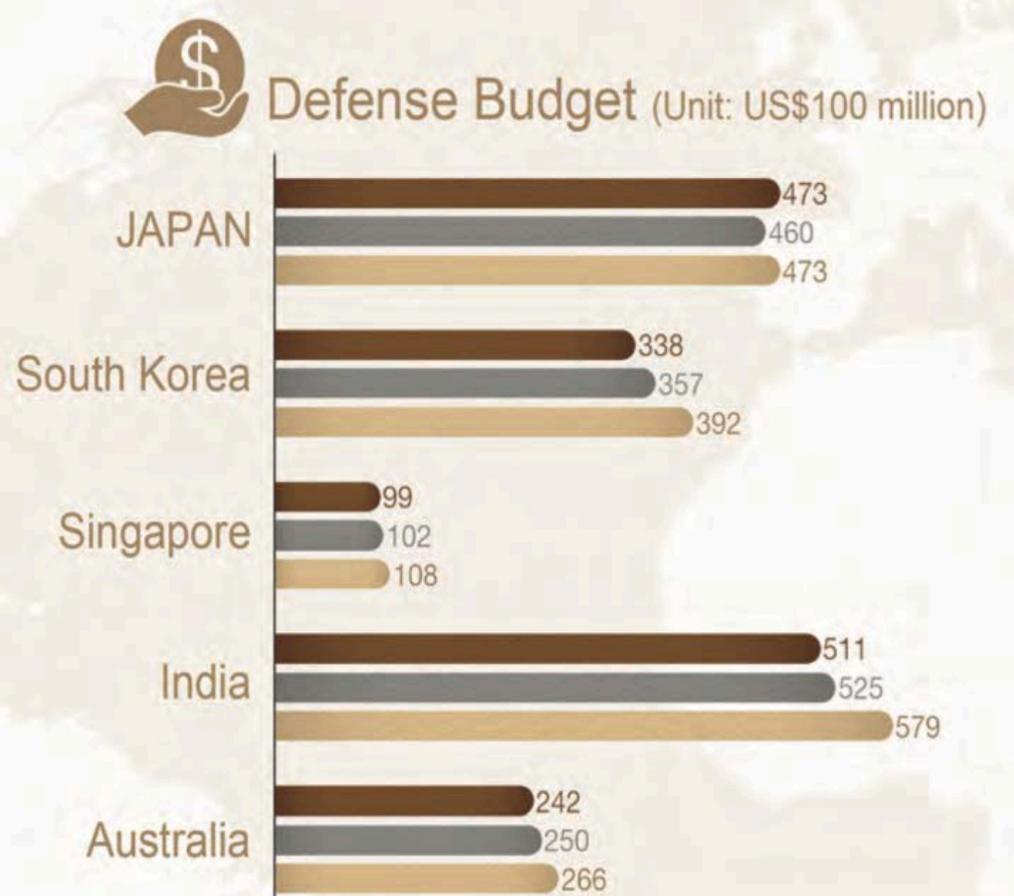
Source: Taiwan, National Defense Report, Ministry of Defense, R.O.C., 2019, p. 15

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Source: Defense Manpower Data Center, DoD; The Military Balance 2019

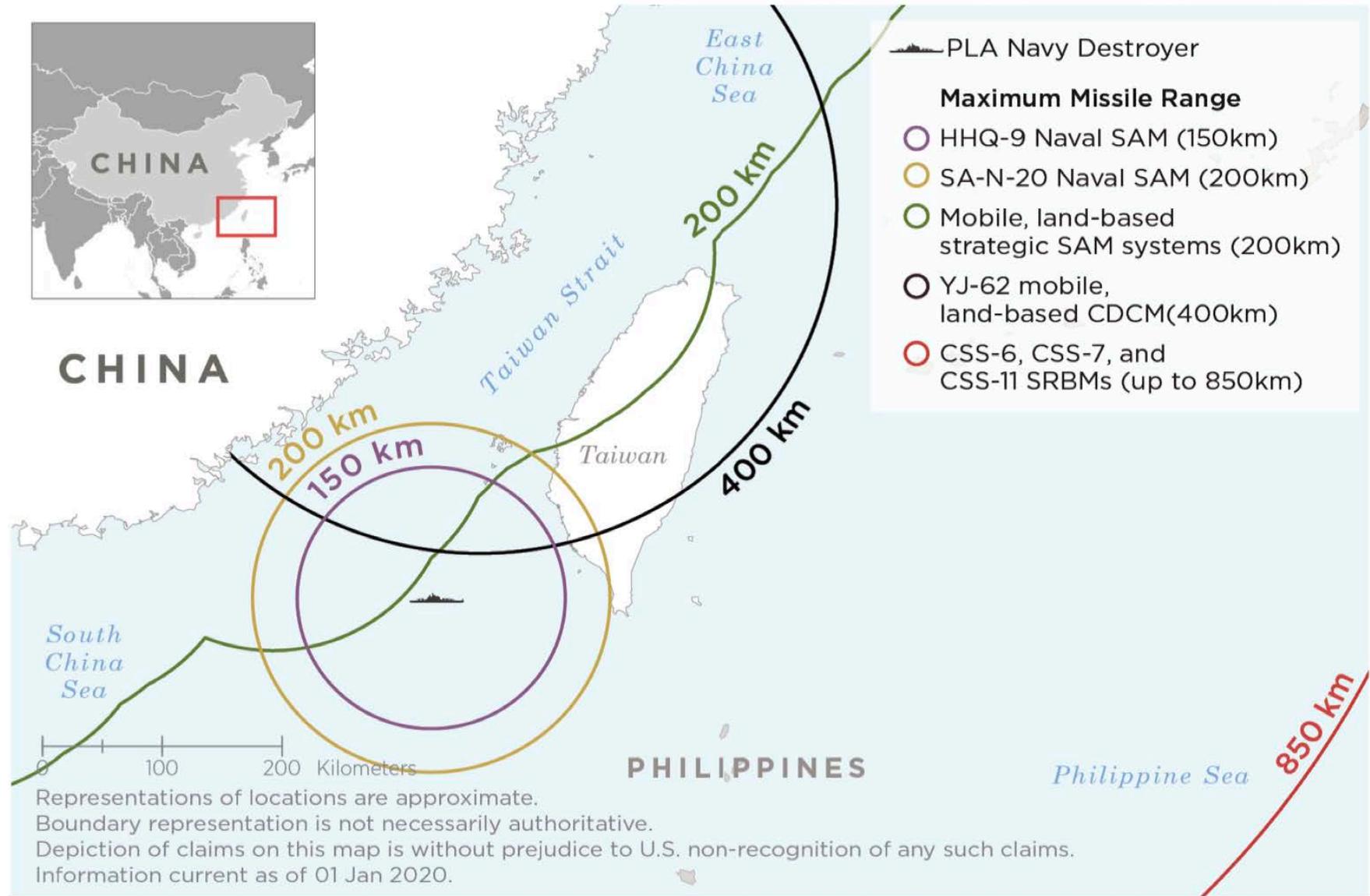
Taiwanese View of Other Major Military Forces in the Indo-Pacific Region



Source: Taiwan, National Defense Report, Ministry of Defense, R.O.C., 2019, p. 26 <https://www.ustaiwandefense.com/tdnswp/wp-content/uploads/2020/02/Taiwan-National-Defense-Report-2019.pdf>. Also see 2021 Taiwan Quadrennial Defense Review (QDR), March 2021, <https://www.ustaiwandefense.com/taiwan-ministry-of-national-defense-reports/> for narrative data.

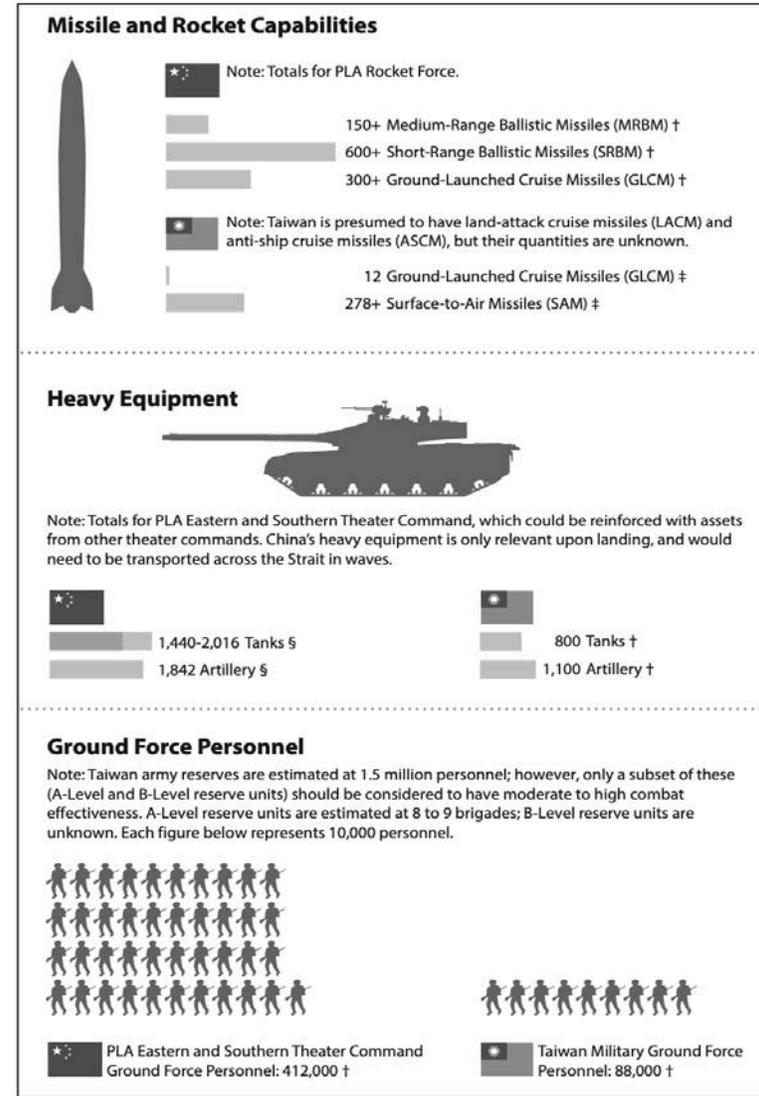
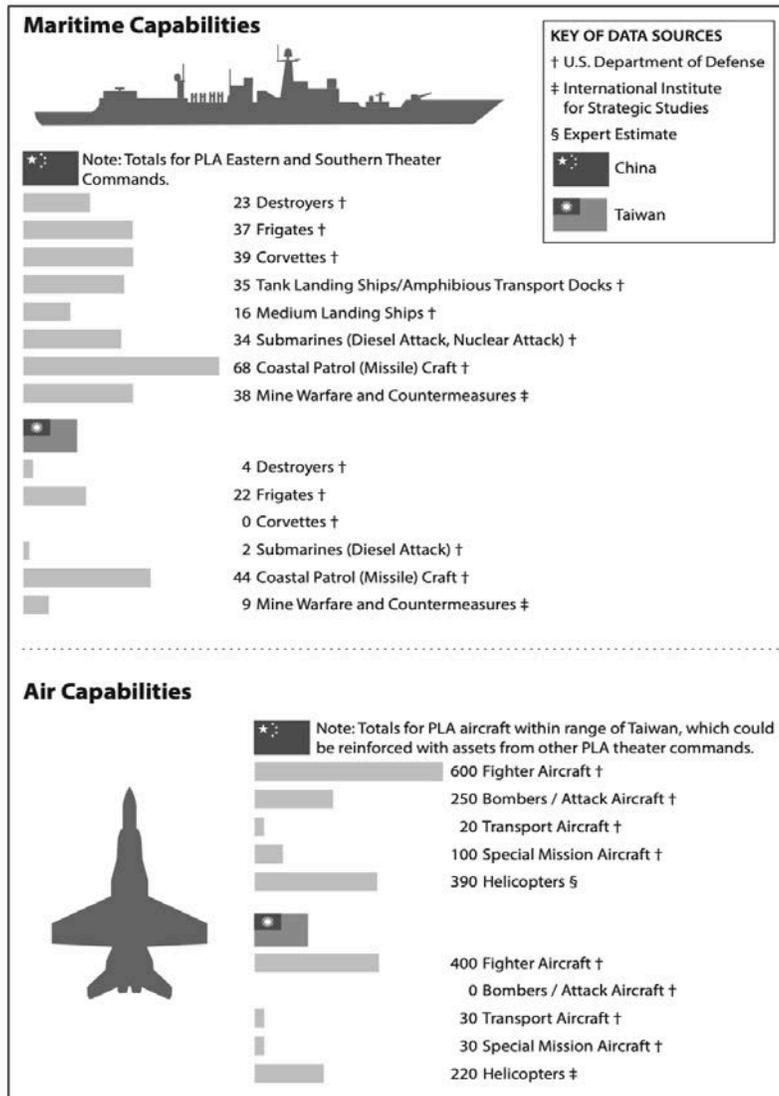
Chinese Missile Capabilities in the Taiwan Strait in 2020

Taiwan Strait



Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 116.

DoD Alternative Estimate of China-Taiwan Balance: 2020



Source: Created for the U.S.-China Economic and Security Review Commission; U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China, 2020*, 164–166; International Institute of Strategic Studies, *The Military Balance: 2020*, 2020, 259–268, 311–314; and expert interviews with Commission staff, August 17–19, 2020.

DIA Estimate of China-Taiwan Balance: 2019

Taiwan Strait Military Balance, Ground Forces

	China		Taiwan
	Total	Eastern and Southern Theaters	Total
Total Ground Force Personnel	1,030,000	412,000	88,000**
Group Armies	13	5	3
Combined Arms Brigades	78	30 (6 amphibious)	N/A
Mechanized Infantry Brigades	N/A		3
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**Counts only active-duty Army personnel.

Taiwan Strait Military Balance, Naval Forces

	China		Taiwan
	Total	Eastern and Southern Theater	Total
Aircraft Carriers	2	1	0
Cruisers	1	0	0
Destroyers	32	23	4
Frigates	49	37	22
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*China's coast guard ships belong to the China Coast Guard (CCG), which is subordinate to the People's Armed Police (PAP).

Taiwan Strait Military Balance, Air Forces

	China		Taiwan
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Fighters	1,500 (2,700*)	600 (750*)	400 (500*)
Bombers/Attack	450	250	0
Transport	400	20	30
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China's Rocket Force

System	Launchers	Missiles	Estimated Range
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SRBM	250	600+	300-1,000km
GLCM	100	300+	>1,500km

RAND Assessment of State of Taiwan’s Deterrence

Category	Variable	Level of Deterrence		
		1996	2004	2016
Motivation: How motivated is the potential aggressor?	1. General level of dissatisfaction with the status quo and determination to create a new strategic situation	Mixed	Strong	Strong
	2. Degree of fear that the strategic situation is about to turn against the aggressor in decisive ways	Weak	Mixed	Strong
	3. Level of national interest involved in the territory of concern	Weak	Weak	Weak
	4. Urgent sense of desperation and a need to act	Weak	Mixed	Strong
Clarity of message: Is the defender clear and explicit regarding what it seeks to prevent and what actions it will take in response?	1. Precision and consistency in the type of aggression the defender seeks to prevent	Mixed	Weak	Weak
	2. Clarity and consistency in the actions that will be taken in the event of aggression	Mixed	Mixed	Weak
	3. Forceful communication of messages to outside audiences, especially potential aggressors	Strong	Weak	Weak
	4. Timely response to warning with clarification of interests and threats	Strong	Mixed	Weak
Credibility of message: Does the aggressor view the defender’s threats as credible and intimidating?	1. Actual and perceived strength of the local military capability to deny the presumed objectives of the aggression	Strong	Strong	Weak
	2. Degree of automaticity of the defender’s response, including escalation to larger conflict	Mixed	Weak	Weak
	3. Degree of actual and perceived credibility of the political commitment to fulfill deterrent threats	Strong	Strong	Mixed
	4. Degree of the defender’s national interest engaged in the state to be protected	Mixed	Mixed	Mixed

Source: Excerpted from Michael J. Mazaar, Nathana Beauchamp-Mustafaga, Timothy Heath, Derek Eaton, *What Deters and Why*, RAND, RR3144, 2021, p. xi.

RAND Assessment of State of U.S. Deterrence

Variables Related to the Clarity of the U.S. Deterrence Message for Taiwan

Variable	Level of Deterrence	Explanation
Clarity on the types of aggression to be deterred	Mixed	U.S. officials have maintained an ambiguous stance, urging “peaceful” resolution.
Clarity on the actions that will follow attack	Mixed	U.S. policy has conditioned a potential response to Chinese aggression while renouncing U.S. backing for Taiwan independence activities.
Forceful communication	Weak	U.S. officials have generally adopted a restrained response to Chinese saber-rattling at Taiwan.
Timeliness of warnings	Mixed	There have been no recent large-scale military crises; in general, U.S. officials rarely comment on Chinese-Taiwanese developments.
Overall assessment	Mixed	The U.S. deterrent posture is not as unqualified as in cases of formal alliance; communication is uneven.

Variables Related to the Credibility of the U.S. Deterrence Message for Taiwan

Variable	Level of Deterrence	Explanation
Strength of the local military capability	Weak	The PLA’s anti-access/area denial capabilities raise the cost and risk of U.S. intervention.
Degree of automaticity of a U.S. response	Weak	U.S. officials have avoided statements implying an automatic response.
Credibility of the U.S. political commitment	Mixed	China perceives the U.S. commitment to be credible but is skeptical.
Degree of U.S. national interest in Taiwan	Mixed	Taiwan represents U.S. commitment and support for democratic values.
Overall assessment	Mixed	Chinese regional military advantages are growing.

Japanese View of Chinese vs. Taiwan Military Build-Up

As for the military balance between the Taiwanese forces and the People's Liberation Army (PLA), which face off across the Taiwan Strait, the Taiwanese forces were previously said to possess military superiority in accordance with Taiwan's superiority in such areas as technological prowess. However, the military balance is considered to have been changing in recent years. China has continuously increased its national defense spending at a high pace against the backdrop of its rapid economic growth in recent years, and based on that, it has rapidly and extensively strengthened its military power in terms of quality and quantity. As a result, since the 2000s, the military balance between the PLA and Taiwan has changed in favor of the PLA on the whole, with its lead widening year after year as a trend. For example, "Annual Report to Congress—Military and Security Developments Involving the People's Republic of China 2019 (May 2019)," published by the U.S. Department of Defense, offered an analysis indicating that in addition to naval and air powers vastly numerically superior to those of Taiwan, the PLA possesses a missile arsenal including 750 to 1,500 short-range missiles, whose range is presumed to cover all or parts of Taiwan.

Under these circumstances, Taiwan is also making efforts to strengthen its self-defense capability while increasing its national defense spending. However, as Taiwan apparently recognizes a gap with China in terms of deployable resources, it intends to develop the "asymmetric" warfare concept and capabilities. It has been pointed out that as part of those efforts, Taiwan is strengthening offensive and defensive electronic warfare capability and capabilities to promptly deploy and sweep mines, and is introducing high-speed stealth vessels.

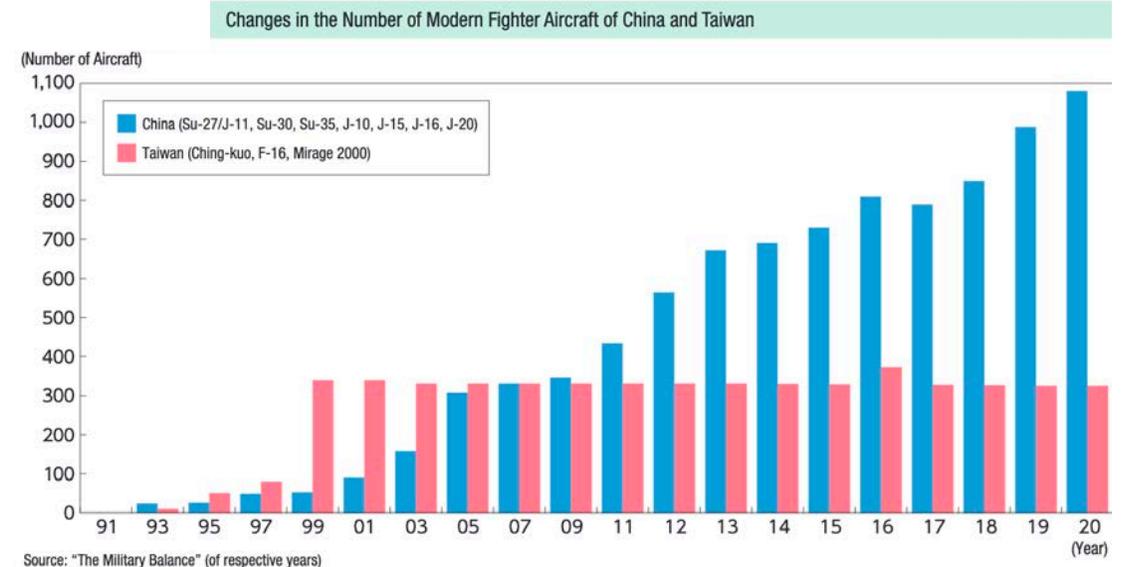
Meanwhile, the United States, an important actor in the military balance between China and Taiwan, has opposed any unilateral actions intended to change the status quo over the Taiwan Strait, and based on this policy, it has provided hardware (including equipment) and software (including training) under the Taiwan Relations Act, enacted in 1979, in order to help



The Taiwan military's F-16 fighter
(May 2019; Joint Military Exercise "Han Kuang 35 Exercise") [AFP/Jiji]

Taiwan maintain sufficient self-defense capability. In August 2019, the U.S. government notified Congress of a plan to sell weapons (including F-16C/D Block 70 fighter aircraft) to Taiwan, the fifth sale of weapons to Taiwan under the Trump administration. This sale is expected to be the largest U.S. sale of weapons to Taiwan. In particular, the sale of fighter aircraft will be the first in 27 years since 1992. In addition, in December 2018, the Asia Reassurance Initiative Act, which includes a clause calling for the U.S. government to periodically sell weapons to Taiwan, was enacted, indicating that interest in efforts to maintain Taiwan's self-defense capability is growing in the United States, including in Congress. These trends in the United States are attracting attention as an example of the country's strengthening of its commitment to the Indo-Pacific region.

In one view, the "status quo" is being maintained in that the "political discord" continues to exist between the two sides facing off across the Taiwan Strait. From a different point of view, it is also said that the "status quo" is already changing due to historic developments over the Taiwan Strait situation occurring in the form of the abovementioned changes in the military balance. In this situation, future developments are due attention.



Japanese Estimate of China-Taiwan Balance: 2020

		China	Taiwan (Reference)
Total military forces		Approx. 2.04 million troops	Approx. 0.16 million troops
Ground forces	Ground troops	Approx. 0.98 million troops	Approx. 90,000 troops
	Tanks, etc.	Type-99/A, Type-96/A, Type-88A/B and others Approx. 6,200 vehicles	M-60A, M-48A/H and others Approx. 700 vehicles
Maritime forces	Warships	Approx. 750 vessels 1,970,000 tons	Approx. 230 vessels 200,000 tons
	Aircraft carriers, destroyers, and frigates	Approx. 90 vessels	Approx. 30 vessels
	Submarines	Approx. 70 vessels	4 vessels
	Marines	Approx. 30,000 troops	Approx. 10,000 troops
Air forces	Combat aircraft	Approx. 3,020 aircraft	Approx. 520 aircraft
	Modern fighter aircraft	J-10 × 468 Su-27/J-11 × 349 Su-30 × 97 Su-35 × 24 J-15 × 20 J-16 × 60 J-20 × 22 (Fourth and fifth generation fighters (total): 1,080)	Mirage 2000 × 55 F-16 × 143 Ching-kuo × 127 (Fourth generation fighters (total): 325)
Reference	Population	Approx. 1.397 billion	Approx. 24 million
	Term of service	2 years	The last conscripts were enlisted before the end of 2018. However, the obligation to undergo four months of military training is being maintained for those born in or after 1994.

Note: Data from "The Military Balance 2020," etc.

China's Central and Northern Theaters and Japan, Korea, and Russia

China's Central Theater Forces

The Central Theater Command is responsible for the defense of the capital, providing security for CCP leadership, and serving as a strategic reserve to the other theater commands. The Central Theater Command's area of responsibility stretches from the Bohai Gulf to the interior of China, connecting the other four theater commands. Units within the Central Theater Command include three group armies, two Air Force bases, and one Rocket Force base. Although the Central Theater Command has coastal responsibilities, it lacks a subordinate naval fleet.

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, pp. 110-111.



China's Northern Theater Forces

The area of responsibility of the Northern Theater Command includes the majority of China's borders with Mongolia and Russia, North Korea, and the Yellow Sea. The Northern Theater is responsible for operations along China's northern periphery and conducting border stability operations associated with a North Korean contingency and northern border contingencies involving Mongolia or Russia. PLA units located within the Northern Theater Command are three group armies, a naval fleet, two marine brigades, two air bases, and one PLARF base. The Northern Theater Navy would be responsible primarily for protecting the sea approaches to northern China, but could provide mission-critical assets to support other fleets. In 2019, the Northern Theater Command Navy carried out a comprehensive anti-submarine drill and a long-range air defense maneuver exercise. The Northern Theater Air Force also executed a combat-readiness drill, conducting day and nighttime patrols.

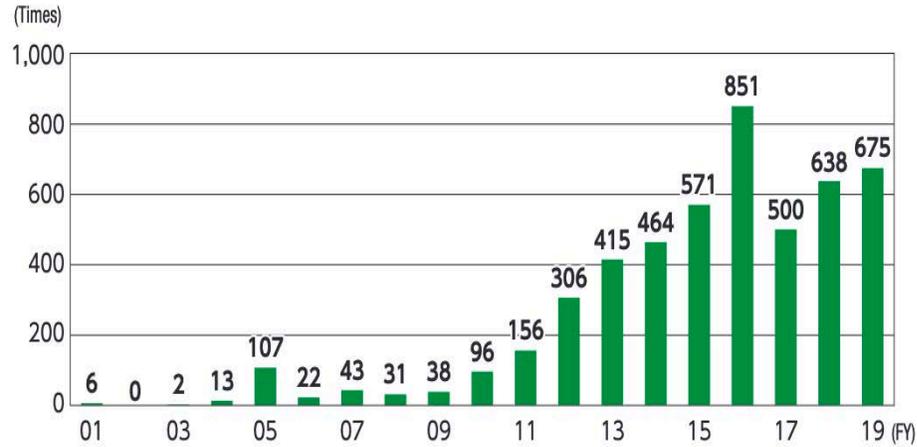
The PRC's relationship with North Korea appeared to warm somewhat following a period of tensions after China increased implementation of UN Security Council resolutions in 2017. China largely continues to enforce a number of the UN Security Council's resolution sanctions against North Korea, but Beijing regularly fails to act against illicit ship-to-ship transfers in China's territorial seas, take action against China-based North Korean banking and weapons trade representatives and their activities, and continues to import coal—albeit at lower volumes—via Chinese barges and ship-to-ship transfers. In 2019, President Xi Jinping met twice with Kim Jong-un, complementing numerous lower-level official exchanges in both North Korea and China. China and North Korea restarted high-level military diplomacy, which included North Korean participation in the PLA Navy's (PLAN's) international fleet review and several meetings between military officials. These engagements include a high-level visit by the director of the General Political Bureau of the Korean People's Army Kim Su-gil with CMC.

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 109.

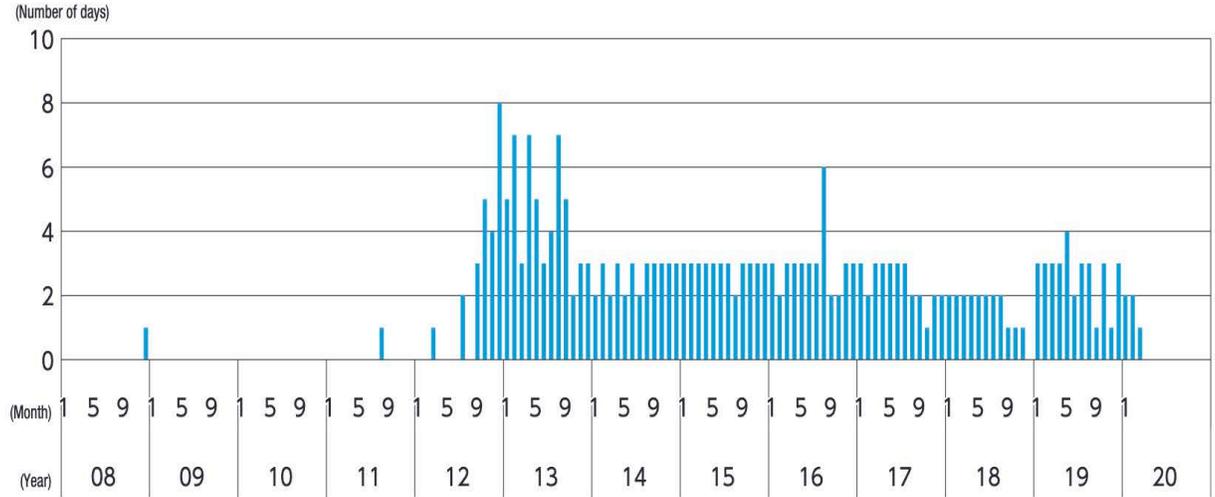


Recent Chinese Military Activity Near Japan: 2013-2020

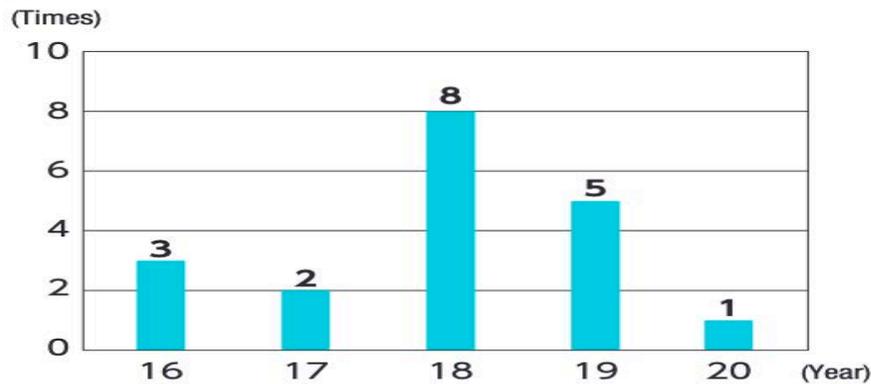
Changes in the Number of Scrambles against Chinese Aircraft



Changes in number of days on which Chinese government vessels intruded into the Japanese territorial waters



Number of Announcements of Chinese Military Aircraft's Passage through the Tsushima Strait



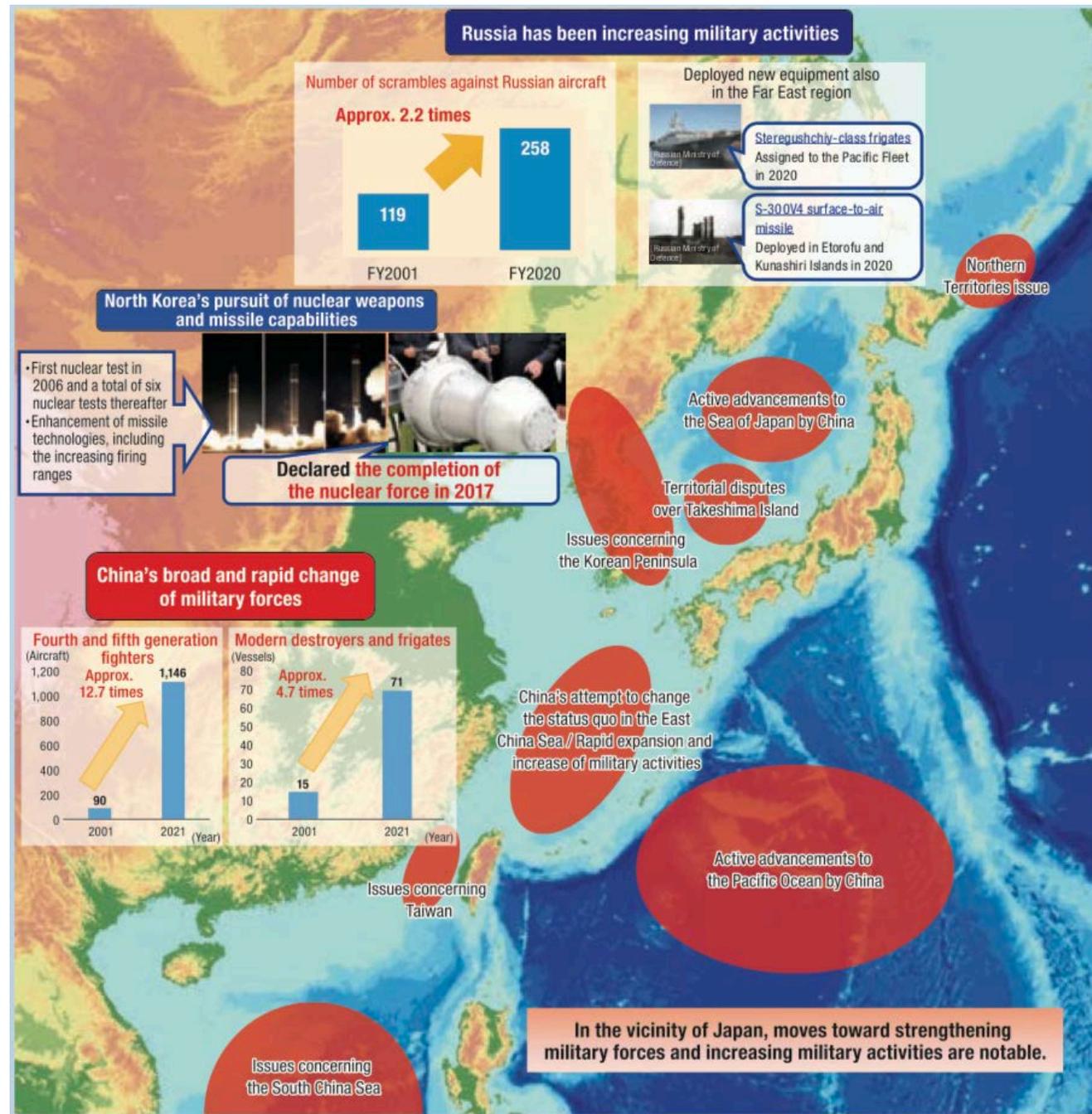
※ The figure for 2020 is as of the end of March.

Identification in the contiguous zone

Year	Number of days (days)	Total number of identified vessels (vessels)
2012	79	407
2013	232	819
2014	243	729
2015	240	709
2016	211	752
2017	171	696
2018	158	607
2019	282	1,097
2020	83	289

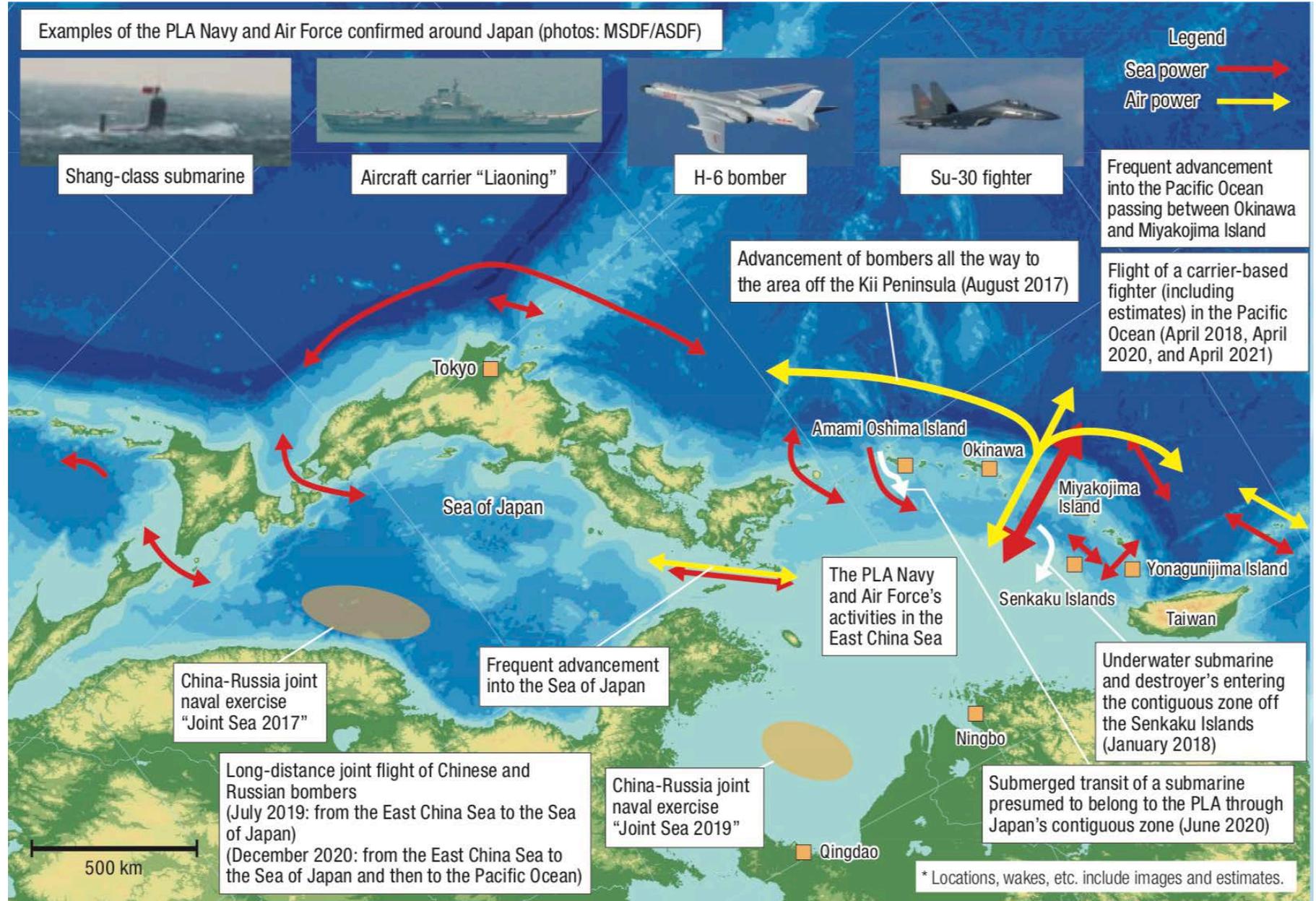
※ The figure for 2012 is that from September to December, and the figure for 2020 is as of the end of March.

Japanese View of Security Environment Around Japan: 2021



Source: Japanese Ministry of Defense, *Defense of Japan*, 2020, p. 15.

Japanese View of Chinese Activity Around Japan: 2021 – I

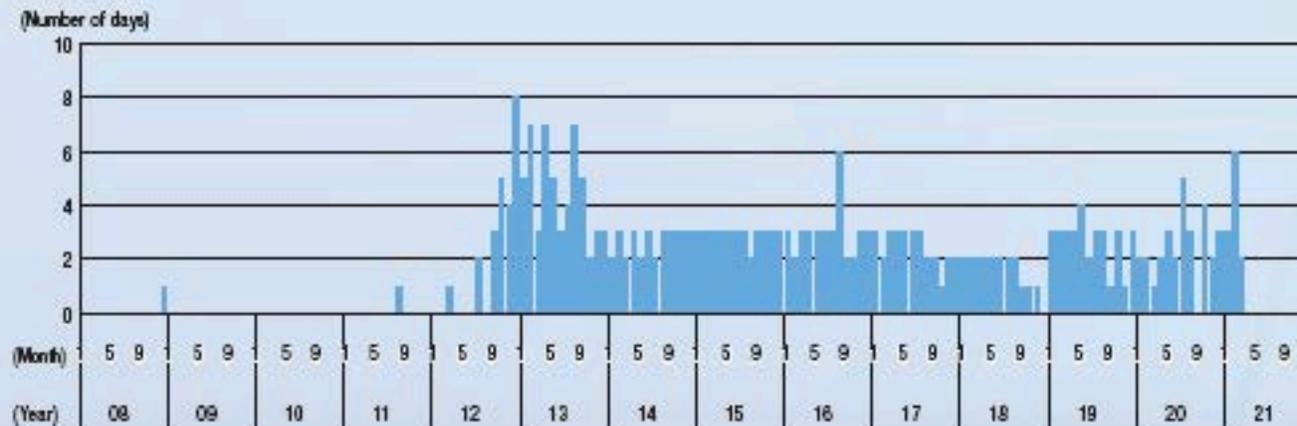


Source: Japanese Ministry of Defense, *Defense of Japan*, 2021, p. 18.

Japanese View of Chinese Activity Around Japan: 2021 – II

- China has relentlessly continued attempts to unilaterally change the status quo by coercion in the sea area around the Senkaku Islands, leading to a grave matter of concern. Its actions involving unilateral assertions over Japan's territorial waters around the Senkaku Islands are, fundamentally, a violation of international law.
- In February 2021, the China Coast Guard Law, which stipulates the responsibility of the Coast Guard and its authority including the use of weapons, entered into force. The Coast Guard Law includes problematic provisions in terms of their inconsistency with international law. Sources of inconsistency include, among others, ambiguity as to geographical areas the Coast Guard Law applies and how the rules governing the use of weapons are implemented. The Coast Guard Law must not be allowed to infringe on the legitimate interests of the relevant countries including Japan. Furthermore, the raising of tensions in the East China Sea and other sea areas is completely unacceptable.

Changes in number of days on which China Coast Guard vessels, etc. intruded into the Japanese territorial waters



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2016	211	752
2017	171	696
2018	158	607
2019	282	1,097
2020	333	1,161
2021	81	300

* The figure for 2012 is that from September to December, and the figure for 2021 is as of the end of March.

China and Russia: 2019

China has steadily increased its cooperation with Russia in recent years in a wide range of exercises, IS&R activities, in regional activities like the Shanghai Cooperation Council, and selected aspects of technology. A broadly up-to-date and accurate open-source estimate of the size and frequency does not seem to be readily available, but *DIA* notes:

In June 2019, Russia and China upgraded their relations to a ‘comprehensive strategic partnership of coordination in a new era,’ pledging closer coordination on global security issues and mutual support. This was followed by the PLAAF and the Russian Aerospace Force conducting their first combined air patrol in the Asia-Pacific region. For the second year in a row, China participated in a Russian strategic command and staff exercise, TSENTR-2019, held this year in the Russian Central Military District. Additionally, cooperation between the two militaries includes joint defense technology development, exercises, and cooperation on other military modernization initiatives. Despite continued military cooperation, the PRC and Russia have denied the creation of a military alliance or their intent to enter into an alliance.

TSENTR-2019. From mid-late September, China participated in Russia's strategic command-staff exercise, TSENTR-2019, along with armed forces elements from India, Pakistan, Kyrgyzstan, Kazakhstan, Tajikistan, and Uzbekistan. The aim of the exercise was to test readiness levels of the Russian military and interoperability among regional partners, while simulating a response to terrorist threats in Central Asia. China represented the largest foreign contingent, deploying about 1,600 ground and air troops from the PLA's Western Theater Command and nearly 30 fixed-wing aircraft and helicopters, including H-6 bombers. During the exercise, China and Russia conducted ground maneuvers and Chinese and Russian aircraft may have conducted missile and bombing strikes on mock enemy targets. The PRC's Minister of Defense Wei observed part of the exercise alongside the Russian defense minister and President Vladimir Putin, commenting on the increased level of China- Russia cooperation. Following last year's VOSTOK exercise, TSENTR marked the second consecutive year that China has participated in Russia's command-staff capstone exercise series.

China and Russia: 2020

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Japanese View of Russian Role in Asia: 2021

Overview

- Russia is modernizing its military equipment, including strategic nuclear forces, and is gradually enhancing the deployment capability of its military forces in remote areas by securing military bases outside Russia.
- Russia is promoting the development of hypersonic weapons and other new types of weapons, while also intensifying activities in new domains such as space and electromagnetic spectrum.

Activities in Japan's Northern Territories and the Vicinity of Japan

- In addition to a trend of increasing activity by Russian armed forces in the vicinity of Japan, Russia has also shown a recent tendency to deploy the latest equipment in the Far East region.
- In the strategic nuclear forces exercises conducted in December 2020, a Borey-class SSBN deployed in and around the Sea of Okhotsk fired a new SLBM for the first time.
- In December 2020, the Ministry of Defence of Russia announced the full deployment of the S-300V4 surface-to-air missile system in Etorofu and Kunashiri Islands.

Advancement in the Military Cooperation with China

- In December 2020, Russian Tu-95 bombers, along with Chinese H-6 bombers, carried out long distance joint flights from the Sea of Japan to the East China Sea and the Pacific Ocean. The China-Russia joint flight is the second such incident following one in July 2019.
- In response to a question regarding the Chinese-Russian military alliance, President Putin remarked, “Theoretically, it is possible to envisage a military alliance.”
- In December 2020, the Chinese and Russian Ministers of Defense agreed to extend the bilateral cooperation agreement on the launch notification for ballistic missiles and other missiles for 10 years.

China's Ground Forces

China's Evolving Ground Forces – I

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

—Excerpt from *China's Military Strategy*, May 2015

The PLA Army (PLAA) is the world's largest standing ground force, with approximately 915,000 active-duty personnel in combat units. China's military reforms since 2015 have included creating a separate PLAA headquarters for the first time in the PLA's history. In April 2017, the PLA announced the reduction of 5 of the PLAA's 18 group armies (corps-sized units), and the restructuring to a corps-brigade-battalion force structure. This new design implemented more mobile, modular units and integrated maneuver elements into combined-arms brigades. The PLAA is also modernizing C4I systems to enhance its forces' interoperability.

PLAA-produced publications consistently discuss “new-type operations,” which are operations that emphasize an effects-based application of combat power to neutralize key nodes, diminish the enemy's capability to effectively fight (systems confrontation), and achieve operational objectives quickly. At the tactical level, PLAA battalion training most likely includes use of precise, long-range fire to maximize protection and surprise; dispersion of formations of weapon platforms while relying on advanced communications technologies; and increasingly lethal munitions to enable PLAA commanders to produce mass effects on an enemy.

Units

The development of the PLAA's “new-type” operational forces reflects China's desire to plan and construct a force that is multifaceted, with capabilities for operations ranging from high-intensity conflict to security-stability operations. These forces stress the importance of ISR and leveraging information to enable future combat; they can conduct three-dimensional operations (Army aviation, air mobility, and airborne forces) and can operate in a severely degraded communications environment.

Operations emphasize engaging the enemy from much longer distances, place greater importance on protection and survivability, and emphasize the employment of cyberoperations. Future PLAA units will be smaller, more modular, and less dependent on headquarters for resources. This new construct envisions generating combat power and effectiveness across warfighting functions, from smaller, more flexible units.

China's Evolving Ground Forces – II

Key Takeaways

- The PLAA is the world's largest standing ground force, with approximately 915,000 active-duty personnel in combat units.
- In 2019, the PLAA continued to transition into a more modern, mobile, and lethal ground force through the fielding of upgraded combat systems and the integration of communications equipment and other technologies. The PLAA's modernization seeks to improve its ability to conduct joint operations in a high-intensity conflict and project power abroad.
- In 2019, the PLAA continued to create and mature formations at lower echelons that are more operationally flexible and better suited to conducting and managing complex combined-arms and joint operations.
- In 2019, the PLAA demonstrated a significant increase in training at both the service-level and joint-level and it continued to implement more realistic training methods.

The People's Liberation Army (PLAA) is the world's largest standing ground force, with approximately 915,000 active-duty personnel in combat units. The PLAA is the primary ground fighting force for the PLA. The PRC's 2019 defense white paper described the PLAA's tasks as transitioning from "regional defense" to trans-theater operations with an emphasis on improving its capabilities to conduct multi-domain, trans-theater, and sustained operations "so as to build a new type of strong and modernized land force." In 2019, the PLAA continued efforts to transition into a more modern, mobile, and lethal ground force through the fielding of upgraded combat systems and the integration of communications equipment and other technologies, to improve its ability to project power and conduct joint operations in a high-intensity conflict in line with the CCP's modernization goals. Throughout 2019, the PLAA also continued to implement the major PLA-wide structural reforms that began in late 2015 and improving its combat readiness.

...The PLAA's forces are organized into five Theater Army Commands, the Xinjiang military command, and the Tibet military command. The PLAA has now standardized its 13 group armies (roughly a U.S. corps-level equivalent), which were reduced in number from 18 in 2017 as part of an effort to downsize and streamline the PLAA's force structure. Each group army now includes multiple combined-arms brigades. In total, these 78 combined-arms brigades serve as the PLAA's primary maneuver force.

...The PLAA's modernization continues to emphasize vehicle and weapon upgrades in line with the PLA's overall modernization priorities and CMC guidance. The PRC's 2019 defense white paper, however, noted that the PLA "has yet to complete the task of mechanization," implying that completing mechanization by the end of 2020 was unlikely. Western observers have noted that the CCP's mechanization goal pertains primarily to the PLA's ground forces and point to the challenges of modernizing the PLAA given its sheer size. For example, equipment in PLAA infantry units varies and may include a mix of obsolete platforms from the 1960s up to some of the region's most modern and capable platforms. Similarly, PLAA armored units are comprised of a wide range of legacy tanks and modernized third-generation main battle tanks. Despite the PLA's modernization ambitions and its demonstrated ability to develop highly modern equipment for ground forces, the PLAA has faced challenges acquiring and fielding new equipment in sufficient quantities to retire its legacy equipment, although it continues to make progress in this regard.

China's Major Ground Forces

Type and Echelon

Army Groups	13
Combined-Arms Brigades	78
Artillery Brigades	15
Army Aviation/Air Assault Brigades	13
Mechanized Infantry Division	1

Source: Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 56, and U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 43.



Army Modernization

The service seeks to improve its ability to “deploy in different terrain environments while bringing ample firepower in combat scenarios beyond China’s borders,” according to DOD.^a

Capabilities:

The sophistication of the ground forces’ armaments has advanced to among the best in the world, and the PLAA’s capabilities are increasing. One U.S. observer of the PLAA writes

“New weapons and technologies allow army units to move faster over more difficult terrain, including bodies of water; shoot farther and faster; and integrate their capabilities with those found in the other services more than ever before. Army commanders now have a variety of means to attack opponents out to 150 kilometers beyond their frontlines, including long-range multiple rocket launchers and artillery, attack helicopters, [special operations forces] teams, nonlethal electronic warfare and possibly cyber weapons, and supporting PLA Air Force aircraft and armed UAVs.^b”

- **Tanks:** The Type 15 light battle tank, fielded in 2018, is capable of traversing mountainous terrain and likely will enhance the PLAA’s ability to conduct operations along the disputed China-India border.¹⁹³ The PLAA’s most capable tanks are the Type 96A and Type 99.¹⁹⁴
- **Army Aviation:** Most of the PLA’s helicopters are assigned to the PLAA, and are advancing the service’s ability to project power.¹⁹⁵ DOD anticipates the Z-20 medium lift helicopter, which made its first public appearance in 2019 and resembles the U.S. Black Hawk helicopter, “will enhance aviation and air assault brigades’ ability to perform rapid air insertion operations, light infantry force projection, and expedited logistics.”¹⁹⁶
- **Amphibious forces:** PLAA amphibious forces prepare, sometimes alongside PLAN amphibious forces, for amphibious assault operations, with an emphasis on a Taiwan conflict scenario. DOD believes the PLAA “will likely increase its ability to establish, defend, and exploit a beachhead lodgment” in a Taiwan invasion mission.

a. U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People’s Republic of China 2020*, August 21, 2020, p. 116

b. Dennis J. Blasko, “The Biggest Loser in Chinese Military Reforms,” in *Chairman Xi Remakes the PLA: Assessing Chinese Military Reforms*, Phillip C. Saunders et al., eds. (Washington, DC: National Defense University Press, 2019), p. 363

China's Naval Forces

China's Major Naval Forces

Key Takeaways

- > The PRC has numerically the largest navy in the world with an overall battle force of approximately 350 ships and submarines, including more than 130 major surface combatants.
- > As of 2019, the PLAN is largely composed of modern multi-role platforms featuring advanced anti-ship, anti-air, and anti-submarine weapons and sensors.
- > The PRC commissioned its first domestically built aircraft carrier in late 2019. China expects its second domestically built aircraft carrier to enter service by 2023.
- > In 2019, the PRC launched its first Yushen class amphibious assault ship (Type 075 LHA), its first class of large deck amphibious warship.
- > In the near-term, the PLAN will have the capability to conduct long-range precision strikes against land targets from its submarine and surface combatants using land-attack cruise missiles, notably enhancing the PRC's global power projection capabilities.

The People's Liberation Army Navy (PLAN) is the largest navy in the world with a battle force of approximately 350 platforms, including major surface combatants, submarines, ocean-going amphibious ships, mine warfare ships, aircraft carriers, and fleet auxiliaries. The PRC's 2019 defense white paper described the PLAN as speeding up the transition of its tasks from "defense on the near seas" to "protection missions on the far seas." The PLAN is an increasingly modern and flexible force that has focused on replacing its previous generations of platforms with limited capabilities in favor of larger, modern multi-role combatants. As of 2019, the PLAN is largely composed of modern multi-role platforms featuring advanced anti-ship, anti-air, and anti-submarine weapons and sensors. This modernization aligns with the PRC's growing emphasis on the maritime domain and increasing demands for the PLAN to operate at greater distances from mainland China.

Major Naval Units



Naval Modernization

- **Aircraft carriers:** The PLAN has two operational aircraft carriers, is constructing a third, and almost certainly will build at least one more.¹⁶⁶ China's first carrier (*Liaoning*), refurbished from a Ukrainian hull, entered service in 2012. Its second—and first domestically-developed—carrier (*Shandong*) entered service in 2019. Construction on China's second domestically-developed carrier, which is to be larger and equipped with a catapult launch system, began in 2018;¹⁶⁷ the U.S. Office of Naval Intelligence projected in 2020 that it would be commissioned by 2024... DIA projects this carrier will facilitate PLA power projection in the South China Sea and possibly the Indian Ocean...
- **Amphibious ships:** Facilitating the PLAN's expeditionary capabilities are large-deck amphibious ships such as the new Yushen-class (Type 075) landing helicopter assault ships (one launched in 2019 and two more under construction) and at eight Yuzhao-class (Type 071) amphibious transport docks.¹⁷⁰ These large vessels are capable of embarking several Yuyi-class air-cushion landing craft, helicopters, tanks and other vehicles, as well as large numbers of marines.¹⁷¹
- **Submarines:** According to DOD, the PLAN's submarine force in 2019 comprised 4 Jin-class nuclear-powered ballistic missile submarines, 6 nuclear-powered attack submarines, and 46 diesel-powered attack submarines... (2 more Jin-class submarines entered service in 2020, according to media reports, bringing the total number of Jin-class submarines to 6)... The Jin-class nuclear-powered ballistic missile submarine, paired with the JL-2 submarine-launched ballistic missile, is China's first credible sea-based deterrent. DOD expects China's submarine force to number 65-70 total for the next decade, "replacing older units with more capable units on a near one-to-one basis."
- **Multi-role surface combatants:** The modern Luyang III-class (Type 052D) guided missile destroyer and Jiangkai II-class (Type 054A) guided missile frigate have advanced anti-ship and anti-air weapons and sensors, boosting the PLAN's area air defense and anti-surface warfare capabilities. Smaller combatants, in particular the Jiangdao-class (Type 056) corvette, also pose a threat to adversary surface vessels near China's coast. In 2019, DIA reported that "every major PLAN surface combatant under construction" can carry at least one helicopter, enhancing the fleet's ability to conduct over-the-horizon targeting, anti-submarine warfare, and search and rescue...
- **Naval aviation:**
 - *Carrier aviation:* The PLAN Naval Aviation branch's aircraft carrier-based aircraft, including up to 24 J-15 fourth-generation fighters embarked on China's first carrier, and possibly more than 24 J-15s on its second carrier, as well as several helicopters, will extend PLA power projection capabilities.¹⁷⁶ A variant of the developmental fifth-generation FC-31 stealth fighter... is expected to operate from future aircraft carriers... The developmental carrier-borne KJ-6000 airborne early warning and control aircraft is expected to enhance carrier fleet situational awareness...
 - *Bombers:* PLAN Naval Aviation operates H-6 bombers, the latest variant of which (the land-based H-6J) has a combat radius extending to the second island chain and can carry a larger number of YJ-12 anti-ship cruise missiles...

CRS Estimate of Trends in China and US Naval Ship Strength: 2005-2020

Year of DOD report	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	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
<i>China Coast Guard ships</i>	<i>n/a</i>	<i>185</i>	<i>240</i>	<i>248</i>	<i>255</i>	<i>n/a</i>											
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

ONI and US Navy Estimate of Build-up in China's Naval Ship Strength vs. US: 2020-2040

Table 2. Numbers of Chinese and U.S. Navy Battle Force Ships, 2000-2030

Figures for Chinese ships taken from ONI information paper of February 2020

	2000	2005	2010	2015	2020	2025	2030
Ballistic missile submarines	1	1	3	4	4	6	8
Nuclear-powered attack submarines	5	4	5	6	7	10	13
Diesel attack submarines	56	56	48	53	55	55	55
Aircraft carriers, cruisers, destroyers	19	25	25	26	43	55	65
Frigates, corvettes	38	43	50	74	102	120	135
Total China navy battle force ships, including types not shown above	110	220	220	255	360	400	425
Total U.S. Navy battle force ships	318	282	288	271	297	<i>n/a</i>	<i>n/a</i>

Source: Table prepared by CRS. Source for China's navy: Unclassified ONI information paper prepared for Senate Armed Services Committee, subject "UPDATED China: Naval Construction Trends vis-à-vis U.S. Navy Shipbuilding Plans, 2020-2030," February 2020, 4 pp. Provided by Senate Armed Services Committee to CRS and CBO on March 4, 2020, and used in this CRS report with the committee's permission. Figures are for end of calendar year. Source for figures for U.S. Navy: U.S. Navy data; figures are for end of fiscal year.

Note: n/a means not available.

Table 3. Numbers of Chinese and U.S. Navy 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	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>

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.

Key Trends in Chinese Naval Missile Build Up

Anti-Ship Ballistic Missiles (ASBMs): China is fielding two types of land-based ballistic missiles with a capability of hitting ships at sea—the DF-21D..a road-mobile anti-ship ballistic missile (ASBM) with a range of more than 1,500 kilometers (i.e., more than 910 nautical miles), and the DF-26...a road-mobile, multi-role intermediate range ballistic missile (IRBM) with a maximum range of about 4,000 kilometers (i.e., about 2,160 nautical miles) that DOD says “is capable of conducting both conventional and nuclear precision strikes against ground targets as well as conventional strikes against naval targets.”

Until recently, reported test flights of DF-21s and SDF-26s have not involved attempts to hit moving ships at sea. A November 14, 2020, press report, however, stated that an August 2020 test firing of DF-21 and DF-26 ASBMs into the South China resulted in the missiles successfully hitting a moving target ship south of the Paracel Islands.³¹ A December 3, 2020, press report stated that Admiral Philip Davidson, the commander of U.S. Indo-Pacific Command, “confirmed, for the first time from the U.S. government side, that China’s People’s Liberation Army has successfully tested an anti-ship ballistic missile against a moving ship.”... China reportedly is also developing hypersonic glide vehicles that, if incorporated into Chinese ASBMs, could make Chinese ASBMs more difficult to intercept...

Observers have expressed strong concerns about China’s ASBMs, because such missiles, in combination with broad-area maritime surveillance and targeting systems, would permit China to attack aircraft carriers, other U.S. Navy ships, or ships of allied or partner navies operating in the Western Pacific. The U.S. Navy has not previously faced a threat from highly accurate ballistic missiles capable of hitting moving ships at sea. For this reason, some observers have referred to ASBMs as a “game-changing” weapon.

Anti-Ship Cruise Missiles (ASCMs)

China’s extensive inventory of anti-ship cruise missiles (ASCMs) ...includes both Russian- and Chinese-made designs, including some advanced and highly capable ones, such as the Chinese-made YJ-18.³...Although China’s ASCMs do not always receive as much press attention as China’s ASBMs (perhaps because ASBMs are a more recent development), observers are nevertheless concerned about them. As discussed later in this report, the relatively long ranges of certain Chinese ASCMs have led to concerns among some observers that the U.S. Navy is not moving quickly enough to arm U.S. Navy surface ships with similarly ranged ASCMs

Key Trends in Chinese Carrier Build Up

China's first aircraft carrier, *Liaoning* (Type 001) ...entered service in 2012. China's second aircraft carrier (and its first fully indigenously built carrier), *Shandong* (Type 002) ...entered service on December 17, 2019. ...*Liaoning* and *Shandong* launch fixed-wing aircraft using a "ski ramp" at the ship's bow.

Compared with *Liaoning* and *Shandong*, U.S. Navy aircraft carriers are larger (about 100,000 tons full load displacement), nuclear powered (giving them greater cruising endurance than a conventionally powered ship), able to embark and operate a larger number of aircraft (60 or more), and launch fixed-wing aircraft using catapults, which can give those aircraft a range/payload capability greater than that of aircraft launched with a ski ramp.

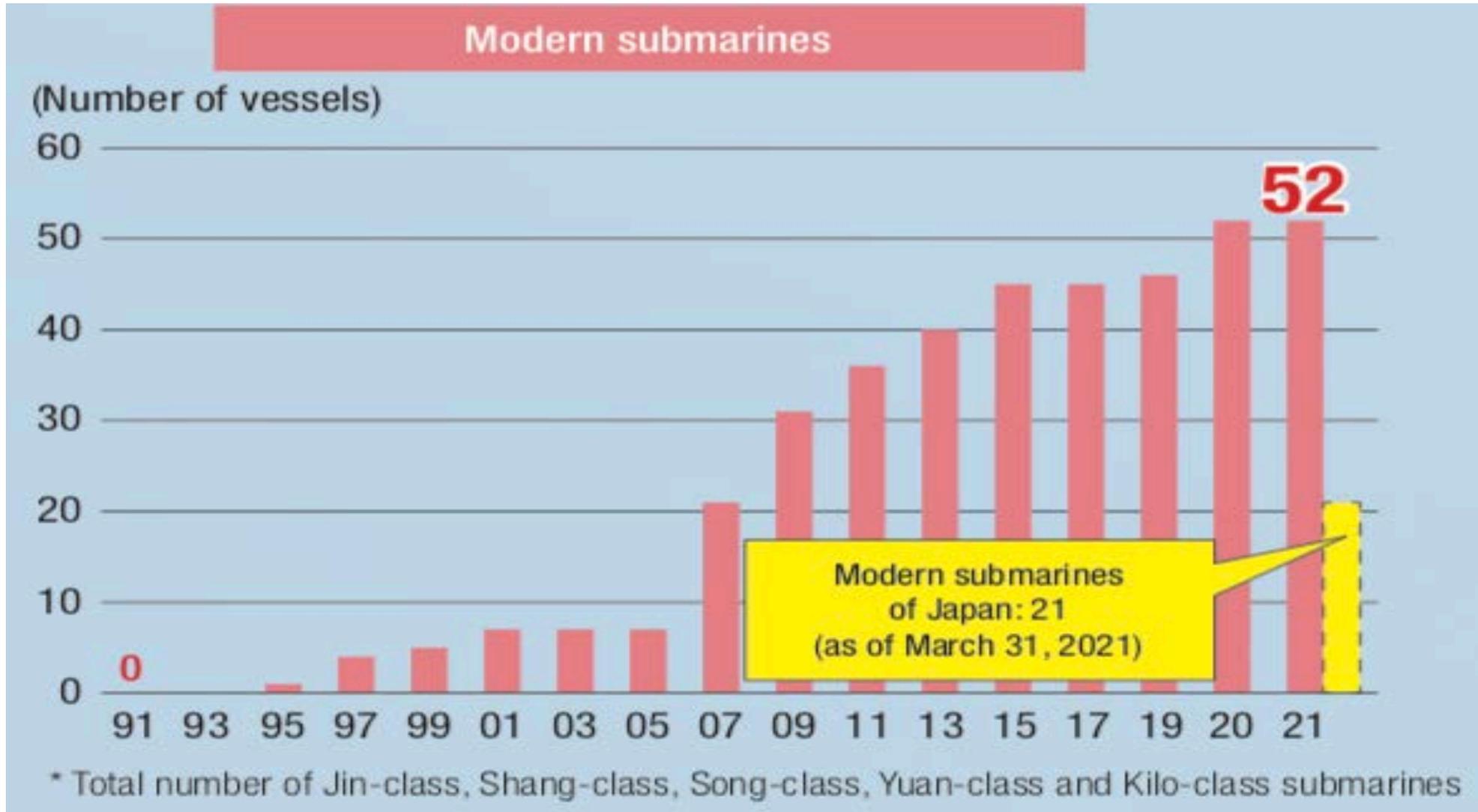
China's third carrier, the Type 003 ...is under construction; ONI expects it to enter service by 2024... It is expected to be conventionally powered, closer in size to U.S. Navy aircraft carriers, and equipped with catapults rather than a ski ramp for launching aircraft. China's fourth carrier reportedly may begin construction as early as 2021...In late November 2019, it was reported that the Chinese government, while deciding to proceed with the construction of the fourth carrier, had put on hold plans to build a fifth carrier, known as the Type 004, which was to be nuclear-powered, due to budgetary and technical considerations. Observers expect that it will be some time before China masters carrier-based aircraft operations on a substantial scale.

...China reportedly plans to develop a carrier-capable variant of its J-20 fifth-generation stealth fighter and/or a carrier-capable variant of its FC-31 fifth-generation stealth fighter (reportedly now designated J-35) to complement or succeed the J-15 on catapult-equipped Chinese carriers.⁵⁸ China reportedly is also developing a carrier-based airborne early warning (AEW) aircraft, called the KJ-600, that is similar to the U.S. Navy's carrier-based E-2 Hawkeye AEW aircraft,⁵⁹ and stealth drone aircraft...

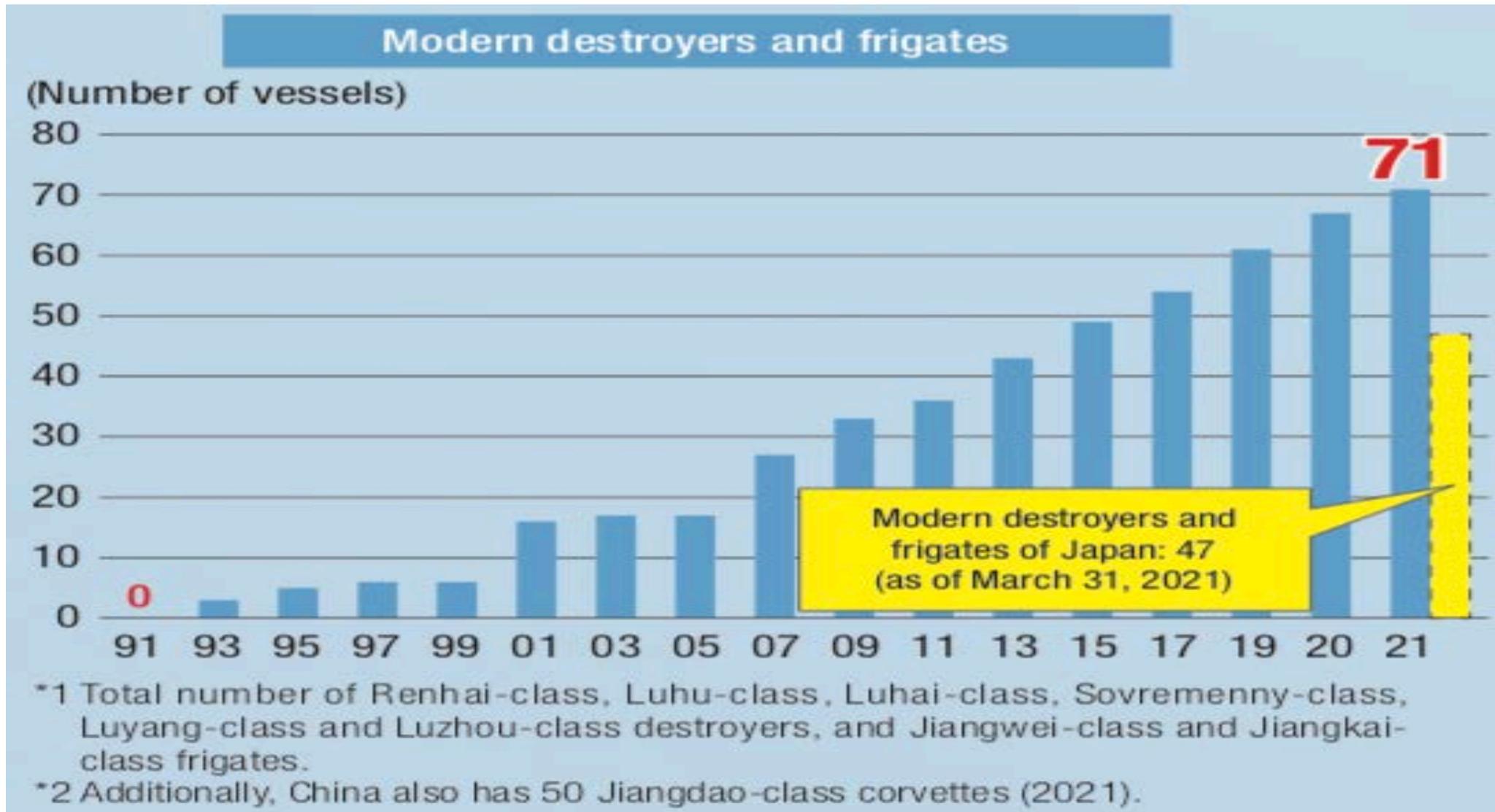
On September 25, 2019, China launched (i.e., put into the water for the final stages of its construction) the first of a new type of amphibious assault ship... called the *Yushen* or Type 075 that has an estimated displacement of 30,000 to 40,000 tons, compared to 41,000 to 45,000 tons for U.S. Navy LHA/LHD-type amphibious assault ships...The ship was commissioned into service in April 2021...

...In July 2020, it was reported that China might be planning to build the first of a new class of amphibious assault ships, called the Type 076 by observers...that would be equipped with electromagnetic catapults, which would enhance its ability to support operations by fixed-wing aircraft and make it somewhat more like an aircraft carrier...

Japanese Estimate of Trends in Chinese Modern Submarines : 1991-2021



Japanese Estimate of Trends in Chinese Modern Destroyers and Frigates : 1991-2021



China's Three Naval Forces

The major PRC maritime entities operating in China's maritime periphery are the PLAN, the China Coast Guard, and the People's Armed Forces Maritime Militia. Since 2018, both the coast guard and the maritime militia have been under military command, reporting to the Central Military Commission, although they are not part of the PLA. The three actors sometimes train and patrol together and are showing signs of increasing interoperability...

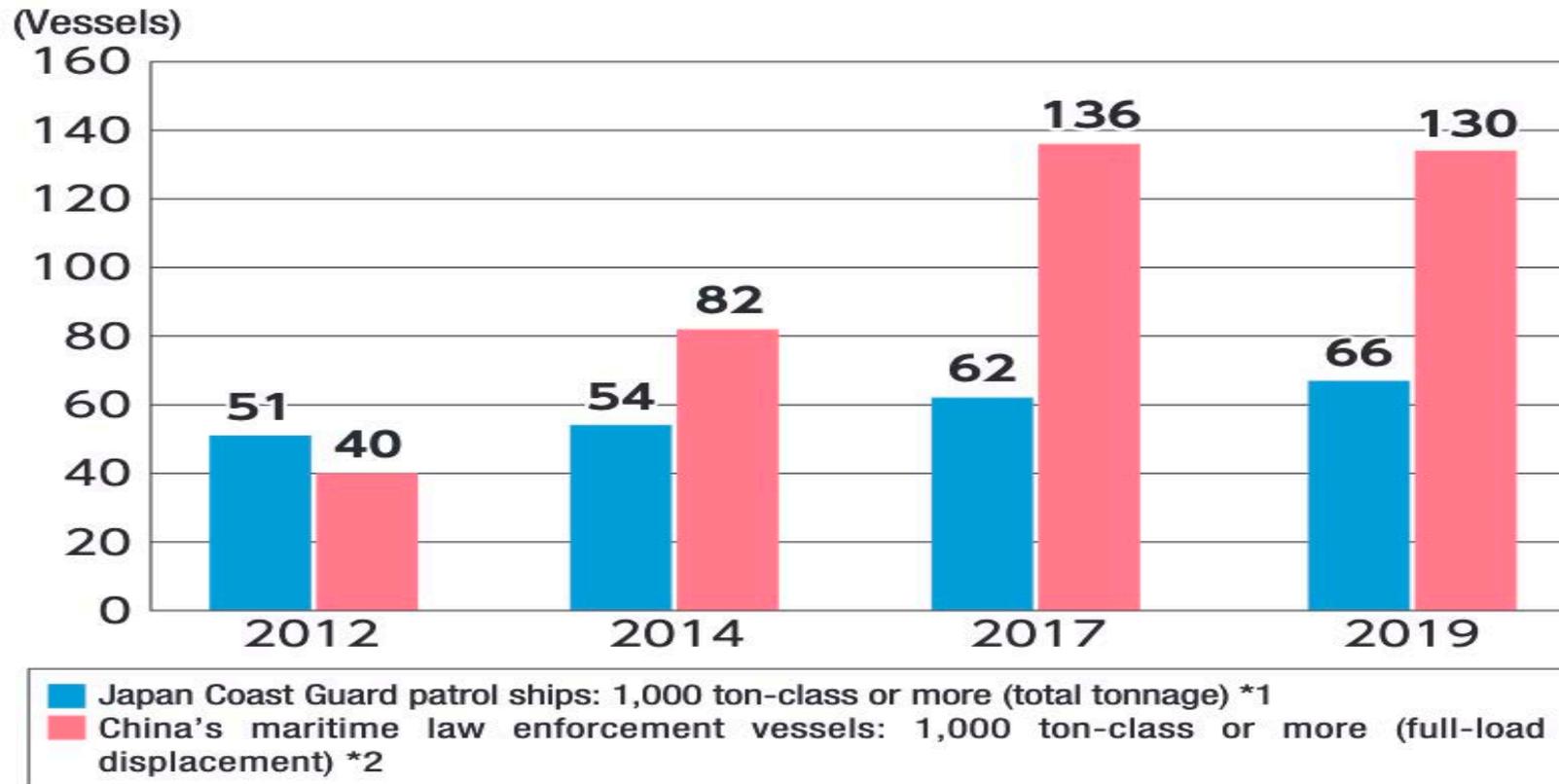
China primarily has used the coast guard and maritime militia to enforce its claims in the South and East China Seas. In many cases where these actors engage with foreign vessels, PLA Navy ships deploy nearby to provide overwatch, deter escalation, and, if necessary, intervene. This approach, in which the military takes a back seat to the coast guard and maritime militia, allows China to deploy forces flexibly and use "gray zone" coercion against other claimants, while putting the onus of escalation on these claimants—most of which have far less powerful coast guards and militaries. In the case of the maritime militia, which often operates under the cover of civilian fishing flotillas, it can also provide plausible deniability of PLA or PRC government direction...

PLA Navy: Although the PLA Navy has rarely been involved in confrontations with other claimants, PLA Navy ships frequently "show the flag" in disputed areas through patrols, presence operations, and military exercises, sometimes jointly with other PLA services, such as the PLA Air Force, or with foreign counterparts such as Russian Navy...

China Coast Guard: The China Coast Guard is the world's largest coast guard, with 130 large patrol ships, more than 70 fast patrol combatants, more than 400 coastal patrol craft, and approximately 1,000 inshore and riverine vessels... Many of the fleet's large patrol ships are well-armed and capable of conducting operations in distant waters. With a mission to enforce China's sovereignty claims, the China Coast Guard regularly patrols disputed waters...

People's Armed Forces Maritime Militia: Part of China's national militia, the People's Armed Forces Maritime Militia is a reserve civilian force of mariners trained to enforce China's maritime claims and to support the PLA Navy when called to do so. It is the world's largest such force. According to the RAND Corporation, China's maritime militia has been involved in "nearly every [PLA Navy and China Coast Guard] operation to harass maritime counter-claimants at disputed features or to seize the features from them."

Japanese Estimate of Paramilitary Naval Build-Up: 1991-2020



* 1 Number of ships as of the end of FY2019

* 2 Number of vessels as of the end of December 2019; Estimation based on publicized information (may be altered in the future)

※ According to "Japan Coast Guard Annual Report 2020," Japan Coast Guard

China's Air Forces

China's Major Air Forces

Key Takeaways

- > The PLAAF and PLAN Aviation together constitute the largest aviation force in the Indo-Pacific region.
- > The PLAAF is rapidly catching up to Western air forces. The PLAAF continues to modernize with the delivery of domestically built aircraft and a wide range of UAVs.
- In October 2019, China signaled the return of the airborne leg of its nuclear triad after the PLAAF publicly revealed the H-6N as its first nuclear-capable air-to-air refuelable bomber.

The People's Liberation Army Air Force (PLAAF) and PLAN Aviation together constitute the largest aviation forces in the region and the third largest in the world, with over 2,500 total aircraft (not including trainer variants or UAVs) of which approximately 2,000 are combat aircraft (including fighters, strategic bombers, tactical bombers, multi-mission tactical, and attack aircraft). The PLAAF's role is to serve as a comprehensive strategic air force capable of long-range airpower projection.

The PRC's 2019 defense white paper described the PLAAF's missions and tasks as transitioning from territorial air defense to "offensive and defensive operations." In 2017, Lieutenant General Ding Laihang assumed the post of PLAAF commander and exhorted the service to build a truly "strategic" air force capable of projecting airpower at a long range. The PLAAF is rapidly catching up to Western air forces. This trend is gradually eroding longstanding and significant U.S. military technical advantages vis-à-vis the PRC in the air domain.

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, pp. 49-50.



Air Force Modernization

- **Fighters:** In 2020 DOD reported the PLAAF “probably will become a majority fourth-generation¹³⁸ force within the next several years,” having already fielded more than 800 fourth-generation fighter aircraft (including the J-10, J-11, and J-16 and their variants).¹³⁹ Some of the PLAAF’s fifth-generation J-20 stealth fighters are operational...
- **Bombers:** Of the PLAAF’s approximately 450¹⁴¹ bombers/attack aircraft, the most advanced—the H-6K—are “extended-range aircraft [that] can carry six [land-attack cruise missiles], providing the PLA a long-range, standoff, precision-strike capability that can reach Guam,” according to DIA... A long-range strategic bomber revealed in 2019, the H-6N, appears to be nuclear-capable, according to DOD and others. Observers expect the H-6N and another developmental long-range stealth bomber dubbed the H-20 to complete China’s nuclear triad of land-, air-, and sea-based nuclear weapons delivery systems...
- **Early warning aircraft:** PLAAF airborne early warning and control aircraft (including the KJ-2000, KJ-200, and KJ-500) are “force multipliers,” “with the ability to stare at a target or track thousands of targets simultaneously,” providing “faster target acquisition time, more accurate target position data, and increased ability to detect low-observable targets,” according to DIA...
- **Transport and aerial refueling:** Transport aircraft (including the Y-20 strategic heavy lift aircraft) and aerial refueling aircraft (including the IL-78 tanker imported from Russia) are expanding the PLAAF’s operational reach and extending expeditionary capabilities...
- **Air and missile defense:** China has received two of an unknown number of S-400 surface-to-air missile (SAM) systems it is procuring from Russia, which expand the range and accuracy of China’s long-range air defenses and may be able to intercept some short-range ballistic missiles. (In September 2018, the U.S. Treasury Department sanctioned the PLA’s Equipment Development Department for this purchase under the Countering America’s Adversaries through Sanctions Act (P.L. 115-44)). Depending on how many batteries the PLAAF procures and where they are deployed, they could complicate air operations by the United States and other countries in the East and South China Seas, and near Taiwan... China’s HQ-19 mid-course interceptor, currently in testing or possibly operational, likely offers ballistic missile defense capability and is designed to target ballistic missiles with ranges out to 3,000 km.
- **Unmanned aerial vehicles (UAVs):** China’s expanding fleet of armed and unarmed UAVs are enhancing the PLA’s ability to conduct intelligence, surveillance, reconnaissance (ISR), electronic countermeasures, naval aviation, and combined reconnaissance/strike missions. The PLA is also testing what it claims is the world’s first “large cargo UAV,” which DOD assesses “may be especially suited to provide logistic support to PLA forces in the South China Sea.”

China's Combat Air Modernization Air Forces

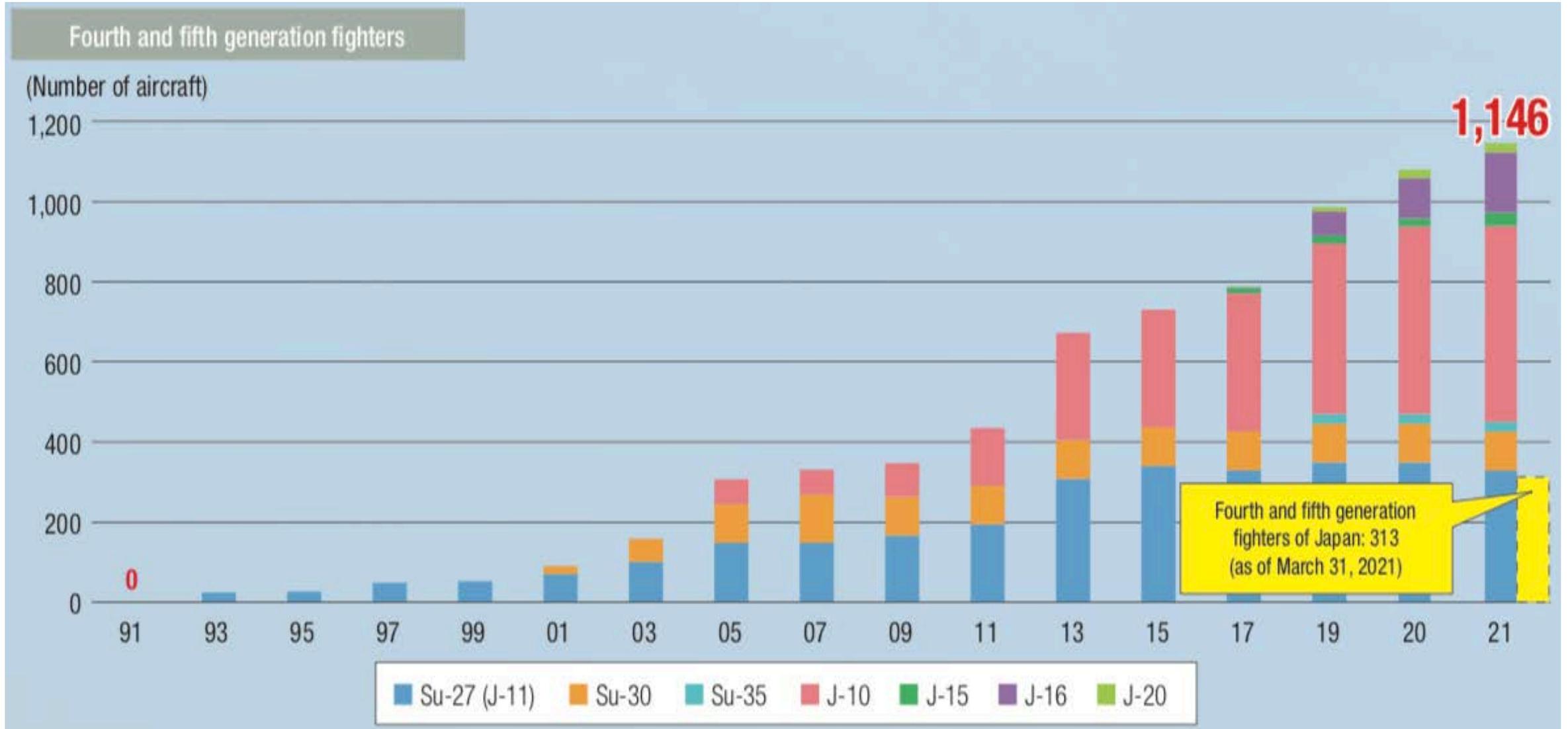
Fourth-generation fighter aircraft*—which include the Chinese J-10B/C, J-11B, and J-16—are generally characterized by the following:

- Electronically or mechanically scanned multimode radars, passive infrared search and track systems.
- “Glass” cockpits with multifunction displays (MFDs), improved heads-up display (HUD), and helmet-mounted sight (HMS).
- High-bandwidth communications and datalinks and identification, friend or foe (IFF).
- Advanced electronic warfare (EW) avionics, including digital jamming system, radar warning receiver, chaff/flare dispensers, and adaptive countermeasures.
- Engines with increased thrust and service life; advanced weapons, including long-range air-to-air missiles (AAMs), off-boresight short-range AAMs, LACMs, ASCMs, and precision-guided munitions (PGMs).
- Passive electronically scanned array or active electronically scanned array (AESA) radars. These radars provide long-range radar detection and electronically scanned radar beams that enable automatic target acquisition, tracking of multiple targets, and highly accurate targeting data for air-to-air and precision air-to-ground engagements.
- Digital radiofrequency memory (DRFM) jammers enabling instantaneous smart jamming responses by automatically selecting jamming waveforms to counter a specific radar threat—significantly improving fighter aircraft survivability.

Fifth-generation fighter aircraft*, including the developmental Chinese J-20 and FC-31/J-31, are commonly defined by the following state-of-the-art technologies:

- Stealthy aircraft designs with significantly reduced radar and infrared signatures.
- AESA radars.
- Long-range, multiband EO targeting systems.
- Sensor fusion.
- Advanced glass cockpits with large MFDs and HMSs.
- Advanced datalinks fusing data from air and ground networks.
- Internal carriage of off-boresight and long-range AAMs, LACMs, ASCMs, and PGMs.
- Sophisticated EW suites with advanced DRFM jammers and EO defensive systems.
- Super maneuverability and/or super cruise capability (ability to fly above Mach 1 without use of afterburner).
- Designed with network-centric warfare technology; will have potent air-to-air lethality and standoff attack capabilities in sensor-to-shooter operations.

Japanese Estimate of Trends in Chinese Fourth & Fifth Generation Fighters: 1991-2021

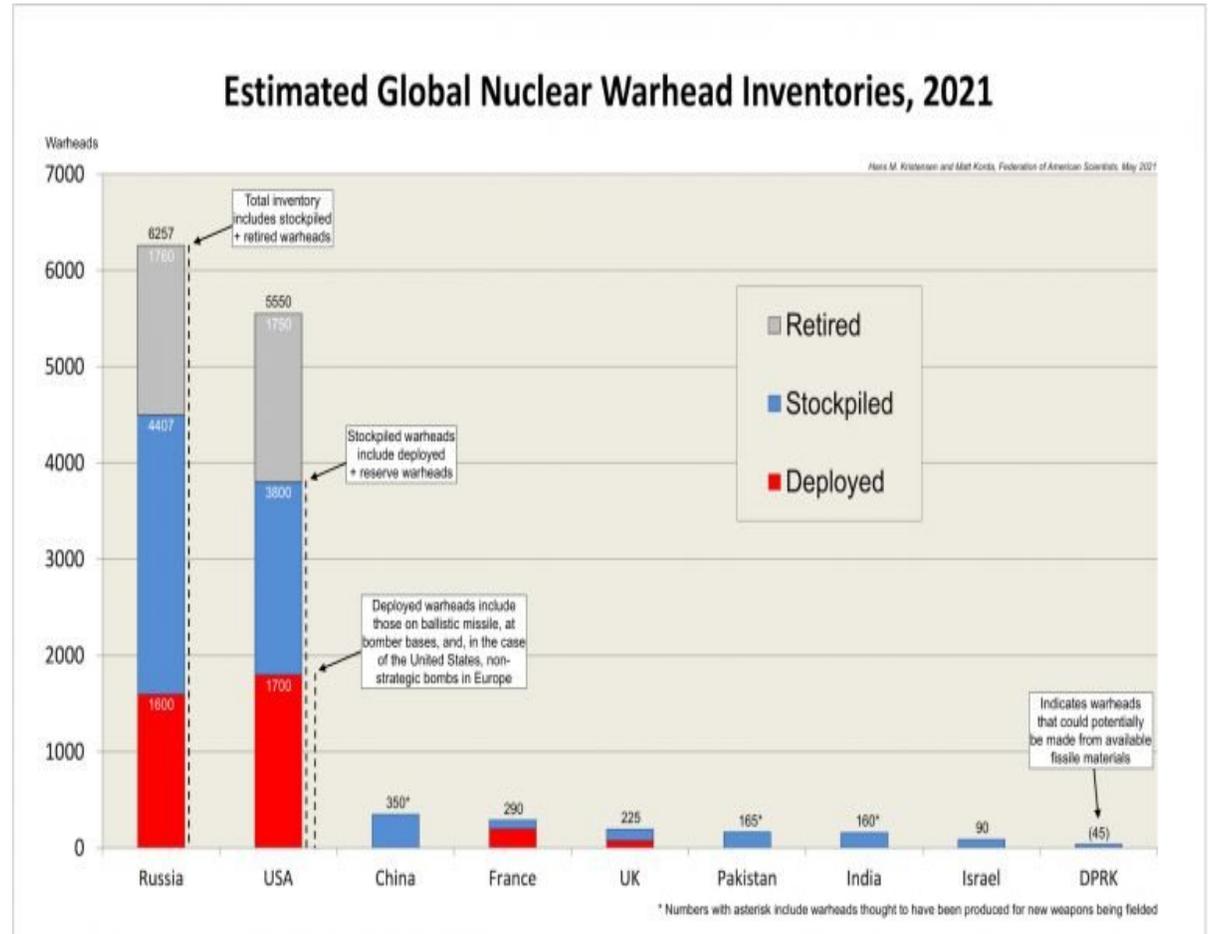
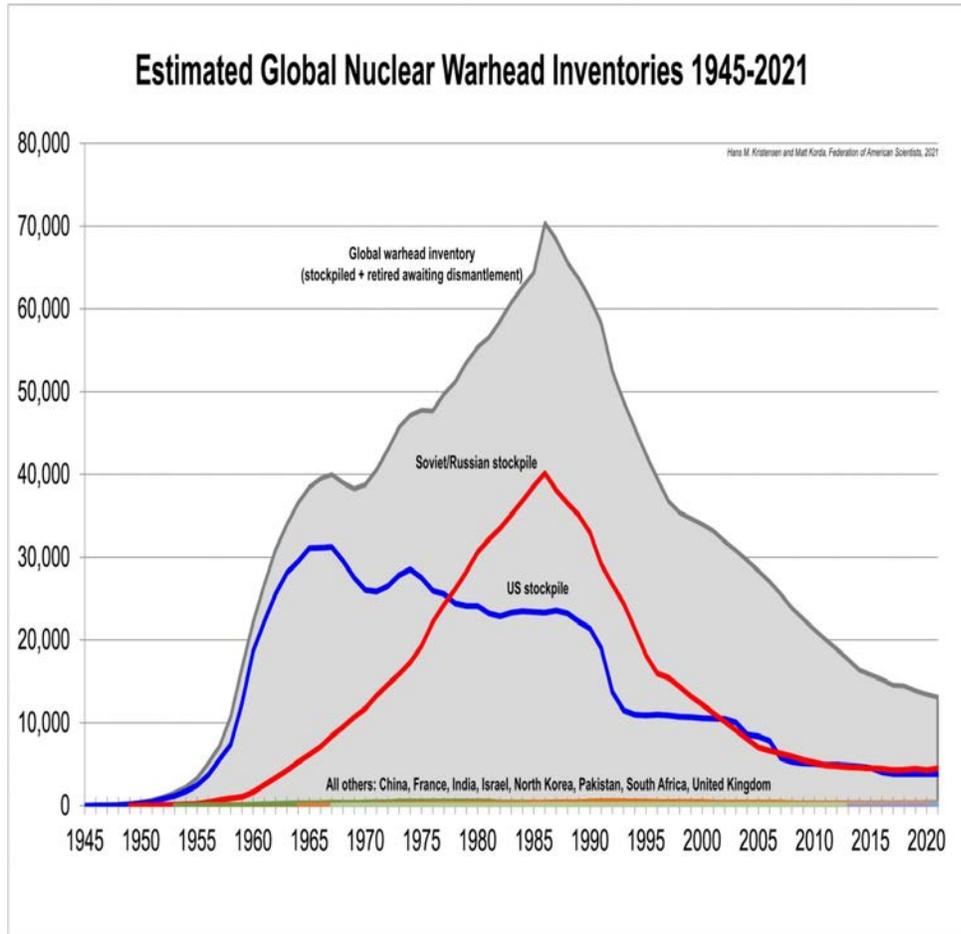


China's Nuclear Forces

China's Evolving Nuclear Forces

- The PRC's strategic ambitions, evolving view of the security landscape, and concerns over survivability are driving significant changes to the size, capabilities, and readiness of its nuclear forces.
- China's nuclear weapons policy prioritizes the maintenance of a survivable nuclear force that can retaliate against an adversary's first strike.
- China has long maintained a "no first use" (NFU) policy, although there is ambiguity over the conditions under which China would act outside of its NFU policy.
- China's nuclear forces will significantly evolve over the next decade as it modernizes, diversifies, and increases the number of its land-, sea-, and air-based nuclear delivery platforms.
- Over the next decade, China's nuclear warhead stockpile—currently estimated to be in the low- 200s—is projected to at least double in size as China expands and modernizes its nuclear forces.
- China is pursuing a "nuclear triad" with the development of a nuclear capable air-launched ballistic missile (ALBM) and improving its ground and sea-based nuclear capabilities.
- New developments in 2019 further suggest that China intends to increase the peacetime readiness of its nuclear forces by moving to a launch-on-warning (LOW) posture with an expanded silo- based force.

China vs. Other Nuclear Forces: 1945-2020



Comparative Nuclear Modernization Since 2010



Figure 1. Nuclear Delivery Systems Since 2010
Data provided by the DoD

Source: Office of the Secretary of Defense, *2018 Nuclear Posture Review*, Department of Defense, p. 8, February 2018.

China's Nuclear Forces in 2020 – I

China is continuing the nuclear weapons modernization program that it initiated in the 1980s and increased in the 1990s and 2000s, fielding more types and greater numbers of nuclear weapons than ever before. Since our previous Nuclear Notebook on China in June 2019, China has continued fielding the DF-26—a dual-capable, mobile, intermediate-range ballistic missile (IRBM)—and is replacing older road-mobile DF-31A intercontinental ballistic missile (ICBM) launchers with the more maneuverable DF-31AG launcher. China is also in the process of fielding the new DF-41, a road-mobile ICBM that is thought to be capable of carrying multiple independently targetable reentry vehicles (MIRVs) like the old DF-5B. At sea, China has completed construction and deployment of two more ballistic missile submarines and is developing a new type. Additionally, China has recently reassigned a nuclear mission to its bombers and is developing an air-launched ballistic missile that might have nuclear capability.

We estimate that China has produced a stockpile of approximately 350 nuclear warheads, of which roughly 272 are for delivery by more than 240 operational land-based ballistic missiles, 48 sea-based ballistic missiles, and 20 nuclear gravity bombs assigned to bombers. The remaining 78 warheads are intended to arm additional land- and sea-based missiles that are in the process of being fielded (see Table 1). This estimate is higher than the “low-200” warheads reported by the Pentagon in its 2020 report to Congress; however, the Pentagon’s estimate only refers to “operational” Chinese nuclear warheads, and therefore presumably excludes warheads that are attributed to newer weapons still in development (US Defense Department 2020a). It is also possible that the Pentagon’s estimate does not include dormant bomber weapons. Taking those categories into account, the Pentagon’s estimate is roughly in line with our own.

Source: Hans M. Kristensen and Matt Korda, “Nuclear notebook: Chinese nuclear forces, 2020,” *Bulletin of the Atomic Scientists*, December 7, 2020, <https://thebulletin.org/premium/2020-12/nuclear-notebook-chinese-nuclear-forces-2020/>.

China's Nuclear Forces in 2020 – II

Source: Hans M. Kristensen and Matt Korda, “Nuclear notebook: Chinese nuclear forces, 2020,” *Bulletin of the Atomic Scientists*, December 7, 2020, <https://thebulletin.org/premium/2020-12/nuclear-notebook-chinese-nuclear-forces-2020/>.

Table 1: Chinese nuclear forces, 2020

By Hans M. Kristensen and Matt Korda

Type	NATO designation	Number of launchers ¹	Year deployed	Range (kilometers)	Warheads x yield ² (kilotons)	Warheads
Land-based ballistic missiles						
DF-4	CSS-3	6 ³	1980	5,500	1 x 3,300	6
DF-5A	CSS-4 Mod 2	10	1981	12,000	1 x 4,000–5,000	10
DF-5B	CSS-4 Mod 3	10	2015	13,000	5 x 200–300	50
DF-5C	(CSS-4 Mod 4)	..	(2020)	13,000	(MIRV)	..
DF-15	CSS-6	..	1990	600	1 x ? ⁴	..
DF-17	?	(18) ⁵	(2021)	1,800+	1 x HGV ⁶	..
DF-21A/E	CSS-5 Mods 2, 6	40	2000, 2016	2,100+ ⁷	1 x 200–300	40 ⁸
DF-26	?	100 ⁹	2016	4,000	1 x 200–300	20 ¹⁰
DF-31	CSS-10 Mod 1	6	2006	7,200	1 x 200–300	6
DF-31A	CSS-10 Mod 2	36	2007	11,200	1 x 200–300	36
DF-31AG	CSS-10 Mod 2 ¹¹	36	2018	11,200	1 x 200–300	36
DF-41	CSS-X-20	(18) ¹²	(2021)	12,000	(3 x 200–300)	(54)
<i>Subtotal:</i>		<i>244 (280)</i>				<i>204 (258)</i>
Submarine-launched ballistic missiles						
JL-2	CSS-N-14	4/48 (2/24) ¹³	2016 (2021)	7,000+ 7,000+	1 x 200–300 1 x 200–300	48 (24)
Aircraft¹⁴						
H-6 ¹⁵	B-6	20	1965/2009	3,100+	1 x bomb (1 x ALBM)	20 n.a.
Total		312 (372)				272 (350)¹⁶

¹ Numbers in parenthesis indicate weapons in the process of entering service but not yet operational.

² The Chinese nuclear testing program demonstrated a wide range of warhead yields. While older and less accurate missiles were equipped with megaton-yield warheads, new and more accurate missiles carry warheads with much lower yields, possibly in the low hundreds of kilotons. It is possible that some warheads have even lower yield options.

³ The 2020 US Defense Department report still lists the old liquid-fuel DF-4. But with the fielding of greater numbers of solid-fuel DF-31AG and DF-26 missiles, it is possible that the DF-4 is in the process of being retired, if it hasn't already happened.

⁴ The CIA concluded in 1993 that China “almost certainly” had developed a warhead for the DF-15, but it is unclear whether the capability was fielded.

⁵ Eighteen DF-17 launchers participated in the 2019 Beijing parade but only 16 were shown.

⁶ The DF-17 was presented as a conventional missile at the 2019 Beijing parade, but US Strategic Command has recently asserted the weapon is nuclear-capable. We're awaiting more information before attributing warheads to the DF-17.

⁷ US Defense Department lists the range of the DF-21A/E as 1,750 km, but US Air Force has reported it as 2,150 km.

Different Estimates of China's Nuclear Force Trends – I

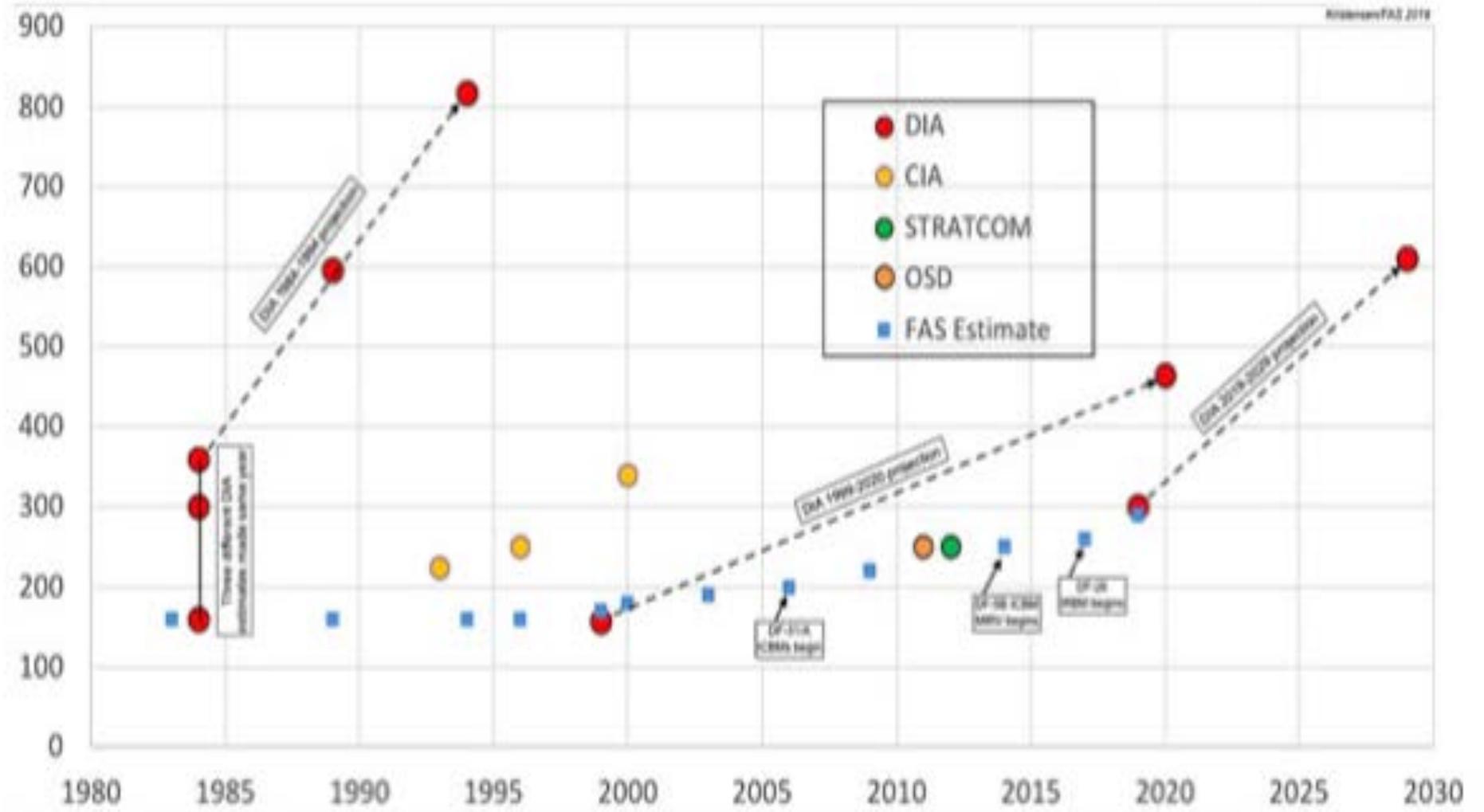
The Defense Intelligence Agency's projected increase is based on the expected deployment of additional nuclear-capable missiles. This includes 24 DF-41 ICBMs and up to 24 JL-2 submarine-launched ballistic missiles (SLBMs) on two additional submarines. Unlike previous projections, the fielding of a MIRV capability has the potential to significantly increase the size of the stockpile, but by how much depends on several unknown factors. While many non-official sources attribute very high numbers of warheads to MIRVed missiles (for example, 10 warheads per DF-41), we estimate that MIRVed missiles are assigned a low number of warheads (perhaps three each), and that part of the missile payload capability is intended for decoys and penetration aids. This is because we believe that the purpose of the MIRV program is to ensure penetration of US missile defenses, rather than to maximize the warhead loading of the Chinese missile force. As the United States strengthens its missile defenses, China will likely further modify its nuclear posture to ensure the credibility of its retaliatory strike force, including deploying hypersonic glide vehicles.

The projection has been widely repeated by other parts of the US government, including by the commander of US Strategic Command in February 2020 (Richard 2020a, 4) and by the Pentagon in its most recent annual report to Congress (US Defense Department 2020a, 87). It implies that China could have less than 500 nuclear warheads by the late 2020s, depending on how the count is made. This increase, according to the Defense Department report, can be achieved “without new fissile material production,” apparently confirming that China has not resumed production of fissile material for nuclear weapons (US Defense Department 2020a, 87).

The projected increase has also triggered a wide range of speculations about China's nuclear intentions... But the Pentagon's statement that China may only have a stockpile in the low-200s appears to have taken some of the wind out of those sails. Even if the Chinese stockpile did double in size, it would still only make up a fraction of the US and Russian stockpiles. This fact has enabled the Chinese government to reject it as “unrealistic to expect China to join the two countries in a negotiation aimed at nuclear arms reduction” (Ministry of National Defense of the People's Republic of China 2020).

Source: Hans M. Kristensen and Matt Korda, “Nuclear notebook: Chinese nuclear forces, 2020,” *Bulletin of the Atomic Scientists*, December 7, 2020, <https://thebulletin.org/premium/2020-12/nuclear-notebook-chinese-nuclear-forces-2020/>.

Different U.S. Estimates of China's Nuclear Strength – II



Source: Hans M. Kristensen and Matt Korda, "Nuclear notebook: Chinese nuclear forces, 2020," *Bulletin of the Atomic Scientists*, December 7, 2020, <https://thebulletin.org/premium/2020-12/nuclear-notebook-chinese-nuclear-forces-2020/>.

DIA = Defense Intelligence Agency; CIA = Central Intelligence Agency; STRATCOM = US Strategic Command; OSD = Office of the Secretary of Defense; FAS = Federation of American Scientists.

China's Nuclear Weapons Facilities

China's nuclear weapons program has been supported by a number of facilities that include production, processing, research and development, and testing.

Source: Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 38.



China's Evolving Precision Strike Capability and Rocket and Missile Forces

China's Evolving Conventional Precision Strike Capability

Short-Range Ballistic Missiles (300-1,000 km). The PLARF has approximately 200 SRBM launchers and over 600 SRBMs. These missile systems include advanced variants with improved ranges and accuracy as well as more sophisticated payloads; earlier generations are being phased out and replaced by variants with true precision strike capability.

Medium-Range Ballistic Missiles (1,000-3,000 km). The PLA fields approximately 150 conventional MRBMs launchers and more than 150 missiles which increase the range at which it can conduct precision strikes against land targets and naval ships operating out to the First Island Chain.

Intermediate-Range Ballistic Missiles (3,000-5,500 km). The PLA's DF-26 is a road-mobile, nuclear and conventional capable IRBM that is able to conduct near-precision strikes as far away from China as Guam in the Second Island Chain. The PLA has fielded approximately 200 IRBM launchers and more than 200 missiles. In conjunction with reconnaissance satellites, the PLAN's expanding network of sky wave and surface wave over-the-horizon (OTH) systems provide warning and targeting capabilities at extended distances from China to support long-range precision strikes, including employment of ASBMs.

Land-Attack Cruise Missiles. The PLA fields approximately 100 ground-launched LACMs launchers and more than 300 missiles for standoff precision strikes. The PLA continues to develop additional LACM-variants for deployment with the PLAN and PLAAF.

Anti-ship Cruise Missiles. China deploys a wide range of advanced ASCMs, with the YJ-83 family of missiles the most numerous, and equipping the majority of China's ships as well as multiple aircraft. China has also outfitted several ships with YJ-62 ASCMs. The YJ-18 is a long range, torpedo tube launched ASCM with a supersonic terminal sprint. It has likely replaced the older YJ-82 on Song, Yuan, and Shang class submarines. China claims its new Luyang III class DDGs and Renhai CGs have a vertically launched variant of the YJ-18. China has also developed the long range supersonic YJ-12 ASCM for the H-6 bomber. At a 2018 exhibition, China displayed a ship-to-ship variant of the YJ-12 called the YJ-12A and the ground launched anti-ship variant YJ-12B. China has deployed the YJ-12B to several outposts in

the South China Sea. China carries the Russian SS-N-22 SUNBURN on two Russian-built Sovremenny class DDGs. Upgrades to two of the Sovremenny DDGs (Hulls 136 and 137) allow them to fire the YJ-12A. China also employs the Russian SS-N-27b SIZZLER on eight Russian built Kilo class submarines. **Ground Attack Munitions.** The PLAAF has a small number of tactical air-to-surface missiles (ASMs) as well as precision munitions; guidance options include satellite positioning, laser, electro-optic, and imaging infrared. China is developing or adapting a range of smaller ASMs and guided bombs for use on its expanding fleet of armed UAVs.

Anti-Radiation Weapons. The PLA imported Israeli-made Harpy UAVs and Russian-made anti-radiation missiles during the 1990s. China is integrating the YJ-91, an indigenous version of the Russian Kh-31P (AS-17), into its fighter-bomber force and advertising the ASN-301 anti-radiation drone, an improved domestic variant of the Harpy.

Artillery-Delivered High Precision Munitions. The PLA is fielding long-range rocket artillery systems with the range to strike targets within or even across the Taiwan Strait. The most common of these systems is the PHL-03 12x300 mm multiple-rocket launcher – similar to the Russian 9A52-2

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China's Current PLA Rocket Forces

The PLARF has about 1,200 short-range ballistic missiles (SRBMs), and China is increasing the lethality of its conventional missile force by fielding the CSS-11/DF-16 ballistic missile, with a range of 800 to 1,000 kilometers. The CSS-11/DF-16, coupled with the already deployed conventional land-attack and antiship variants of the CSS-5/DF-21 medium-range ballistic missile (MRBM), will improve China's ability to strike not only Taiwan but other regional targets.

The Rocket Force is fielding conventional MRBMs to increase the range at which it can conduct precision strikes against land targets and naval ships (including aircraft carriers) operating from China's shores out to the first island chain—the islands running from the Kurils, through Taiwan, to Borneo, roughly encompassing the Yellow Sea, East China Sea, and South China Sea. The CSS-5 Mod-5/ DF-21D has a range exceeding 1,500 kilometers and has a maneuverable warhead. During the PLA's 90th anniversary parade in 2017, China displayed a new MRBM designated the DF-16G, which China claims features high accuracy, short preparation time, and an improved maneuverable terminal stage that can better infiltrate missile defense systems.²⁵⁸

China unveiled the DF-26 intermediate-range ballistic missile (IRBM) during its September 2015 military parade in Beijing. The DF-26 is capable of conducting precision strikes against ground targets and contributes to China's counterintervention posture in the

Asia-Pacific region. During the parade, official public statements also referenced a nuclear version of the DF-26, which, if it has the same guidance capabilities, would give China its first nuclear precision-strike capability against theater targets

The PLARF also continues to enhance its nuclear deterrent, maintaining silo-based nuclear ICBMs and adding more survivable, mobile nuclear delivery systems. China currently has 75 to 100 ICBMs, including the silo-based CSS-4 Mod 2/DF-5A and MIRV-equipped CSS-4 Mod 3/DF-5B; the solid-fueled, road-mobile CSS-10 Mod 1/DF-31 and CSS-10 Mod 2/ DF-31A; and the shorter range CSS-3/DF-4. The CSS-10 Mod 2/DF-31A has a range of more than 11,200 kilometers and can reach most locations within the continental United States. China also is developing a new MIRV-capable road-mobile ICBM, the CSS-X-10/DF-41.

The CJ-10 ground-launched cruise missile (GLCM) has a range in excess of 1,500 kilometers and offers flight profiles different from ballistic missiles, enhancing targeting options. Because of overlap in the kinds of targets China is likely to engage with either ballistic missiles or cruise missiles, GLCMs and air-launched land-attack cruise missiles provide key operational and planning flexibility. These weapons are likely to reduce the burden on ballistic missile forces as well as create somewhat safer strike opportunities for Chinese aircrews, allowing them to engage from much greater distances and from more advantageous locations. This will complicate an adversary's air and missile defense problem.

China's Current PLA Rocket Force Systems

System	Type	Warheads	Propellant	Deployment Mode	Max Range km
CSS-3/DF-4	ICBM	Nuclear	Liquid	ROTL**	5,500+
CSS-4/DF-5	ICBM	Nuclear	Liquid	Silo	12,000-13,000
CSS-7/DF-11	SRBM	Conventional	Solid	Mobile	300-600
CSS-6/DF-15	SRBM	Conventional	Solid	Mobile	600-850+
CSS-11/DF-16	SRBM	Conventional	Solid	Mobile	800-1,000
CSS-5/DF-21	MRBM	Nuclear and Conventional Variants	Solid	Mobile	1,500-1,750+
CSS-5 Mod-5/DF-21D	ASBM	Conventional	Solid	Mobile	1,500+
DF-26	IRBM	Nuclear and Conventional Variants	Solid	Mobile	4,000
CSS-10/DF-31	ICBM	Nuclear	Solid	Mobile	7,200-11,200
CJ-10	GLCM	Conventional	Solid	Mobile	1500+

**This chart does not include systems in development.*

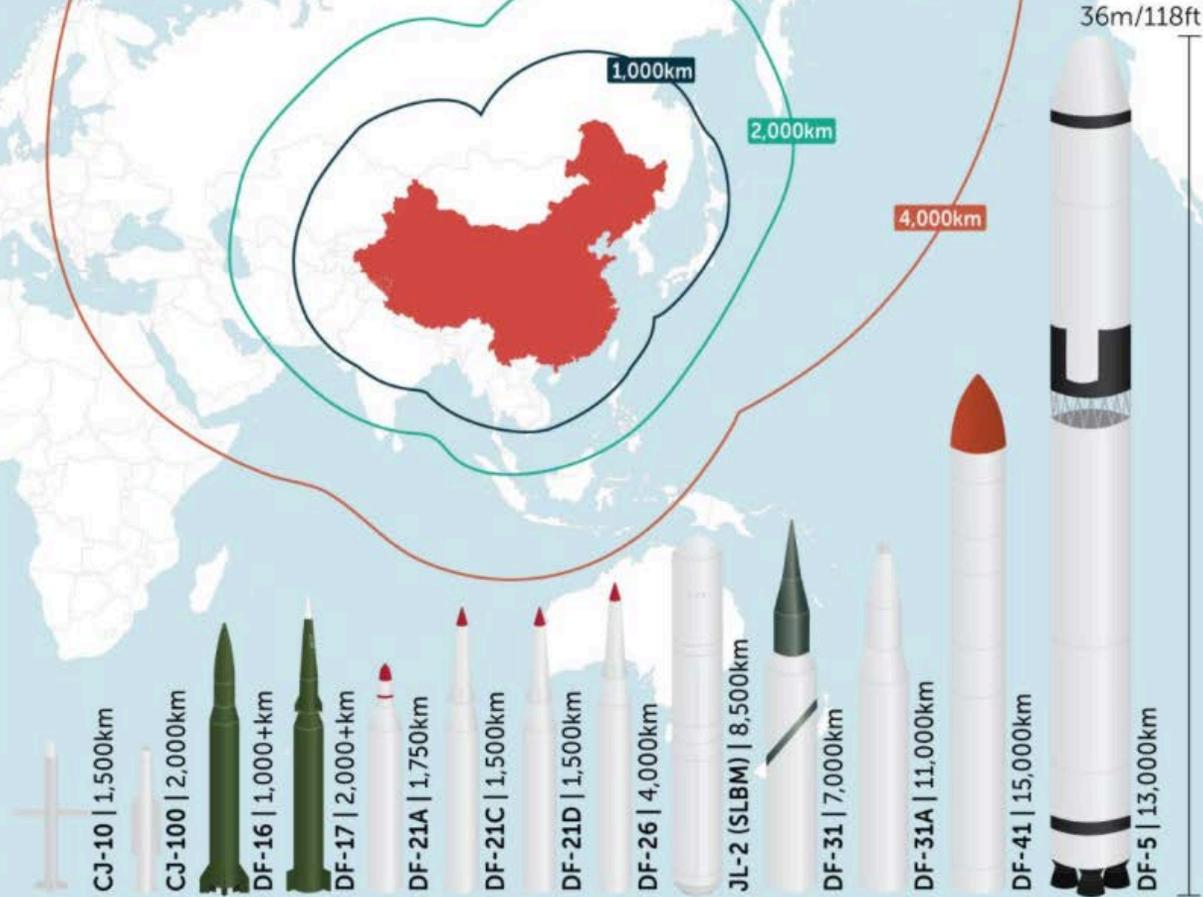
*** Rollout to Launch*



CHINA'S BALLISTIC & CRUISE MISSILES



China has the most active and diverse missile development program in the world. China is modernizing its ICBMs, developing multiple independently targetable reentry vehicles and hypersonic boost-glide vehicles. China's navy is also deploying a new fleet of nuclear ballistic missile submarines. China's advances in ISR and maneuvering reentry vehicles have given it an emerging capability to attack large naval vessels with long-range ballistic missiles.

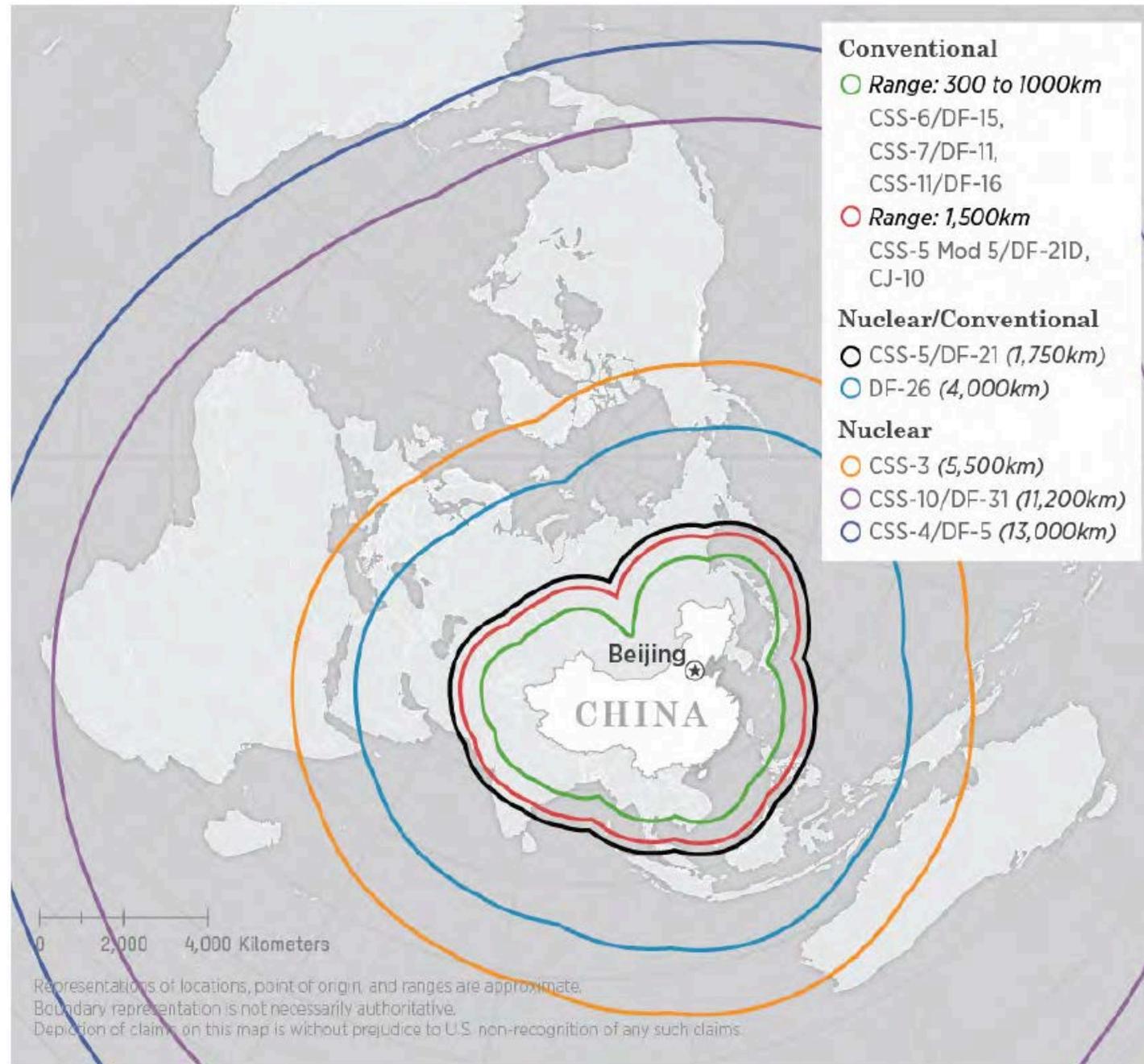


CSIS | MISSILE DEFENSE PROJECT

June 2020

Source: Missile Defense Project, "Missiles of China," *Missile Threat*, Center for Strategic and International Studies, June 14, 2018, last modified July 16, 2020, <https://missilethreat.csis.org/country/china/>.

Nominal Range of China's Current Conventional and Nuclear Missiles (in Kilometers)

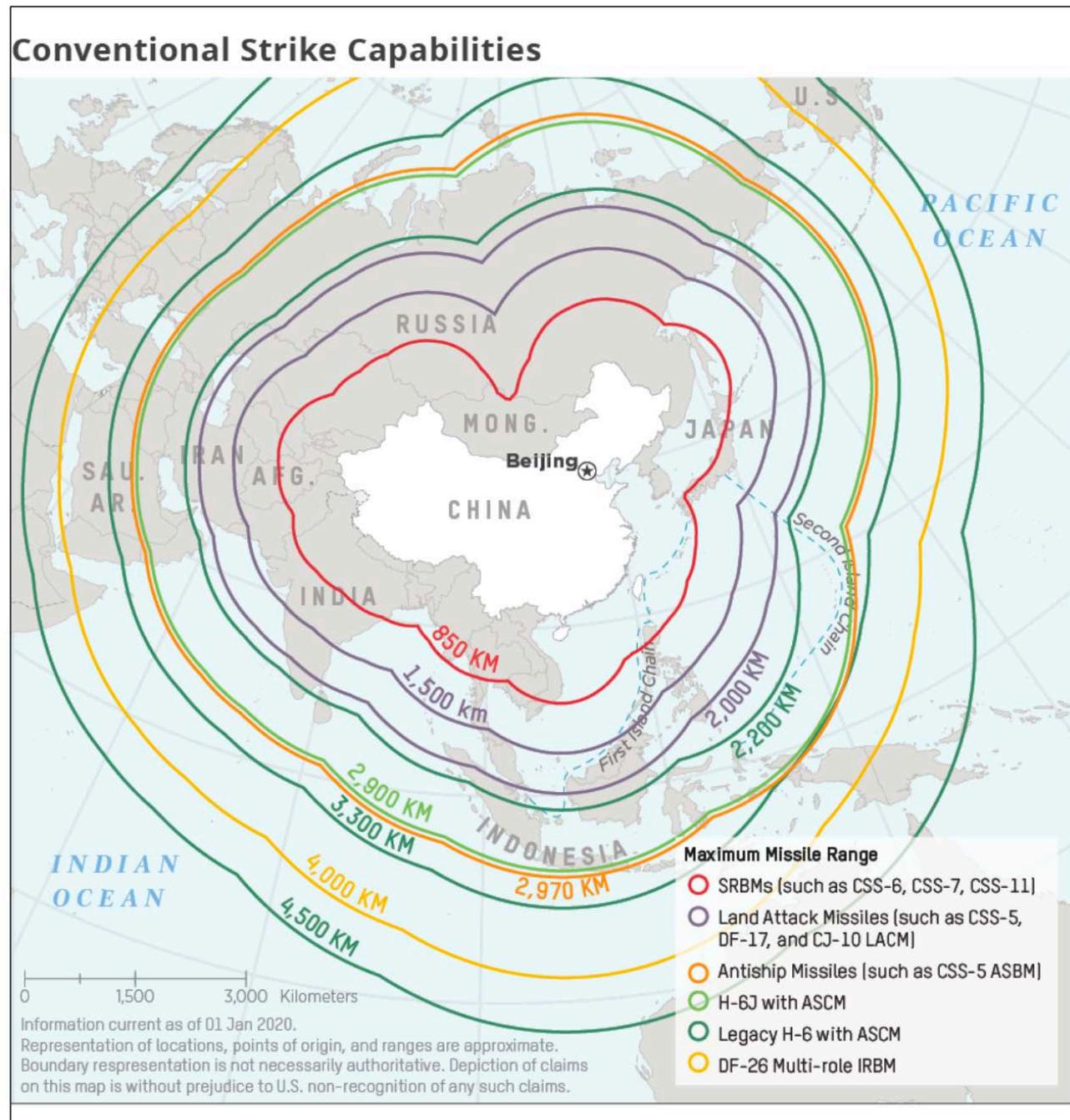


Source: Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 94.

Maximum Nominal Range of China's Current Conventional Missiles (in Kilometers)

Notes: Source graphic notes: "Information current as of 01 Jan 2020. Representation of locations, points of origin, and ranges are approximate. Boundary representation is not necessarily authoritative. Depiction of claims on this map is without prejudice to U.S. non-recognition of any such claims."

Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 57, and Caitlin Campbell, *China's Military: The People's Liberation Army*, CRS, R46808, June 4, 2021, p. 52.



Advanced Technology, Informatization, and Critical Security Domains

The Importance of Advanced Technology and “Informatization”

In 1993, China updated its official military strategic guidance to reflect the growing importance of advanced technology in warfare and national defense. This was informed in large part by the success of U.S. military operations against Iraq in Operation Desert Storm in 1991, which demonstrated to Chinese strategists the enormous advantage that a high-technology force has over less technologically-advanced adversaries. The PRC revised China’s military strategy again in 2004 and 2014 to focus specifically on “informatization,”...the application of advanced information technology across all aspects of military operations, particularly in support of command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capabilities....China’s 2015 defense white paper assesses

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

According to two U.S. analysts of the PLA, “Informatization is the core of everything the [PLA] wants to accomplish. From high-tech missions in space and cyberspace, to long-range precision strike, ballistic missile defense, and naval deployments abroad, the ability to transmit, process, and receive information is a vital enabler...China’s efforts to informatize the PLA extend to cultivating and integrating emerging technologies such as quantum computing and artificial intelligence as well.

Maritime, Cyber, and Space as “Critical Security Domains”

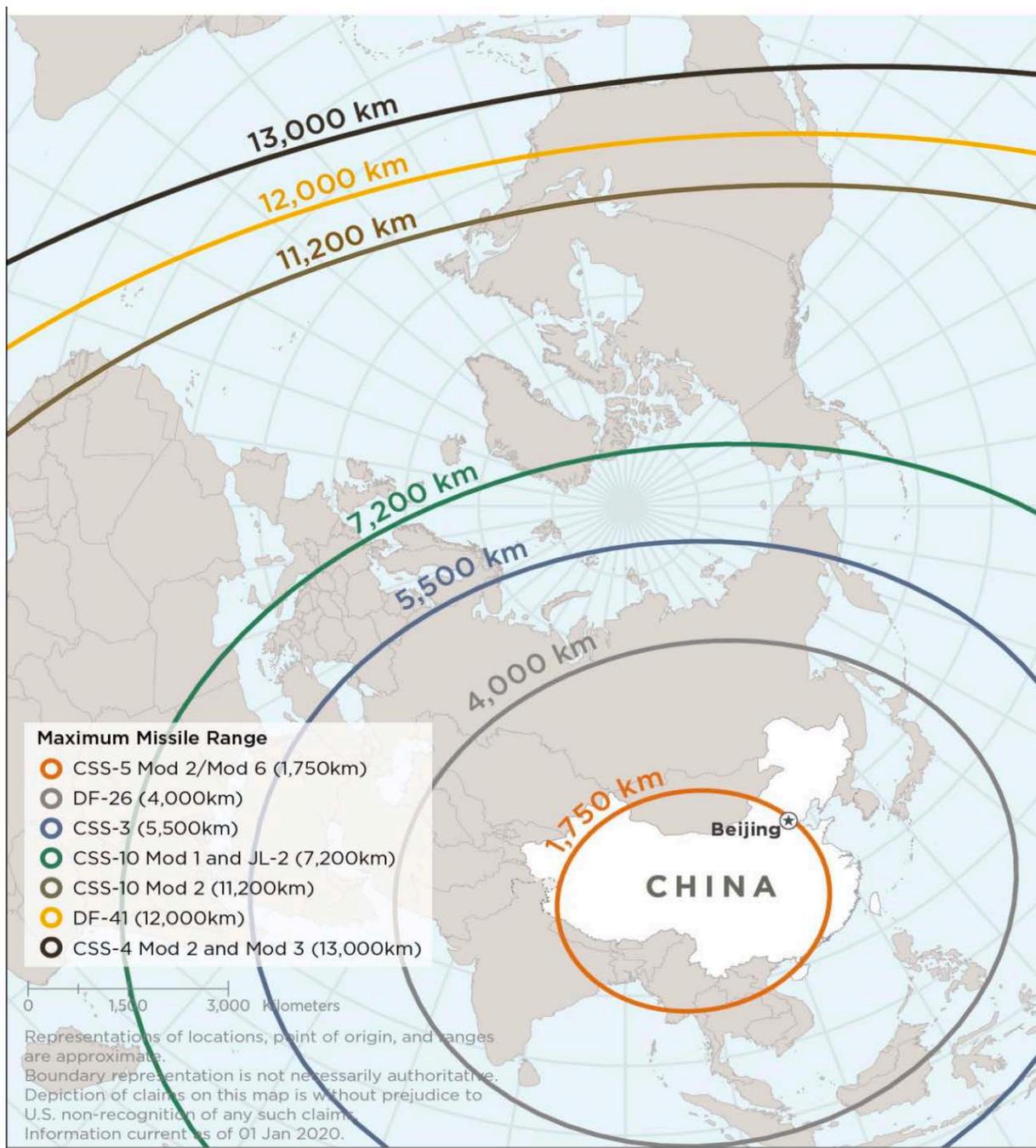
Official statements and Chinese strategic writings emphasize the growing importance of the maritime, cyber, and space domains in warfare. China’s 2015 defense white paper cemented the primacy of the maritime realm in China’s strategic planning, asserting, “The traditional mentality that land outweighs sea must be abandoned, and great importance has to be attached to managing the seas and oceans and protecting maritime rights and interests.”... Top Chinese military thinkers predict China’s most likely and most important prospective armed conflicts would take place in the maritime realm...

The 2015 defense white paper also highlights the growing importance of space and cyberspace in warfare, referring to them as “the new commanding heights” in strategic competition. The 2015 establishment of a Strategic Support Force to more comprehensively integrate space and cyberspace into PLA operations reflects Chinese military planners’ assessment that whoever occupies the strategic high ground of space and cyberspace will enjoy the advantage in a future armed conflict...

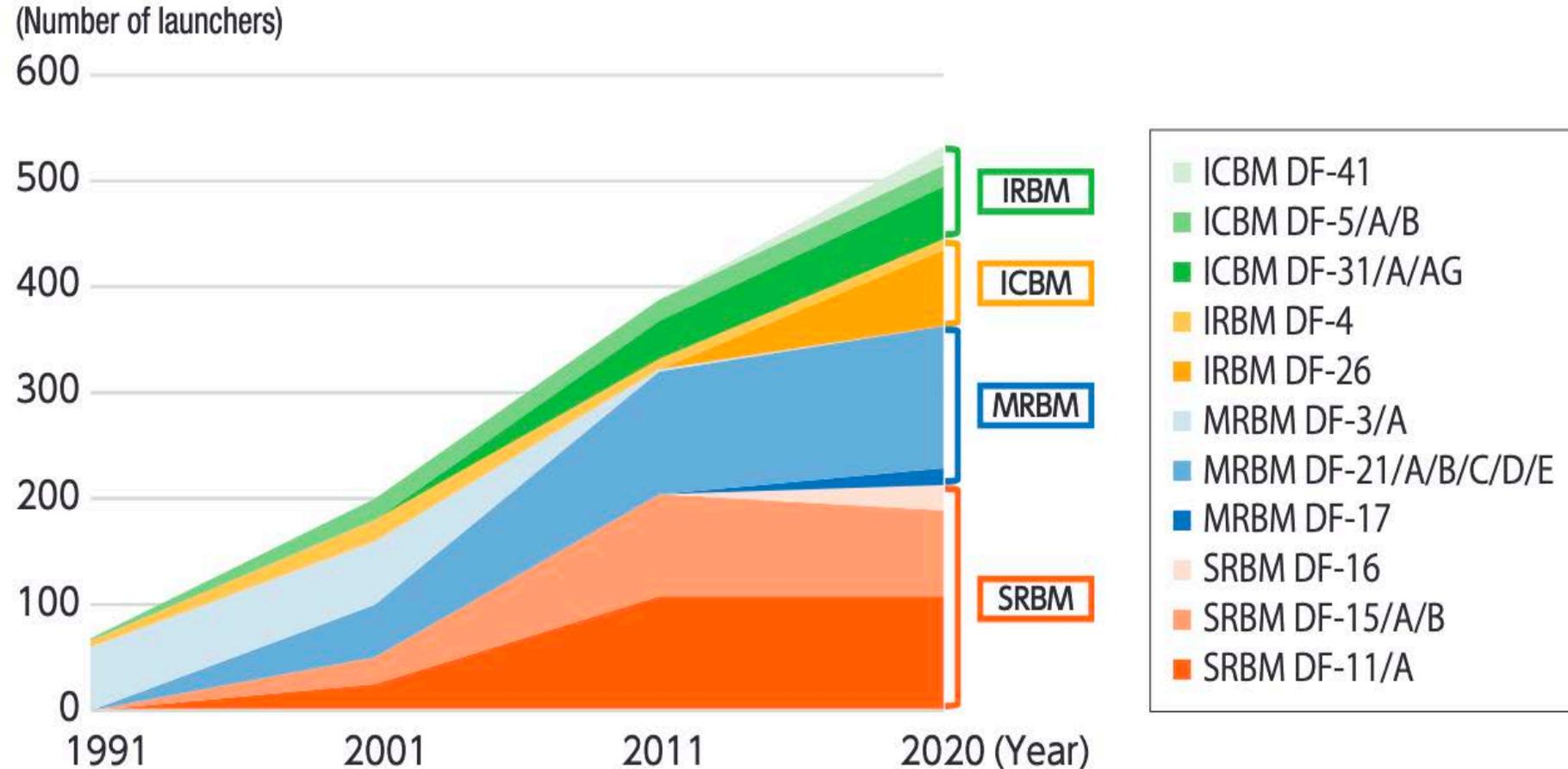
Maximum Nominal Range of China's Current Nuclear Ballistic Missiles (in Kilometers)

Notes: Source graphic notes: “Representations of locations, point of origin, and ranges are approximate. Boundary representation is not necessarily authoritative. Depiction of claims on this map is without prejudice to U.S. non-recognition of any such claims. Information current as of 01 Jan 2020.”

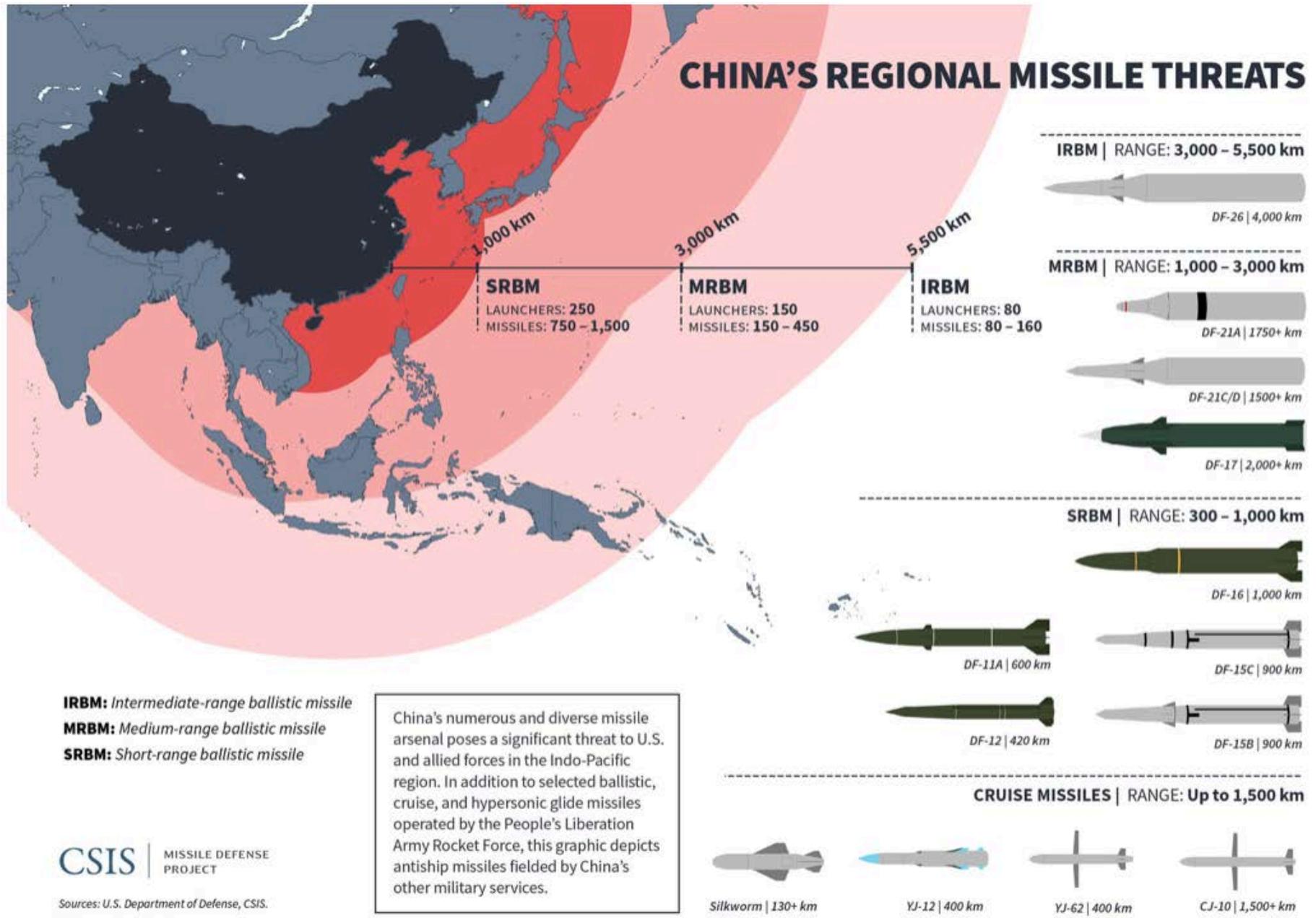
Source: U.S. Department of Defense, *Annual Report to Congress: Military and Security Developments Involving the People's Republic of China 2020*, August 21, 2020, p. 58, and Caitlin Campbell, *China's Military: The People's Liberation Army*, CRS, R46808, June 4, 2021, p. 53.



Japanese Estimate of Trends in Chinese Missiles Fired: 1991-2020



- ※ The numbers of launchers, missiles, and warheads of ballistic missiles possessed by China are not publicized.
- ※ This data classifies the number of launchers possessed by China into ICBM, IRBM, MRBM, and SRBM according to the general standard based on “The Military Balance” of each year.



Source: Missile Defense Project, "Missiles of China," *Missile Threat*, Center for Strategic and International Studies, June 14, 2018, last modified July 16, 2020, <https://missilethreat.csis.org/country/china/>.

IRBM: Intermediate-range ballistic missile
MRBM: Medium-range ballistic missile
SRBM: Short-range ballistic missile

China's numerous and diverse missile arsenal poses a significant threat to U.S. and allied forces in the Indo-Pacific region. In addition to selected ballistic, cruise, and hypersonic glide missiles operated by the People's Liberation Army Rocket Force, this graphic depicts antiship missiles fielded by China's other military services.

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 Sources: U.S. Department of Defense, CSIS.

China's Evolving Civil and Open-Source Military and Intelligence Space Capability

China's Space Launch Sites



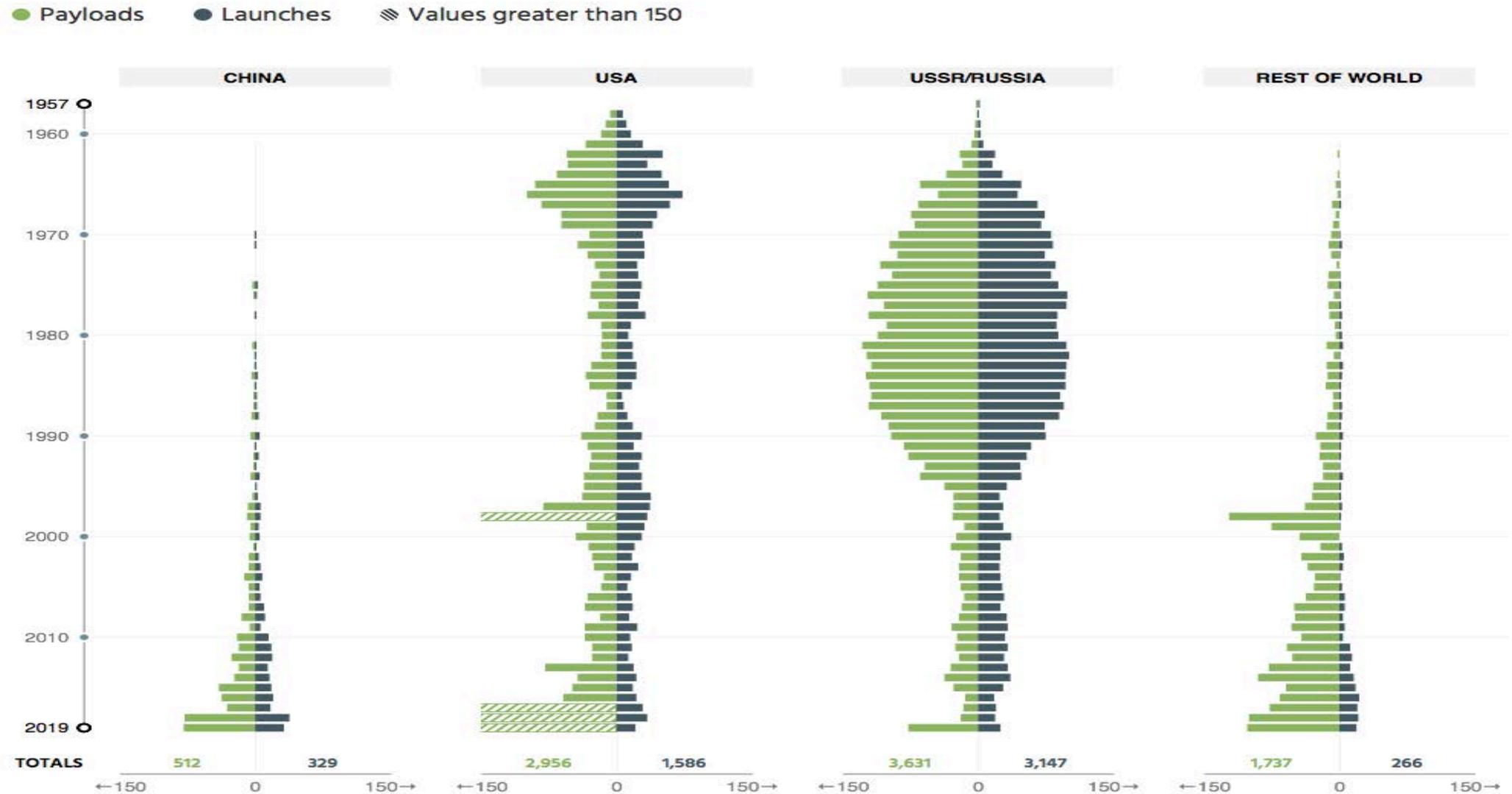
Source: Defense Intelligence Agency, *China Military Power: Modernizing a Force to Fight and Win*, 2019, p. 44.

China's Open Source Space Sites

Source: Wikipedia, *Chinese Space Program*
https://en.wikipedia.org/wiki/Chinese_space_program.



Global Open-Source Space Launches and Payloads



Comparative Open-Source Civil and Military/Intelligence Satellite Numbers

Perhaps the most significant change in the post-Cold War era has been China's growing importance as a space actor. Between 2010 and 2019, China conducted 207 launches, more than one-and-a-half times the number of launches it carried out in the previous four decades. More than one-fifth of China's total launches took place in 2018 and 2019 alone. Moreover, China's 38 launches in 2018 stand as the highest amount in a single year by any country in the 21st century.

Launches are not the only means of measuring space activity. Payloads – which can include satellites, space probes, and spacecraft – tell another part of the story... A total of 2,791 Soviet payloads were launched into space during the Cold War... This was more than double the 1,193 payloads of the US and more than 10 times the number of payloads from the rest of the world.

Improved technology has reduced the size of satellites, and rockets now often carry multiple payloads per launch. The US has been at the forefront of these innovations, accumulating 1,763 payloads launched between 1992 and 2019. Russia's 840 payloads and China's 480 payloads round out the top three. In 2017, an Indian PSLV rocket set a record for successfully launching [104 satellites](#) at once.

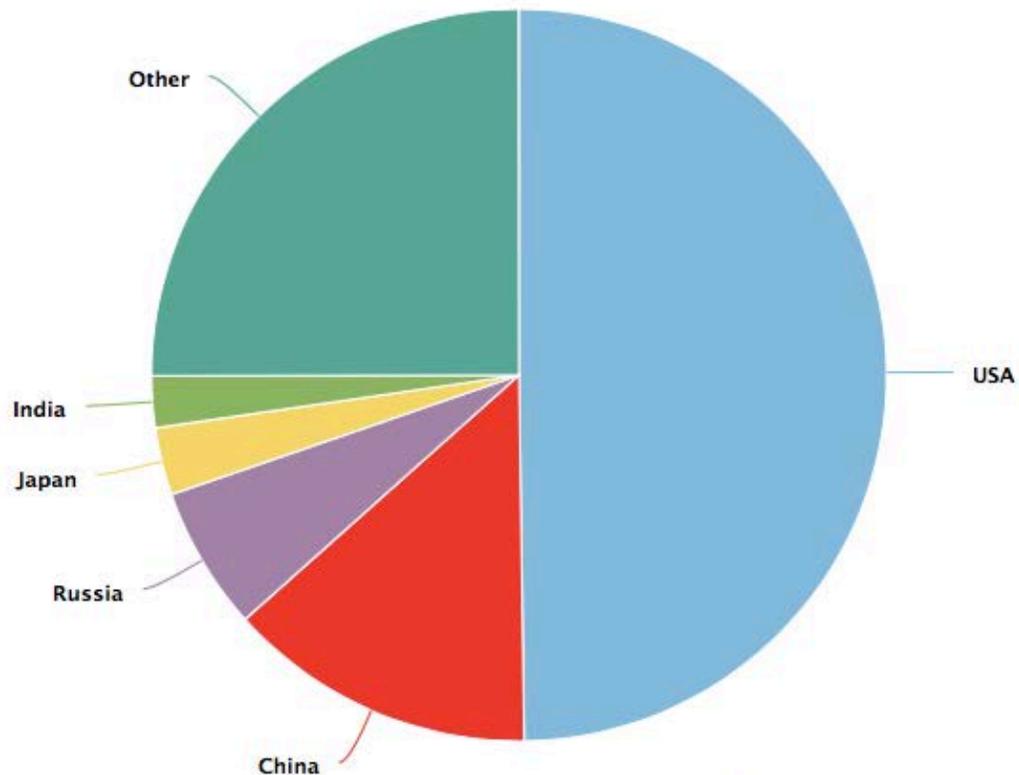
Earth-orbiting satellites are, by far, the most common payloads launched into space. These satellites provide numerous capabilities such as communications, navigation, and Earth observation. As of March 2020, there were [2,666](#) known satellites in orbit. Of these, 13.6 percent (363 satellites) are owned or operated by Chinese entities... This is more than twice the number of Russian satellites (169) in operation. The US maintains an impressive 1,327 satellites, which is roughly half of all known satellites in orbit.

Many of the satellites operated by China are part of the BeiDou Navigation Satellite System, which has been designed as an alternative to the US Global Positioning System (GPS), the Russian GLONASS, and the European Galileo systems. In June 2020, China successfully deployed its [final](#) third-generation BeiDou satellite, completing the constellation. With a total of 35 satellites in orbit, the BeiDou constellation outnumbers the [31 operational GPS satellites](#) that were in orbit as of May 2020...

BeiDou represents more than just a technological breakthrough for China. A 2016 government [white paper](#) on BeiDou highlights the satellite constellation's importance in supporting the Belt and Road Initiative (BRI) by providing navigational services to developing countries. BeiDou already serves more than [30 BRI countries](#), including Pakistan, Laos, and Indonesia. China's use of BeiDou in supporting the BRI demonstrates Beijing's commitment to leveraging its space capabilities to help shape affairs back on Earth.

Active Satellites by Country of Ownership

Based on totals through March 2020



CSIS China Power Project | Source: Union of Concerned Scientists