



不战而胜

China's Divine Move

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About This Document

The United States Army War College (USAWC) student of Team Sun Tzu Panda prepared this document as an Integrated Research Project to complete the Strategic Research Requirement Project portion of the Master of Strategic Studies degree program. This report's research, analysis, and production occurred from November 2022 through May 2023 in conjunction with the resident Army War College Senior



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Service College curriculum. The team consisted of the following: one United States (U.S.) Army Colonel, one Marine Corps Lieutenant Colonel, and three U.S. Army Lieutenant Colonels: Adam S. Camarano (Aviation), Sung G. Kim (Infantry), William Prince Jr. (Logistics), Robert H. Topper Jr. (Signal) and Christopher A. Wilson (Information Operations).

Requirement

This report is the base for answering the question posed by MG David C. Hill, Commandant for U.S. Army War College, and Dr. James Breckenridge, Provost for USAWC. ([Appendix 1 for Terms of Reference](#))

What are the strategic conditions likely required to achieve the reunification of China and Taiwan? Over what time frame will China likely attempt to establish these conditions?

What are the opportunities that establishing the conditions for reunification sets for other elements of China's Grand Strategy?

Words of Estimative Probability

The study used the Intelligence Community Directive (ICD) 203 for words of estimative probability (WEP) for determining Chinese indicators and warnings of action against Taiwan. ([Appendix 2](#))

Source Reliability

The analyst annotated source reliability throughout the document as high (H), medium (M), or low (L) based on the Standard Primary Source Credibility Scale, Trust Scale, and Website Evaluation Worksheet. ([Appendix 3](#)) When the analyst produced the estimate, they directly hyperlinked the citation to the open-source content. The analyst hyperlinked the source of any figures and photos embedded in this estimate.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information. ([Appendix 4](#))

Attribution

Cover Photo Source: <https://www.foreignaffairs.com/articles/china/2021-06-03/china-taiwan-war-temptation>

Title

Divine Move, also known as the Hand of God, refers to the perfect game of Go.



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Executive Summary

Setting Conditions for Reunification

Increasing maritime capabilities, securing commodities, financial and technology resources, and expanding space and cyber maneuvers likely (55-80%) indicate People's Republic of China's (PRC) attempt to reunify with Taiwan. Despite current media rhetoric indicating impending military action, it is very unlikely (5-20%) they will risk the significant disruptions armed conflict creates for its grand strategy. While military actions such as invasion or blockade are options, the PRC's preferred strategy for reunification is very likely (80-95%) a fait accompli leveraging the advantages created by implementing a broader strategy.

Key Judgements

China's three primary options to reunify Taiwan are a fait accompli, a blockade to coerce, or a military invasion. Each option requires condition setting across five core areas with escalating requirements and timelines based on the risk associated with the option. We assessed the following probabilities for likelihood over the next decade.

1. Conditions very likely set to accomplish a fait accompli by 2028.
2. Conditions likely set to conduct a blockade by 2033.
3. Conditions unlikely set to invade by 2035.

The forecasts in this report depend on current information, geopolitical trends, and rational actor theory. Nevertheless, the report does not account for unanticipated events or irrational actor contingencies.

Key Finding 1

People's Republic of China's (PRC) must set conditions in five areas to mitigate vulnerabilities and achieve the capabilities necessary to reunify Taiwan. These conditions integrate into the larger grand strategy aimed at ascendance towards global dominance and serve multiple purposes to achieve that goal. Despite the broad application across the breadth of their grand strategy, it is very likely (80-95%) these conditions are the key strategic indicators that demonstrate Beijing sufficiently mitigated the risk to national interests and established the capability to reunify with Taiwan.

Maritime Forces Are Capable Of Regional And Global Power Projection

The People's Liberation Army Navy (PLA-N) possesses the capability and capacity to simultaneously project power to secure trade along global sea lines of communication (SLOC), dominate the maritime domain out to the second island chain, and a sufficient amphibious capability to pose a credible threat of invasion.

Estimated Probability of Condition Set

- Fait Accompli: likely by 2028
- Blockade: likely by 2033
- Invasion: unlikely by 2033

The maritime condition increases in importance and scales proportionally with escalation on the conflict continuum. A fait accompli likely requires a minimal increase in capability, while conversely, an invasion very likely requires significant investment in both capability and capacity.

Commodities Security and Resilience

The PRC establishes sufficient supplies and access to food and energy to withstand one to two years of disruption due to conflict. This condition includes domestic production modernization, diversified international trade partnerships, and an increase in overland transportation infrastructure.

Estimated Probability of Condition Set

- Fait Accompli: likely by 2028
- Blockade: likely by 2033
- Invasion: likely by 2033

Commodity security is likely the earliest achievable goal. This condition is essential to maintaining progress towards grand strategy goals and is very likely the greatest vulnerability the PRC will face in conflict.

Economic Security

The PRC promulgates a global China-centric currency and financial system to increase international influence, reduce vulnerabilities to international sanctions, and exert greater control on its population. This condition includes the internationalization of the Renminbi (RMB), the establishment of a digital currency, an increase in the Cross-border Interbank Payment System (CIPS), and enacting policy and laws to counter financial actions deemed harmful.

Estimated Probability of Condition Set

- Fait Accompli: likely by 2028
- Blockade: likely by 2033
- Invasion: likely by 2033

::

Economic security is likely the most difficult to achieve due to its dependence on other nations to integrate into the Chinese system. On the current trajectory, they will likely reach sufficient economic security by 2033 to allow for greater freedom of options to reunify Taiwan through military action.

Technology Security

China increases its domestic ability to generate intellectual property and technology on par with or exceeding Western capabilities. The military-civil fusion strategy aims to increase efficiency and enable breakthrough technology. Additionally, they will likely increase and diversify foreign investment, recruitment, and academic collaboration to generate leap-ahead technology.

Estimated Probability of Condition Set

- Fait Accompli: unlikely by 2033 but not required
- Blockade: likely by 2035+
- Invasion: likely by 2035+

China is very unlikely to achieve technological independence before 2035 due to its extreme reliance on foreign intellectual property and the pace of global advancement. Barring a leap ahead or breakthrough technology, the PRC will likely need to diversify and strengthen its foreign technology interests through economic and diplomatic means to achieve technology security before 2035.

Increase Cyber and Space Activity

China leverages its cyber and space capabilities as a precursor to and during the initial stages of conflict with Taiwan. These attacks that disrupt and degrade critical systems across all domains will coincide with kinetic military action. The PRC very likely already

possesses the conditions to dominate the cyber domain and will very likely have the sufficient anti-satellite capability by 2033 to locally control the space domain. They will likely use lessons from the Russian-Ukraine war to combine cyber and military action across time to create better effects.

Estimated Probability of Condition Set

- Fait Accompli: very likely by 2028
- Blockade: likely by 2033
- Invasion: likely by 2033

China currently has sufficient cyber capability to conduct offensive destructive cyber action. The scarcity of space assets limits domain capabilities. However, the PRC will likely develop a robust anti-satellite capability by 2033. Despite these capabilities, it is very likely the PRC will not employ destructive space or cyber unless fully committed to conflict due to the escalatory nature and high probability of loss of use after employment.

Key Finding 2

" The greatest victory is that which requires no battle."

Sun Tzu

President Xi Jinping likely sees reunification with Taiwan as a by-product of overall dominance in global leadership when viewing their actions in the context of more significant national interests. Setting strategic conditions across maritime, commodities, economic, technology, cyber, and space will very likely result in opportunities for reunification via *fait accompli*. The goal for the PRC is to establish a dynamic where Taiwan and the global community see the result as a net positive or, at the very least, an outcome that outweighs the costs of conflict. Despite the military rhetoric and focus on Taiwan, the PRC is likely using the auspice of conflict to distract adversaries from broader global ambitions and focus on domestic urgency to align the population.

A *fait accompli* allows China to leverage its global progress to build the capability to reunify Taiwan. The PRC will likely achieve sufficient conditions to implement a *fait accompli* by 2028. This option requires significantly less direct investment and greater flexibility across all five strategic conditions than blockade or invasion. It will enable Beijing to focus its resources on progress toward the greater global grand strategy. Military actions such as blockade or invasion require a much more significant investment over a longer timeframe to achieve sufficient conditions setting. These factors increase the likelihood that adversary competition and unexpected events can disrupt or raise the cost of progress toward reunification at the expense of broader global ambitions.

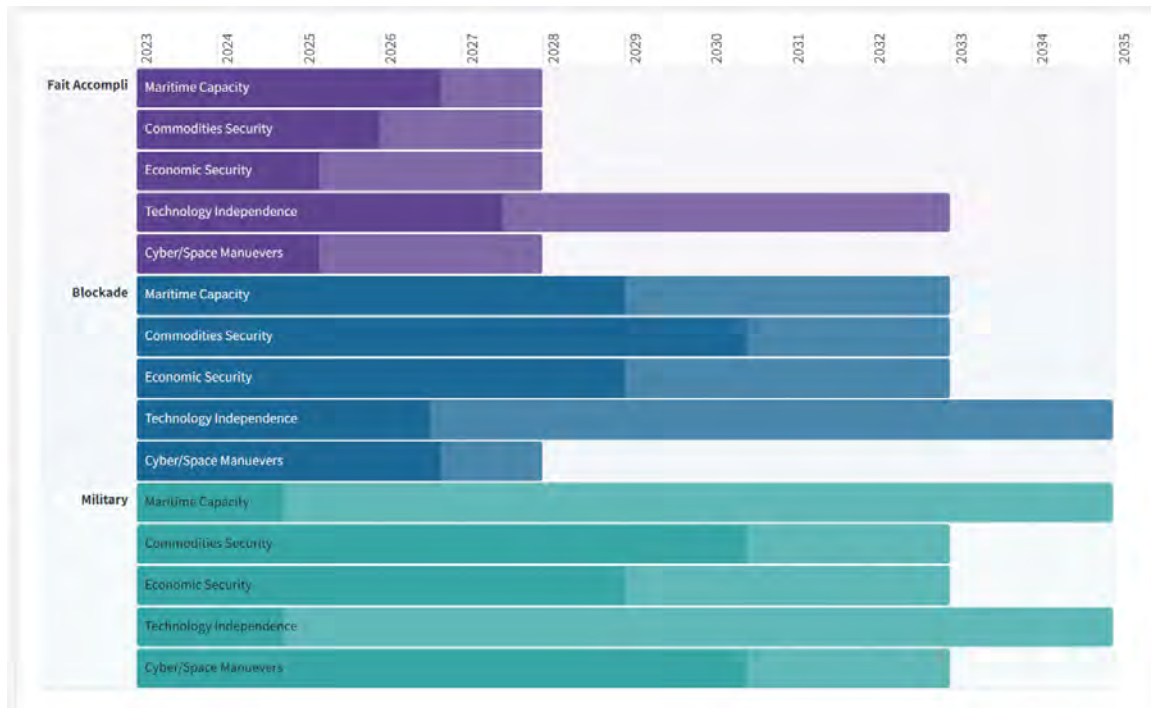


Figure 1: Indicator Progress by Scenario

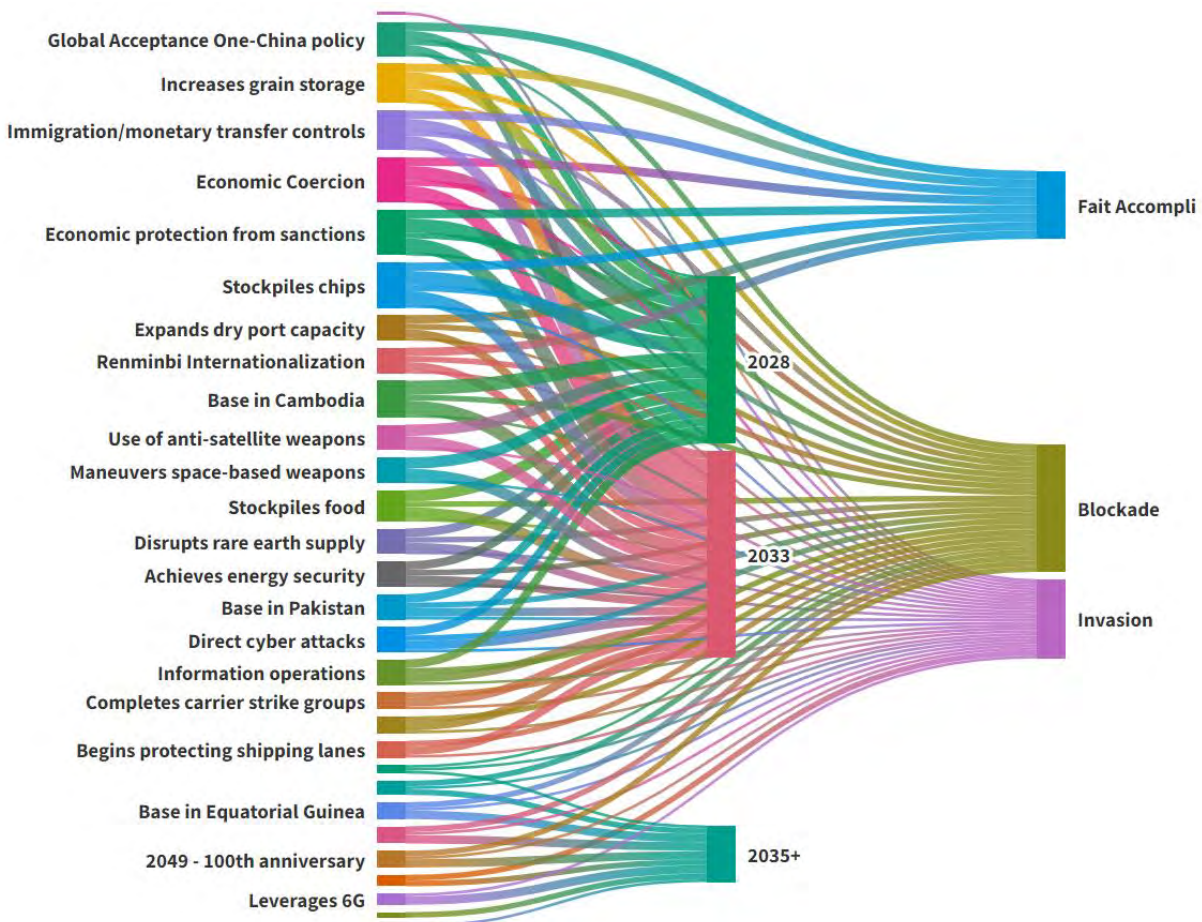


Figure 2: Indicator Progress by Condition

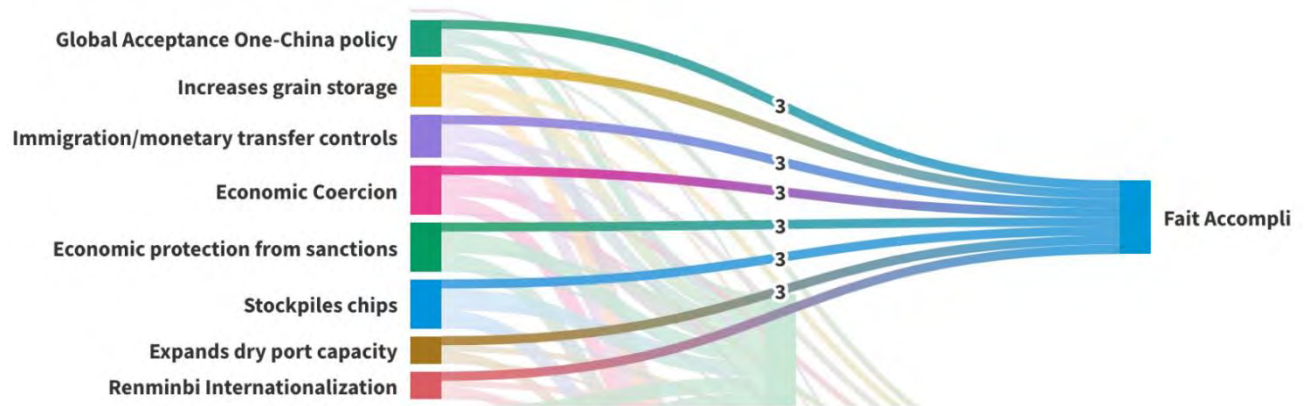


Figure 2.1: Fait Accompli Achievable by 2028

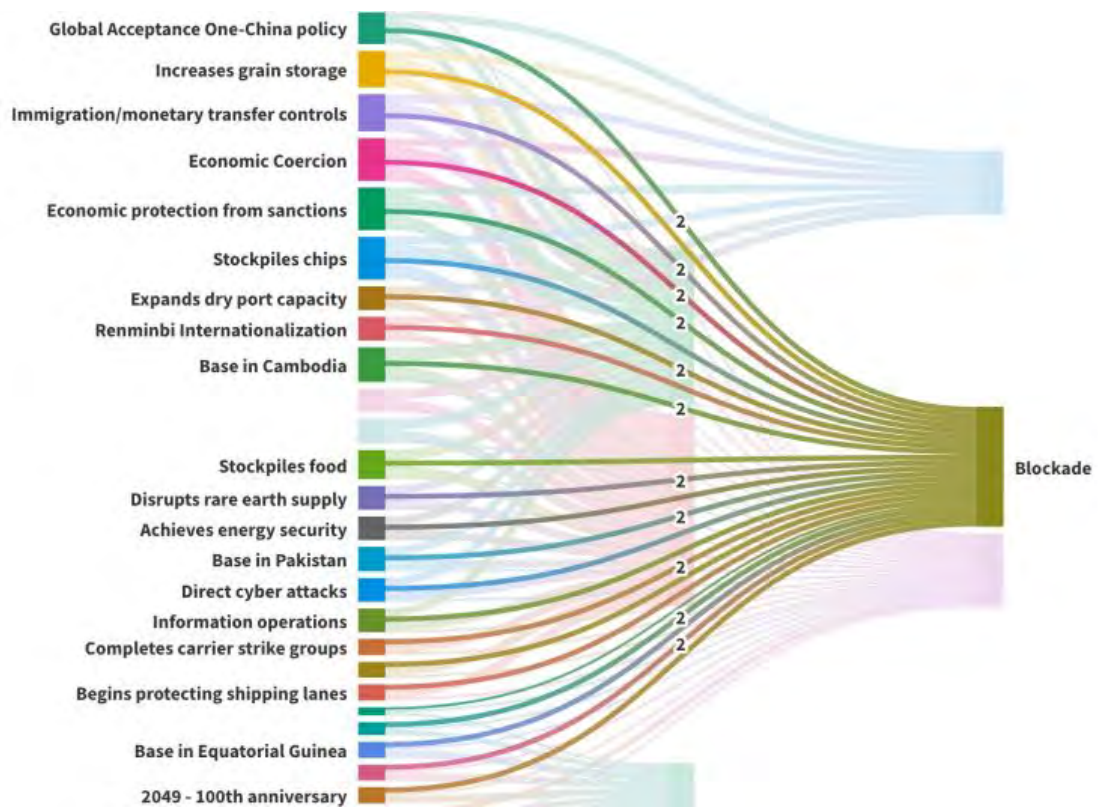


Figure 2.2: Blockade Achievable by 2033

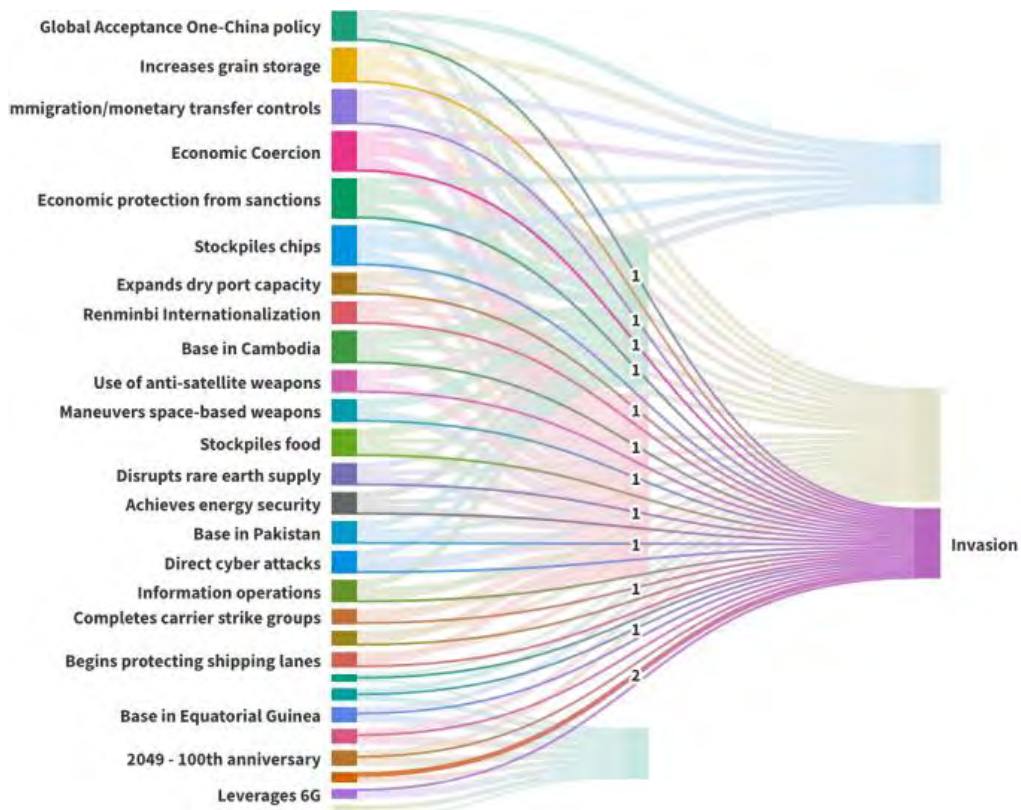


Figure 2.3: Invasion Achievable by 2033

Conditions And Indicators Report



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Maritime Forces Capable Of Local And Global Power Projection

The People's Liberation Army Navy (PLA-N) likely requires ten years or more to expand and modernize its fleet to overcome power projection limitations. To set strategic conditions for forceful reunification, the PLA-N must be capable of large-scale amphibious operations and isolating Taiwan while simultaneously projecting combat power to secure overseas interests and trade routes. Our research indicates that China will need five carrier strike groups, establish five military bases outside the first island chain, and significantly increase the amphibious capability to set conditions for forceful reunification.

Maritime Indicators

PLA-N fleet of five fully operational carrier strike groups

China can put five carrier strike groups to sea to project power out to the second island chain while simultaneously securing critical maritime trade routes. Those responsible for Taiwan's defense will likely require the deployment of a force to isolate Taiwan from adversary action and reduce vulnerabilities to essential commodity trade.

Rate of building type 075 and 076 amphibious assault ships

PLA-N accelerates building Type 075 and 076 amphibious assault ships or increases priority over building blue water capability, a likely indicator for preparations for an amphibious invasion. A continued focus on constructing carriers, cruisers, and destroyers likely indicates a focus on power projection and potentially protecting shipping lanes over a direct attack.

Building bases along key shipping routes to protect energy and economic trade shipments

Bases along key shipping routes in Cambodia, Djibouti, Pakistan, Myanmar, Bangladesh, or Sri Lanka will protect People's Republic of China (PRC) investments, create regional influence, and enable PLA-N naval endurance to protect key shipping lanes.

Increase in joint amphibious operations training; emphasis on amphibious assault, over-the-horizon, ship-to-shore, and vertical lift

An increase in large-scale joint forceable entry exercises focusing on the common employment of the entire PLA, including logistics and command and control between multiple theater commands.

PLA achieves military readiness of 75 percent or greater

The current conscription model does not produce the required number of experienced and trained conscripts throughout the year. The PLA aims to use a twice-a-year conscript model to fill critical billets in units with new personnel with the proper education and background to meet the demands of 75 percent or better military readiness. The government openly acknowledges that the new schedule poses challenges to the existing conscription institutions, and the workforce supporting force recruitment is adapting to the new situation. Thus far, the PLA has failed to increase the proportion of college graduates recruited into the force.

Strategic Assessment

China relies heavily on maritime trade to import critical commodities such as food and energy. An adversary strategy adhering to Sir Julian Corbett's theory of sea denial to disrupt trade very likely creates a significant obstacle for the PLA-N to overcome without expanding its blue water fleet. [H](#) China's geographic location makes it vulnerable to adversary interference in shipping, as shown in figure 3 below.

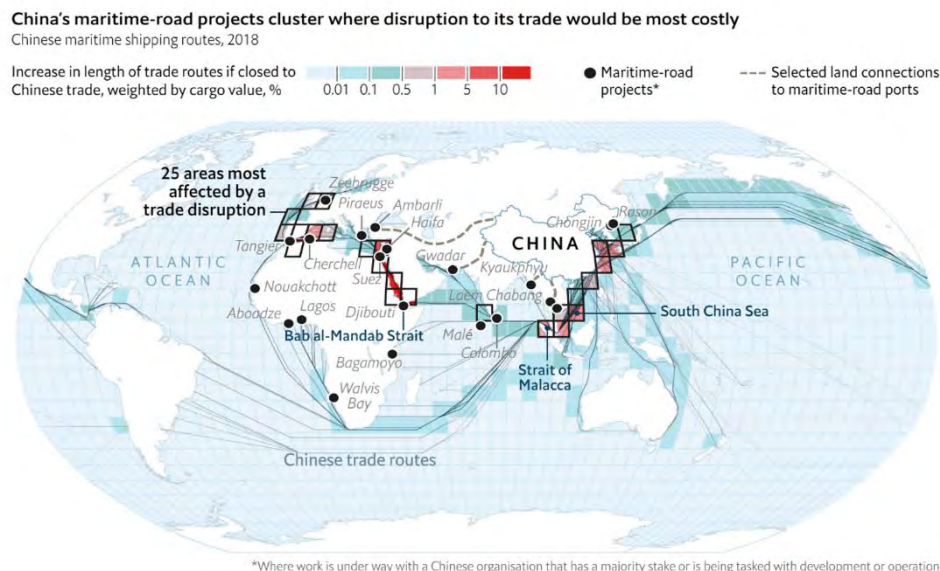


Figure 3: Vulnerable Points In Maritime Trade Routes

The United States (U.S.) and its allies pose a significant threat to the PLA's ability to conduct offensive operations against Taiwan due to the significant presence of forces in the first and second island chains. The PLA-N would very likely require a fleet capable of

maintaining parity, if not dominance, out to the second island chain to enable a blockade or invasion of Taiwan.



Figure 4: U.S. Military Presence To Counter China In Western Pacific

China is on course to develop maritime capabilities to rival or even exceed the U.S. No other nation is comparable to the PRC in the rapid advancement of naval capabilities. [H](#) They already possess the largest navy in the world, but it is not equal to the U.S. in terms of size, capability, and overall readiness to perform global missions. [H](#) The PLA-N is on track to increase its fleet to five aircraft carriers and 19 additional amphibious ships by 2031 and five foreign military bases by 2035 to support global power projection. [H](#) If China decides to take military action, securing key shipping lanes for resources and energy supplies is necessary. The PRC needs to build and launch the planned naval platforms and establish additional bases along key shipping routes to protect shipping lanes. [H](#) To achieve this, China will likely establish five additional bases outside of Chinese territory by 2035 to support operations to protect key shipping lanes. [H](#)

With its increased investment in domestically produced aircraft carriers, Beijing is more capable of projecting its maritime power throughout the South China Sea and beyond the region. However, in a 2022 annual report to Congress, the Pentagon assessed that the PRC still needs to demonstrate a credible amphibious and airborne capability to invade Taiwan. [H](#) An invasion of Taiwan will require an effective integration with similar ground forces and marine units, carrying out operations in complex or degraded environments, transcending their lack of relevant combat experience, and obtaining adequate air support. [M](#) The military lacks the expertise to coordinate the employment of all four services and

support and logistics to enable such a complex operation. ^H Additionally, it has yet to conduct amphibious exercises above the battalion level and needs a training support system to implement such training. ^H Conducting an amphibious invasion poses several problems, requiring units to work in concert with multiple outside elements and theatre commands. Furthermore, the operational requirements of support by militia and civilian assets add to the complexity. ^H

Despite China's rhetoric on reunifying with Taiwan, it has prioritized building large aircraft carriers, escort cruisers, and amphibious transport dock (LPD) ships, indicating a clear shift towards blue-water naval operations over smaller expeditionary missions. ^M If China genuinely focused on the region, then the evidence must show the navy's change of priority through the investment of landing ships and crafts necessary for conducting large-scale amphibious operations. ^H

Commodities Security And Resilience

China is likely capable of setting food and energy security conditions by 2028. The 14th Five Year Plan for National Economic and Social Development implements a strategy to address commodity vulnerabilities through the modernization of domestic agriculture and energy infrastructure, increase in Belt and Road Initiative (BRI) projects to increase access to commodities, and diversification of trade partners to provide supply chain resilience. Our research indicates that China will increase food reserves, overland transportation capability, and diversify trade partners to set conditions by 2028.

Commodities Security Indicators

Soybean and grain imports increase by 25 percent or greater

Soybean and grain imports increase by 25 percent or greater for two or more consecutive years without a corresponding consumption demand or market trend. A simultaneous decrease in imports from the United States (U.S.) is a sub-indicator that China has sufficiently diversified its agriculture trade to maintain supply chain resilience.

Construction of regional grain storage facilities near urban centers

Regional grain storage facilities constructed in urban areas will very likely facilitate food reserves able to feed local populations for three to six months. These urban storage facilities will reduce the pressure on domestic logistics and alleviate the challenges of just-in-time logistics during the conflict.

Agricultural storage construction projects on over 30 percent of rural farms

Modernizing farm storage for agricultural commodities will decrease food waste due to spoilage and infestation. This project will reduce annual import and production requirements, creating a more efficient and resilient agricultural supply chain. It very likely includes the creation of regional grain exchanges to build efficiency in the market.

China doubles dry port capacity

Doubling dry port capacity at key transfer points, such as Khorgos, increases international rail capacity, reducing the dependence on maritime transportation for essential commodity trade. Overland routes offer access to more trade partners and create resilience from disruption of sea lines of communication.

People's Republic of China achieves energy diversification

China completes the BRI infrastructure pipeline, rail, and overland transportation systems to reduce the vulnerability of energy imports from the Middle East, Eurasia, and Russia.

Strategic Assessment

China is heavily dependent on food and energy imports to meet the massive demand of its population and industrial base. The Chinese Communist Party's (CCP) 14th Five-Year Plan for National Economic and Social Development, published in March 2021, is a grand blueprint for building a modernized socialist country. [H](#) Part Fifteen focuses on food and energy resource security strategies. [H](#) The strategies reduce risk through domestic development and implementing favorable and resilient international systems. [H](#)

China's food security vulnerabilities originate from reliance on imports and inefficient storage methods. [M](#) The country's shortage of arable land requires annual food imports exceeding 100 million tons to meet the population's consumption demand. [H](#) Most imports originate in the Western Hemisphere and travel by maritime trade, creating vulnerabilities to sanctions and disrupting shipping lanes. [H](#) Food storage held on farms creates problems with accessibility to urban population centers and significant wastage due to spoilage in storage and transit. [H](#) The COVID-19 pandemic highlighted these vulnerabilities with reports of urban centers running out of food despite months of reported reserves on farms in agricultural centers. [H](#)

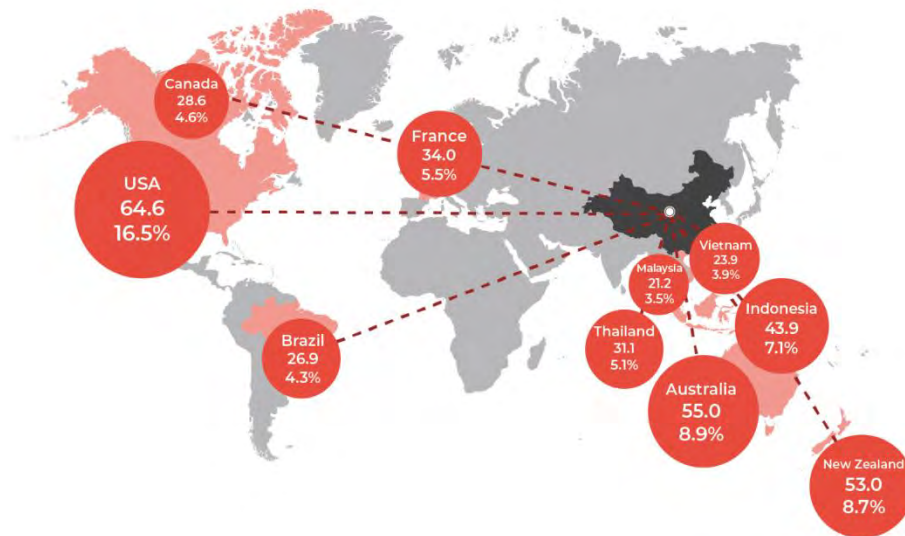


Figure 5: China's Top 10 Food Import Partners

China suffers from significant energy security challenges. Geology, energy density, and policymaking constrain the country's ability to meet the massive energy demand domestically. ^H Recent estimates show imports comprise 79 percent of energy resources and expect to remain or increase through 2030. ^H A significant portion of oil imports are vulnerable to the impacts of conflict as 70 to 85 percent of imported oil travels through the Malacca straits. ^H

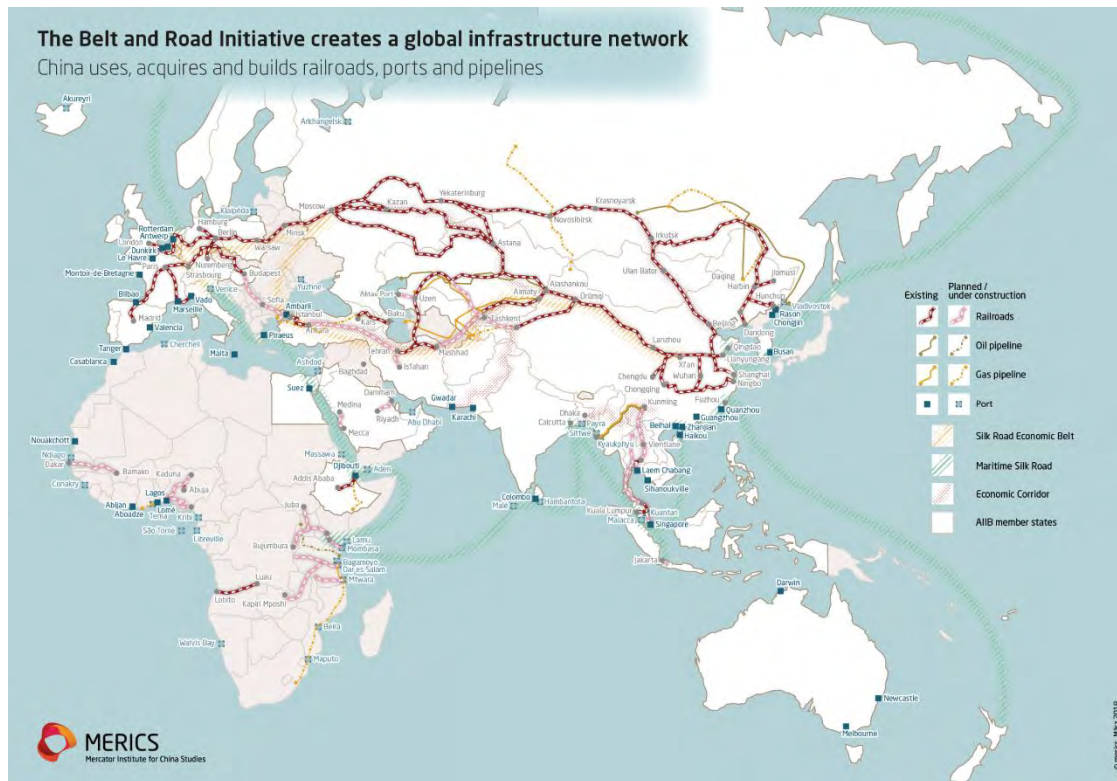


Figure 6: Map of China's BRI Infrastructure Network

The 14th Five Year Plan implements a strategy to consolidate the domestic production base, expand strategic energy reserves, strengthen the security of reserves, diversify sources of imports, and cultivate a trading system that uses the Yuan. ^H The People's Republic of China (PRC) will very likely improve energy security by continuing its import expansion, building pipelines to bypass maritime chokepoints, using its navy to secure trade routes, and establishing energy trade in Yuan. ^H

Despite China's attempts to increase domestic production of critical commodities, it will very likely remain dependent on imports and strategic reserves to meet growing demand. Our research indicates that the PRC will mitigate vulnerabilities through increased overland BRI infrastructure in regions unlikely to see disruption from conflict and diversifying trade with partners who are unlikely to participate in sanctions during competition.

Economic Security

The People's Republic of China (PRC) is pursuing a strategy to create a China-centric alternative to the international banking system. The development and promulgation of this system serve to emplace China as the global economic leader and reduce the coercive power of Western sanctions. The core aspects of this policy are establishing the digital Renminbi (RMB) as a global reserve currency and expanding the Cross-Border Interbank Payment System (CIPS). In addition to the international economic advantage, these initiatives enable greater control and influence over the Chinese population.

Economic Security Indicators

BRICS leadership adopts digital currency

The adoption of the digital RMB almost certainly indicates increased support for an alternative-centric monetary system among China's largest trading partners. Brazil, Russia, India, China, and South Africa (BRICS) Leadership decision is very likely a key milestone required to sustain their strategy for global economic growth.

Secure Renminbi to third most used currency in global trade

An increase in Renminbi (RMB) usage from the current fifth to third most-used currency indicates that enough global trade opportunities exist for China to mitigate the impacts of Western sanctions.

Economic coercion against foreign companies and industries

China employs economic coercion against international companies to gain or maintain access and restrict adversary access to critical technology and commodities. Economic influence tied to Chinese currency promulgation is also very likely aimed at generating international support or indifference to reunification.

Fifty percent annual reduction of Chinese high net-worth individual emigration

PRC law and monetary policy restricting the movement of Chinese wealth outside the country will very likely occur to control the people through the influence of the wealthy.

Cross-Border Interbank Payment System volume increases by 25 percent annually

CIPS is unlikely to be a viable tool to avoid Western sanctions and financial influence if it does not have sufficient international support. A significant increase in CIPS volume indicates growing global trust and confidence in the alternate banking system.

Strategic Assessment

Economic power serves two purposes, allowing the PRC to pursue its stated goals and as means of control over the population. [H](#) The central bank sanctions imposed on Russia after the Ukraine invasion created concern in China, showing a country with significant foreign reserves is still vulnerable when faced with coordinated sanctions from large economic markets. [M](#) China is looking to alter the status quo away from the dollar by aggressively pushing the RMB, digital currency, and CIPS into the world stage to evade sanctions in the event of a conflict. [HH](#) The PRC will almost certainly insulate itself from Western sanctions before a conflict with Taiwan. China has learned lessons from Russia's failures and seeks to pre-empt the United States (U.S.) Sanctions. [H](#)

The RMB is the fifth most active currency for global payments by value, with a two percent share. [M](#) Society for Worldwide Interbank Financial Telecommunications (SWIFT) data shows that the dollar remains the most active global currency, followed by the Euro, the British Pound, the Japanese Yen, and the RMB. [H](#)

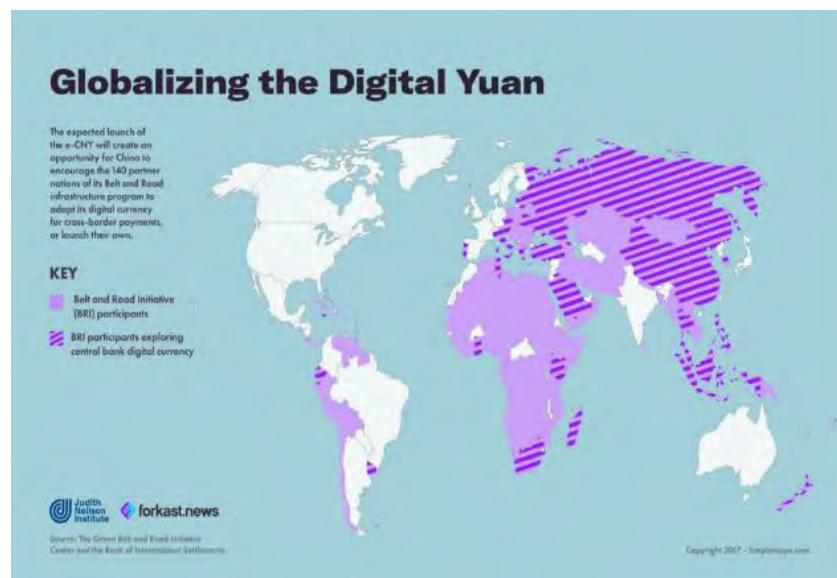


Figure 7: Map Of Potential Users Of Digital Yuan

Financial institutions, such as Citigroup and Goldman Sachs, predict that the Yuan will very likely become the third-most-used currency in international payments and as a reserve currency by 2030. [M](#) In August 2023, at the BRICS leadership summit, they will likely decide to transition to a digital currency. [H](#) The e-CNY (digital Yuan) is the leading candidate for adoption by the BRICS, paving the way for much broader global adoption. [H](#)

Over one thousand institutions and 103 countries use the Cross-Border Interbank Payment System (CIPS) to conduct financial transactions. ^H While this number is small compared to the Western systems, CIPS is growing significantly, facilitating over 79 trillion Yuan in 2021, a 65 trillion increase since 2017. ^H Despite the CIPs significant growth and capacity, it still uses SWIFT for most of its cross-border message traffic due to translator limitations in non-Chinese institutions. ^H Our research indicates that CIPS can function as an alternative and independent system to SWIFT; however, it will take over a decade to fully build capability and acceptance to mitigate the risk during the conflict. ^H

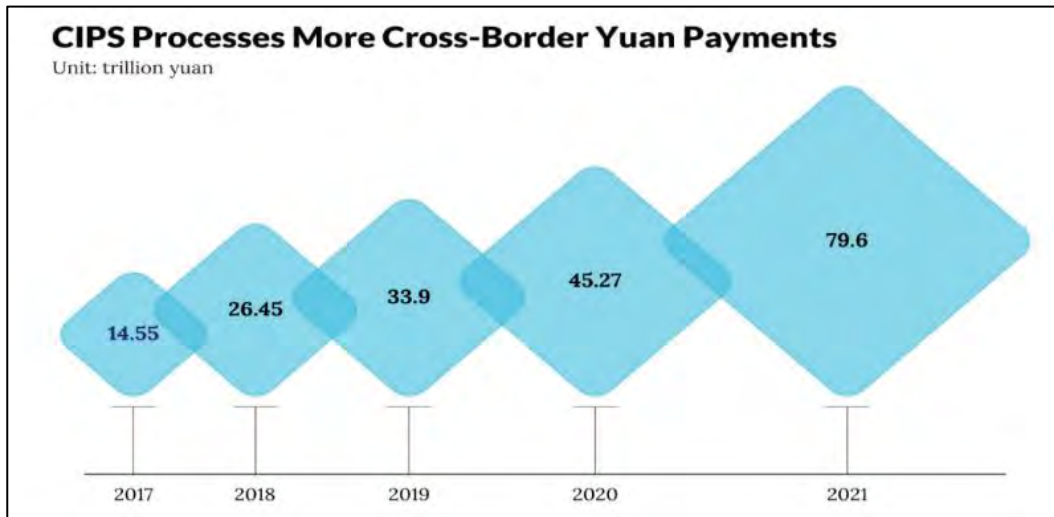


Figure 8: CIPS Increases

Beijing's use of economic coercion in the Indo-Pacific region is becoming a common tool for the PRC. China increasingly uses its economic might to influence foreign governments, organizations, and industries. ^H China has a history of using economics as punishment against foreign companies and industries when efforts by a company or industry go contrary to what the PRC considers acceptable or may have shamed them publicly. Coercion often utilizes trade restrictions on foreign governments' economies by restricting imports and exports. ^H Examples of trade restrictions implemented by Beijing are tariff increases, license denials, targeted customs, and unofficial trade embargos. The United States stationed Terminal High Altitude Area Defense (THAAD) anti-missile systems on the Korean peninsula in 2017, resulting in the Chinese Communist Party rejecting all Korean lithium batteries from LG Chem and Samsung SGI battery production companies. ^H

Despite the growth of China's economic power, the international adoption of RMB and CIPS as an alternate financial system is very unlikely to fully insulate the PRC in the next ten years through natural progression. To overcome the obstacles of full global implementation, the PRC will likely resort to coercion through trade deals to force compliance with trade partners to accelerate growth which is also likely to create mistrust in the system.

Technology Security

China will likely pursue a strategy of military-civil fusion (MCF) to increase military human capital capability and a greater degree of technological independence to set conditions for conflict with Taiwan. The People's Liberation Army (PLA) will likely increase the professional qualifications of the force to take full advantage of its military strength through changes in recruiting and conscription models. A parallel effort to boost domestic technology innovation will likely further strengthen China's ability to match or exceed Western dominance.

Technology Security Indicators

China fully implements its military-civil fusion strategy

A fully implemented MCF will likely occur through a breakthrough in science and technology, exploiting a global disruptor, or partnering with an entity that makes them independent from the international community. Additionally, commercial companies will likely reduce international exports to align their production with domestic requirements. China recalls all prominent figures of Science and Technology from abroad.

PLA matches technological and human capital

To achieve a more technologically advanced force, the PLA will likely change its recruitment and conscription strategy to bring a higher percentage of educated soldiers into the force and increase the conscription to twice a year to build continuity.

China domestically produces high-end semiconductors chips

China can domestically produce high-end semiconductors by obtaining extreme ultraviolet lithography (EUV) machines from Advanced Semiconductor Materials Lithography (ASML) or developing faux EUV technology.

Prevent brain-drain and feed education pipeline in sectors of interest

The People's Republic of China (PRC) places more significant restrictions on Chinese nationals remaining abroad after completing higher education and recalling those possessing advanced degrees in technology. Domestic policy changes incentivizing innovation in the academic and industrial sectors would coincide with increasing the productivity of technological advancement.

Strategic Assessment

China heavily depends on foreign technology for most of its industrial and military production and modernization. Its methods include acquiring foreign technology through both legal agreements and illegal technological acquisitions. [H](#) China domestically generates only 15 percent of the technology used to power its industry and military. [H](#) The MCF strategy aims to reduce foreign dependence by creating synergy between central and local government regulatory agencies, military end-users, and defense civilians, and commercial research and development (R&D) ecosystems in critical domains. [H](#) An additional obstacle the PLA must overcome is the mismatch of technological capability to the education of its human capital.

The Military-Civil Fusion strategy eliminates barriers between civilian research and commercial sectors. It will likely exploit quantum computing, semiconductors, 5G, advanced nuclear technology, aerospace technology, and artificial intelligence to develop military and civilian applications. [H](#) Although China's MCF strategy includes objectives to develop and acquire advanced dual-use technology for military purposes and reform the national defense science and technology industries, its broader goal is to strengthen all of China's instruments of national power. [H](#)

Technology production is a significant vulnerability for the PRC. Much of the intellectual property and advanced machinery to modernize the PLA and industrial power originate overseas, primarily from Western countries. [H](#) The United States is China's number one exporter of intellectual property, which has enhanced the pressure to seek alternate domestic and international sources using legal means and theft and coercion. [H](#) Reliance on foreign technology leaves the PRC industry vulnerable to geopolitical tension, demonstrated by sanctions against Semiconductor Manufacturing International Corporation (SMIC) and Huawei, who have now lost access to high-tech semiconductors. [H](#)

China relies heavily on foreign technology to produce semiconductors. The domestic industry is not currently capable of producing modern chips to create advanced military and commercial products. [H](#) To curb China's military ambitions, the U.S. restricted the sale of advanced computer chips and computer-making equipment to China. This move is so significant that the actual impact is currently unmeasurable. China consumes over three-quarters of global semiconductors but only makes 15 percent of global outputs. [H](#)

The development of modern military technologies demands high-quality human capital to match its capacity to its capability. Our research indicates that due to the lack of qualified personnel and professional development, the PLA cannot fully employ the technologically

advanced systems to execute the missions envisioned by the PRC. ^H Despite the scope and speed of its campaign to modernize its military over the past twenty years, the force's readiness does not match the technological advancements achieved by modernization. ^H The PLA faces tough decisions, economic structure, and technological developments that require adjustments and adaptation to address domestic social issues. ^M

China's culture of government control and outsourcing education creates additional challenges for developing technology independence. Chinese students are coming to United States (U.S.) universities, earning doctorate degrees in science, technology, engineering, and math. They are pursuing their careers in the U.S. instead of returning to China. Data shows that 90 percent of Chinese students who obtain a doctorate in the U.S. stay well after graduation. ^H This loss of intellectual talent creates a barrier to direct contribution to innovation. Additionally, PRC law stipulates any company with over 50 employees requires a Chinese Communist Party (CCP) representative on site to report to the party. Having a CCP representative reporting on protected business practices compromises proprietary information, eliminates competitive advantage, and dissuades individuals in a company from innovation. ^H

Despite China's global industrial and military development and influence, the country is unlikely to match Western militaries and corporations in technology innovation without a significant cultural change. Restrictive policies and rifts in domestic priorities combine to impede progress and further entrench reliance on foreign intellectual property. ^{HH}

Increase Cyber And Space Activities

The PLA is very likely to conduct significant space and cyber activity to disrupt Taiwan and its allies' ability to coordinate essential civil, military, and information activities. Our research indicates that cyber and space activity will fall into both indicator and warning categories. It is very likely destructive cyber and space attacks will be an immediate precursor to or coincide with military action due to the escalatory nature, the relatively short window of an advantage they create, and an almost certain loss of capability in the respective domains.

Cyber And Space Indicators

Increase cyber operations

China's continuous cyberattacks in Taiwan disrupt, interfere with, or weaken the government's confidence. The three types of cyber operations are low impacts, Distributed Denial-of-Service (DDoS) attacks, disinformation operations, and cyber espionage. [M](#) They are likely compiling a list of cyberattacks on physical infrastructure for future operations.

Disable Taiwanese undersea Internet cables

The sudden cyber isolation of Taiwan due to disabling fiber cables in the East China Sea will cause panic and paralyze commercial activity. It will also cut off China from access to Taiwan's network they worked so hard to achieve.

Maneuver surveillance and offensive satellites near U.S. spaces assets

China maneuvers Tongxin Jishu Shiyan Weixing-3 (TJS-3) or Shijian 21 (SJ-21) satellites to conduct surveillance and position for offensive space operations.

Destructive anti-satellite attack of U.S. and allies space assets

Shijian 21 (SJ-21) is an experimental space debris mitigation satellite and will very likely conduct offensive space operations. [H](#) The classified nature of this mission very likely suggests China will use it in the future for military objectives. [H](#)

Increase use of electromagnetic warfare in the Western Pacific

China views ground-based electromagnetic warfare capabilities as critical to suppress or deceive enemy equipment. [H](#) The current jamming techniques deny space-based communications, radar systems, and global positioning systems' navigation support to the

military movement and precision-guided munitions employment. These are likely key to preventing the U.S. and U.S.-affiliated commercial satellite firms from maintaining a clear picture over Taiwan, as they are in Ukraine. [H](#)

Strategic Assessment

China very likely already possesses the cyber and space domain capabilities required to support military action against Taiwan in all three options. Continued development in the space domain will likely improve the effectiveness and adapt the force to adversary advancements through 2033.

China will likely conduct cyberattacks against Taiwan's critical infrastructure simultaneously with an invasion. Evidence from the Russian-Ukraine war indicates that sophisticated cyber defenses can rapidly negate advantages and eliminate access to the targeted network. [H](#) Taiwan's cyber security is sophisticated and aimed at countering Chinese cyber-enabled disinformation campaigns, defending its networks, and protecting system infrastructure.

Continuous cyberattacks against Taiwan are a regular occurrence, likely designed to disrupt, interfere with, or weaken the government's confidence. The three types of cyber operations are low impacts, Distributed Denial-of-Service (DDoS) attacks,

disinformation operations, and cyber espionage. [M](#) Low-impact attacks observed in August 2022 are an example of expected escalation. Taiwan saw 272 instances of disinformation actions during House Speaker Nancy Pelosi's visit. [M](#)

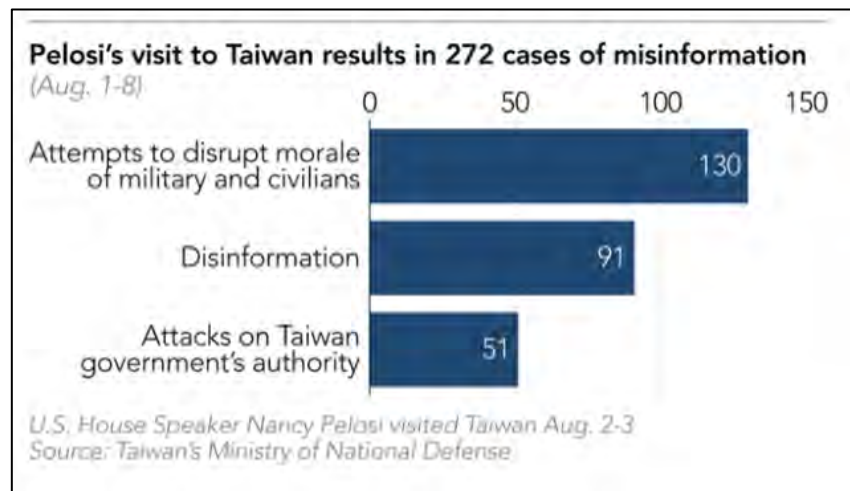


Figure 9: Pelosi's Visit to Taiwan Cyber Instances

Destructive actions in the cyber domain are much less common and will very likely serve as warnings of PLA offensive intentions. Cutting Taiwan's undersea fiber cables or attacking cable landing stations before an invasion would likely create significant disruption in commercial and military capability, panic the population and provide Beijing a window to gain control of the information domain. ^L Disabling the undersea cables is almost certainly an invasion scenario as it dramatically reduces PLA options to conduct cyber warfare based on reduced access.



Figure 10: Taiwan Undersea Internet Cables With PLA-N

The People's Liberation Army (PLA) is very likely maneuvering space-based anti-satellite weapons to counter U.S. space capabilities. As part of its grand strategy, China is working to become the world's dominant space power by 2045. The PRC plans to compete with Western governments and corporations to control space. Active space initiatives include a plan for a 13,000-satellite constellation to compete with Starlink, space surveillance using the Tongxin Jishu Shiyen Weixing-3 (TJS-3) satellite, and experimentation with the Shinjan 21 (SJ-21) space debris mitigation satellite. ^{HH}



Figure 11: SJ-21 Conducted A Space Tug With A Dead Satellite

The PLA has limited ground-based anti-satellite capability and will likely operationalize it by 2033. China has demonstrated a ground-based ballistic anti-satellite weapon with successful tests of the Spacecraft-19 (SC-19) interceptor four times since 2007. ^{HH} China is very likely developing a directed energy weapon (DEW) for counter space to target intelligence, surveillance, and reconnaissance (ISR) satellites to temporarily or

permanently blind imagery satellites and other strategic sensors, denying the ability to monitor, track, and target forces. [HH](#)

Despite the PLA's exquisite capabilities in the cyber and space domains, it is unlikely they will be able to maintain an advantage during the prolonged conflict. Taiwan and the U.S. have devoted significant investments in capability and innovation. China is very unlikely to match without a leap ahead in technology.

Combined Analysis Reports



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China Very Likely To Secure Vulnerabilities Prior To Conflict

Executive Summary

It is very likely (80-95%) the People's Republic of China (PRC) will mitigate food, economic, and energy vulnerabilities to secure domestic support and resilience prior to the conflict. Addressing these vulnerabilities reduces adversary coercive power options. Policy and strategies designed to bolster domestic security are a natural progression of developing nations and are not in themselves indicative of preparations for war; however, it is very unlikely (5-20%) that the PRC would initiate conflict without setting conditions to secure vulnerabilities in these fields.

Discussion

The Chinese Communist Party's (CCP) 14th Five Year Plan for National Economic and Social and Long-Range Objectives for 2035, published in March 2021, is the grand blueprint for building a modernized socialist country. ^H Part Fifteen of the plan describes the development of a more peaceful and secure China, specifically focusing on

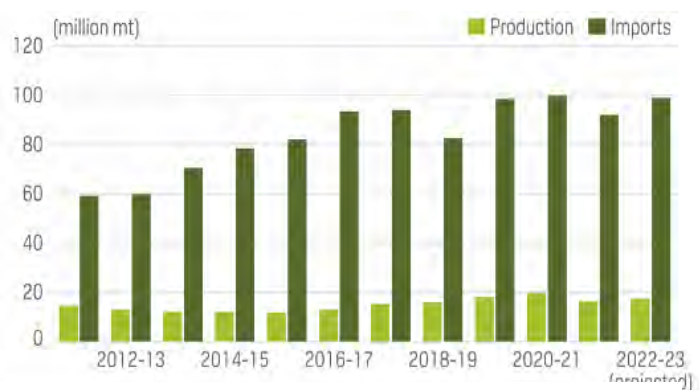


Figure 12: Soybean Imports

food, energy resource, and financial security strategies. ^H In each category, the strategies reduce risk exposure through domestic development as well as implementing favorable and resilient international systems. ^H In February 2023, Central Intelligence Agency (CIA) Director Burns stated that President Xi Jinping instructed his country's army to be ready by 2027. ^H The 2027 benchmark corresponds with the scope of the 14th Five Year Plan's implementation period making it likely (55-80%) that the strategies for securing vulnerabilities are condition-setting requirements for the PRC.

China's food security vulnerabilities originate from reliance on imports to meet demand and outdated and inefficient storage methods. ^M The 14th Five Year Plan directs improvement of the security of the supply system through domestic production, development of regional supply bases, improvement of central grain reserves, and agricultural import through diversification of import sources. ^H The shortage of arable land generates an annual food import requirement exceeding 100 million tons. ^M

Most imports originate in the Western Hemisphere and travel by maritime trade, creating vulnerabilities due to sanctions and disruption of shipping lanes. ^H Food storage is largely

held on farms, which creates problems with accessibility to urban population centers and significant wastage due to spoilage in storage and transit. [M](#) The COVID-19 pandemic highlighted these vulnerabilities with reports of urban centers running out of food despite months of reported reserves on farms in agricultural centers. [M](#) The PRC is likely to implement a strategy to modernize and increase food storage capacity, stockpile critical commodities, and increase infrastructure such as dry ports to enable the diversification of trading partners. [M](#)

China suffers from significant energy security challenges. Geology, energy density, and policymaking constrain the country's ability to meet the massive energy demand domestically. [H](#) Energy resources expect to increase through 2030, although recent estimates show energy imports comprise 79 percent of the total imports. [M](#) A significant portion of oil imports are vulnerable to the impacts of conflict as 70 to 85 percent of imported oil travels through the Malacca straits. [H](#)

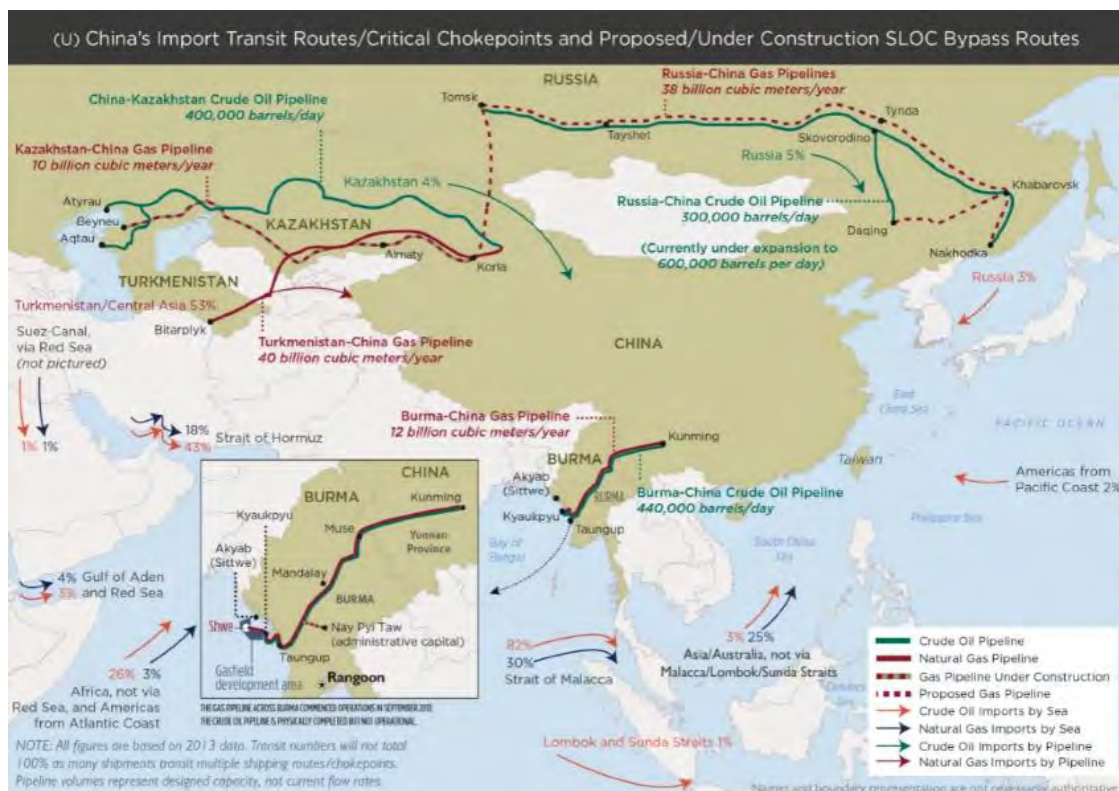


Figure 13: Map of Energy Imports

The 14th Five Year Plan implements a strategy to consolidate the domestic production base, expand strategic energy reserves, strengthen the security of reserves, diversify sources of imports, and cultivate a trading system that uses the Yuan. [H](#) It is very likely the PRC will make significant improvements in energy security by 2030 by continuing its import expansion, building pipelines to bypass maritime chokepoints, using its navy to secure trade routes, and establishing energy trade in Yuan. [M M M](#)

Financial and economic security is a thread that permeates the 14th Five Year Plan, and it is very likely the central tool of the PRCs power. The plan focuses on eliminating corruption, tighter control over investment risk, and improvements of cross-border payment systems beneficial to China. [H](#) Economic power serves two purposes, allowing the government to pursue its stated goals and a means of control over the population. [M](#) The central bank sanctions imposed on Russia after the Ukraine invasion created concern in China, showing a country with significant foreign reserves is still vulnerable when faced with coordinated sanctions from large economic markets. [M](#) China is likely looking to alter the status quo away from the dollar by pushing the Yuan even more aggressively into the world stage with the use of the Cross-Border Interbank Payment System (CIPS) and increasing the internationalization of the Renminbi (RMB) to evade sanctions in the event of a conflict. [M](#) The PRC will likely use the CIPS and their digital currency as the primary tools in this strategy. [M](#) Additionally, the PRC is very likely to institute strict emigration and wealth transfer policies before the conflict to maintain domestic capital and exert control over an influential population segment. [M](#)

The counterargument to the concept of securing vulnerabilities being an essential condition to set before the conflict is that the PRC can take drastic measures as an autocratic governing body that does not prioritize the needs of its population. According to this argument, society can bear any amount of pain if it meets the needs of the elite and military. [M](#) Economic, energy, and food security reform contribute to a natural progression in national socialist development. The 14th Five Year Plan describes the policies and strategies of the natural evolution of developing a modern socialist system and is not a direct indicator of pending conflict. [M](#) Despite these arguments, it is very unlikely (5-20%) that the PRC will risk its economic development progress and increased international influence without a mitigation strategy in place. Reunification with Taiwan remains a stated goal of the PRC, and China will very likely set domestic conditions to endure the repercussions.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Adam S. Camarano

China Very Unlikely To Achieve Joint Forcible Entry Capabilities by 2035

Executive Summary

China is very unlikely (5-20%) to invade Taiwan due to its inability to man, train, and equip the People's Liberation Army Navy (PLA-N) with expeditionary warfare capabilities to conduct amphibious operations within the next ten years. Despite efforts to bolster the amphibious vessels of the PLA-N, the navy will not commission the three technologically advanced amphibious ships by 2025. It will not replace its outdated legacy vessels until 2035 at the earliest.

Discussion

To set favorable conditions for operational success for an invasion of Taiwan, the People's Republic of China (PRC) must build a military force based on strategic requirements to meet the country's policy objectives. The PLA-N faces challenges in manning, training, and equipping its military force to meet the forcible entry operational success principles.

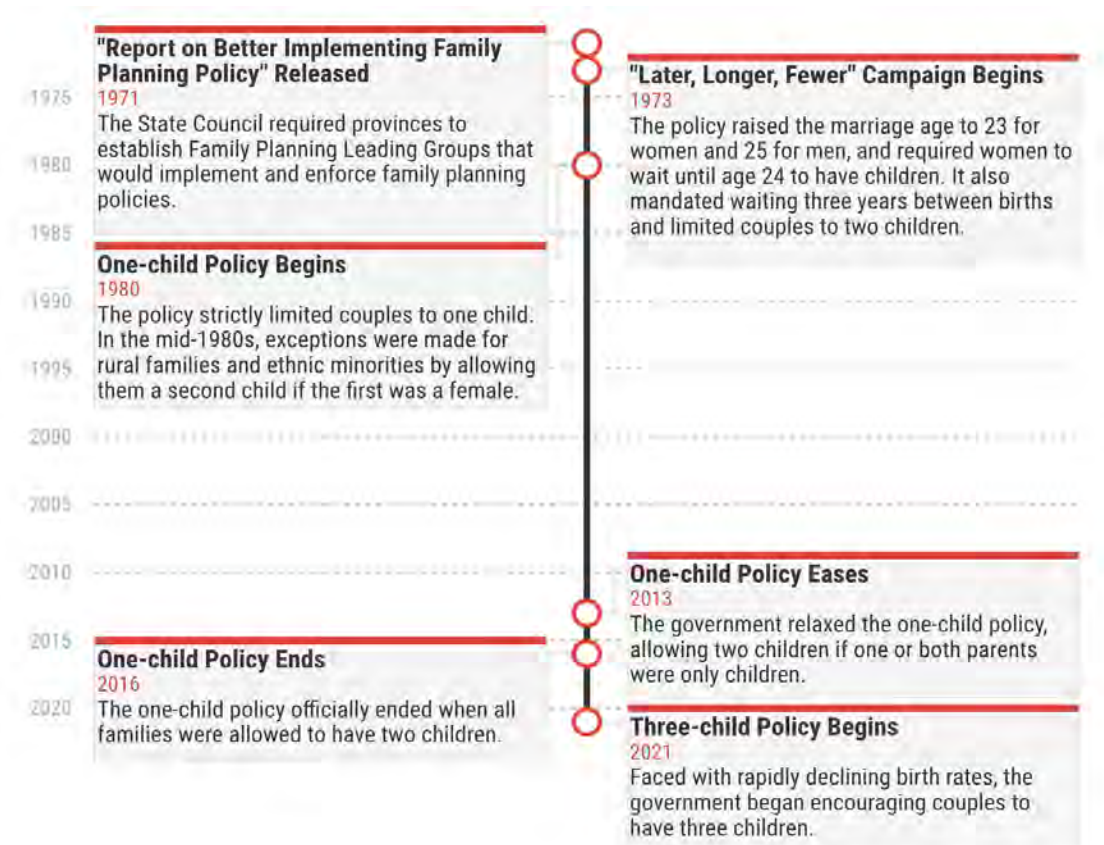


Figure 14: Timeline of Key Chinese Population Control Measures

China's current demographic trends have hampered its economic growth and created challenging social problems despite relying on its young and mobile workforce for a long time. The mounting demographic crisis points to a shortage of talent to develop and maintain a professional fighting force. **This crisis is attributed to plummeting fertility rates, a rise in its aging population, a growing gender gap, competition to recruit educated talent, and decreasing popularity of military service.** ^H The development of modern military technologies demands quality in its human capital—the ability to match its capacity to its capability to maximize effectiveness. The PLA-N faces tough decisions, economic structure, and technological developments that require adjustments and adaptation to address domestic social issues. ^M A large population and financial incentives cannot solve the problems of recruiting and retaining talent. Building and maintaining an amphibious, airborne, air assault, and special operations forces will require top-level talent capable of operating technologically advanced equipment to support their warfighting functions. The solution to their personnel management challenges will require a drastic change to their current hybrid recruitment system of conscription and volunteers and a timeline of decades or a generation in the future, not years. ^H

President Xi Jinping has called on the country's armed forces to strengthen military capability oriented towards actual combat rather than emphasizing military force capacity. The problem with Chinese military training is that they lack doctrine tested and refined through experience in combat environments. ^M



Figure 15: PLA Soldiers Conducting Battle Drills In Guangdong Province

China's lack of combat experience negatively impacts its ability to develop doctrine, tactics, techniques, and procedures to train its military force. World-class militaries require institutions, processes, and procedures that can teach the proper lessons from battlefield experience and improve their performance. ^H Additionally, they design their training approach from the top down to guide users through each step of the process; they highly centralize, script, and follow an approved plan. In particular, the navy's training focuses on the appearance of extreme discipline in its training with an abundance of structure and social mandate that stifle innovation. ^H The closed-ended training system fails to develop creativity and active leadership at every level and enhance individual and collective skills required to overcome the frictions of combat. ^M By emphasizing the size and technology of its forces over addressing gaps in training that focus on the integration of supporting operations, they have prioritized the science of warfighting over the art. As such, their military leaders and service members lack the experience and wherewithal to integrate and synchronize supporting operations to achieve strategic and operational objectives. ^H

In the maritime domain, the investment in carrier strike groups over amphibious vessels favors global power projection rather than a military invasion of Taiwan. ^M The goal of 19 amphibious ships by 2031 indicates that joint forcible entry operations are not the focus of the PLA-N. ^M The aggressive naval modernization effort expanded its naval platforms by integrating more formidable vessels with increased defensive systems and improved sensors and command-and-control capabilities. ^H Nevertheless, this effort heavily depends



Figure 16: China's Type 075 amphibious assault ships Hainan and Guangxi

on foreign technologies, and highly technically advanced naval ships deepen their dependence on semiconductor chips, creating yet another shortfall that China has yet to address. [HH](#) Finally, the state-driven civil-military fusion strategy remains aspirational in melding the commercial and military sectors to develop and acquire dual-use technology for military use. It has demonstrated success in areas such as shipbuilding; its capability to build ships at a rate that outpaces any other modern military has been impressive. While China can accelerate its ability to produce naval vessels, it cannot create the workforce to operate them effectively. However, leading technology companies appear less directly engaged in supporting defense initiatives. [M](#) In a fiercely competitive ecosystem, the commercial industry is more motivated by financial considerations and does not prioritize collaboration with the PLA.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Sung G. Kim

China Unlikely To Achieve Maritime Parity With The U.S. By 2035

Executive Summary

It is unlikely (20-45%) that China will achieve maritime parity with the United States (U.S.) Navy by 2035. Despite having the naval platforms, expanded basing in key regions, and improved training and doctrine to match U.S. maritime capabilities in East and South Asia, China cannot build the personnel depth and readiness to achieve parity with U.S. maritime capabilities due to the inability to recruit the talent needed to operate its advanced systems. [MMMMM](#)

Discussion

China is on course to develop maritime capabilities to rival or even exceed the U.S. No other nation is comparable to the People's Republic of China (PRC) in the rapid advancement of naval capabilities. [H](#) They already possess the largest navy in the world, but it is not equal to the U.S. in terms of size, capability, and overall readiness to perform global missions. This is changing, but it takes time to build a force structure with the readiness to operationalize a larger, more advanced fleet. [M](#)

To create a naval force capable of military action against Taiwan, China is building Carrier Strike Groups and improved Amphibious Assault capabilities. [MM](#) Experts project they will have five aircraft carriers and 19 Amphibious Assault ships by 2031. [H](#) That is potentially enough ships to project power outside the region but likely (55-80%) not enough amphibious assault ships to act against Taiwan. [HM](#)



Figure 17: China New Aircraft Carrier

If China decides to take military action, securing key shipping lanes for resources and energy supplies is necessary. The PRC needs to build and launch the planned naval platforms and establish additional bases along key shipping routes to protect shipping lanes. [M](#) To achieve this, China will likely establish five additional bases outside of Chinese territory by 2035 to support operations to protect key shipping lanes. [M](#) They expect to develop overseas bases for land and air forces in addition to the initial naval base expansion. [H](#)

To seize Taiwan, the PRC needs the training, doctrine, and personnel to execute the operation. The PRC published a new joint doctrine in 2020 and an updated outline of training and education in 2018. [HH](#) While still in its infancy, the training path and doctrine are potentially sufficient to execute a complex operation like the seizing of Taiwan. [H](#) The majority of soldiers in the PRC are conscripts. [M](#) With the largest population in the world, the PRC should have enough personnel to man the expanded maritime fleet. Recruiting personnel with high technical skills or aptitude to operate and lead their advanced ships, weapon systems, and other advanced technology is where China is having problems. [HM](#) The educated young are choosing higher-paying private sector jobs rather than enlisting in the military, resulting in a People's Liberation Army reliant on conscripts without the education to operate advanced systems. [MM](#)

Despite China's rapid development of a more extensive fleet of larger and more capable ships, expanding military basing in key regions to protect economic and energy resources, development and implementation of joint operational doctrine, and updated training to produce improved readiness for operations, China does not have the personnel or system to bring in the personnel to man the platforms and weapons required to execute operations on a large scale. [M](#) Advanced technology and new weapons platforms are an advantage only with the personnel trained and able to utilize them. [H](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. Due to government secrecy, obtaining detailed and up-to-date information on the PRC's capabilities and timelines is difficult. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Christopher A. Wilson

United States Export Restrictions Very Likely To Curb China's Force Multiplying Technologies Over The Next Five Years

Executive Summary

China's technology industries will very likely (80-95%) decrease production by 2026 due to their inability to maintain stockpiled inventories, produce next-generation chips, and purchase the equipment to make their chips to maintain technology production levels. Despite the Chinese Communist Party (CCP) investing billions of dollars to accelerate chip development and reduce their need for [foreign technology](#); they will likely (55-80%) coerce Japan or Netherlands not to support the United States (U.S) export restrictions on [advanced technology](#) and sell to China to meet their technology goals.

Discussion

China will very likely use lessons from the "unforgettable humiliation" the People's Liberation Army (PLA) suffered during the Taiwan Strait missile crisis in 1996, which prompted the CCP to build its own global navigation and positioning satellite (GPS) system despite the cost. [M](#) China developed its satellite-based positioning, navigation, and timing (PNT) system called Bei Dou. After 20 years, they are on their third generation of satellites and now aggressively marketing this to the private sector as part of their Belt and Road Initiative. The PLA integrated Bei Dou into its precision-guided munitions and eliminated the reliance on the U.S. and European Union-based GPS services. More than 30 countries, 400 million users, and six million vehicles use Bei Dou. China aims to use the technology and fifth-generation cellphone technologies to dominate telecommunication services, including next-generation technologies such as autonomous vehicles. [M](#) Early on, the United States (U.S.) enjoyed an unchallenged upper hand as GPS was the gold standard of global navigation satellite systems (GNSS), making other nations dependent on the U.S., like the chip technology today.

China will likely lose its competitive technology advantage by 2026 if they don't have access to next-generation chips or make its own. They have their chip foundries but supply only low-end processors used in automobiles and appliances. [H](#) China and Taiwan produce 60 percent of the worldwide manufacturing capacity of 20-45nm and will likely account for 80 percent globally in five years. China also controls 30 percent of the 50-180nm manufacturing capability and will likely climb to 46 percent in five years. [H](#) As shown in figure 18, U.S. chip designers depend entirely on foreign foundries to manufacture chips on 20-45nm nodes.

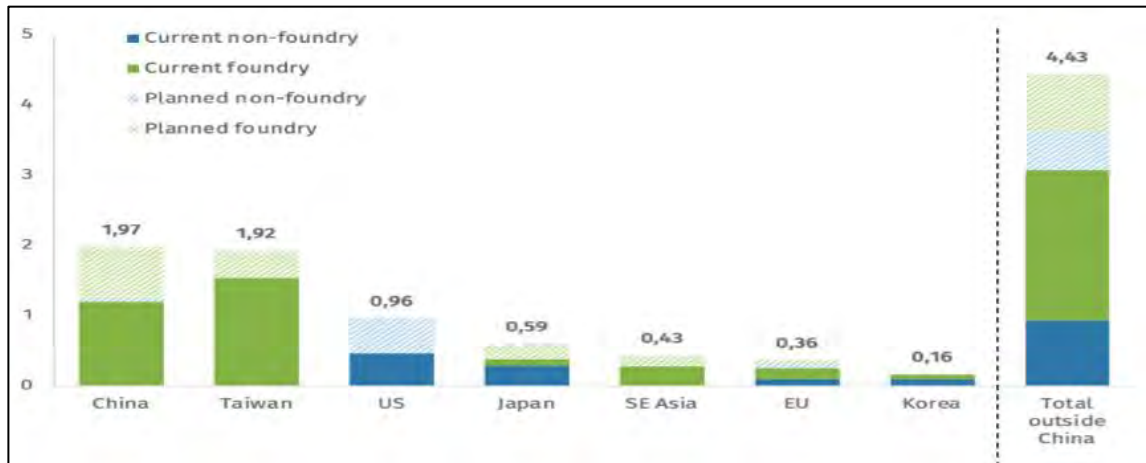


Figure 18: U.S. Relies Almost Exclusively On Foreign Foundry Capacity At 20-45nm

Advanced processor chips require 1,500 steps and technologies owned by U.S., Europe, Japan, and other suppliers. [H](#) The Communist Party is spending billions of dollars trying to accelerate chip development and reduce the need for foreign technology despite the U.S. export ban from buying machines from Advanced Semiconductor Materials Lithography (ASML) in the Netherlands and other equipment from Japan. [H](#) The Chinese military needs high-end semiconductors to develop artificial intelligence, supercomputing, [weapon development](#), and [military capabilities](#). [M](#) U.S. policymakers should recognize that China's ability to adapt allows it to bolster specific sectors of the chip industry by exploiting leaky export controls and engaging in cyber espionage. For example, the Netherlands is not fully aligned with the U.S. position on the bans on older machines and will likely continue to sell this equipment to China regardless of the ban. [M](#)

It is very likely China will take corresponding measures to counter Japan's disruptive behavior to shock the regional technology supply chain. [H](#) Japan restricts 23 types of semiconductor manufacturing equipment aligning its policy with the U.S. containment strategy to curb exports of crucial technology to China. [H](#) Japan's competitive advantage is semiconductor raw material integrated with market needs. The complementarities of China-Japan trade determine that if Japan cuts China off the technological supply chain to support the U.S., then the Japanese economy will suffer significantly. [H](#)

It is very likely the Netherlands will face the consequences if it blocks the export of high-end semiconductor equipment to China. [M](#) China accounts for 15 percent of ASML's total revenue. They sell Chinese customers less advanced machines that use deep ultraviolet light (DUV) machines which China has used for the last 10 to 15 years to make weapons technology. Since the alignment with the U.S., ASML restricts the sale of its most advanced machines, which use extreme ultraviolet light and can produce high volumes of the most cutting-edge microchips (EUV machines). The Dutch carefully weigh their commitment to

the U.S. It is not entirely on board with U.S. views of what constitutes advanced and strategically important technology. [H](#)

The Semiconductor Manufacturing International Corporation (SMIC), China's largest chip company, achieved a breakthrough in the quasi-7 nanometer process using old deep ultraviolet tooling acquired from the Dutch. This is consistent with China's history of being skilled at incremental improvements to legacy technologies such as ballistic missiles. Experts question whether SMIC's breakthrough is sustainable or scalable for production due to the low yield and high cost of using older deep ultraviolet tooling for commercial chips. [H](#) It is very unlikely (5-20%) China will develop high-end semiconductor value chains because they are simply too complex and interconnected for any one country to become self-sufficient. [M](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Robert H. Topper Jr.

China's Vulnerabilities That Could Cost Them A War If Not Addressed Prior To An Attack On Taiwan

Executive Summary

The People's Republic of China (PRC) struggles with two significant vulnerabilities for which they have yet to determine a solution. China depends on [Sea Lines of Communication](#) (SLOC) from the middle east to the Pacific that the United States (U.S.) Navy secures. More than 70 percent of China's oil and liquid natural gas (LNG) and 60 percent of the PRC's trade transit the Malacca Straits. [H](#) China is also dependent on foreign technology. Despite this known vulnerability, China has yet to determine a solution as they discuss renewable energies and electric-powered vehicles to reduce their dependency on foreign oil, which will take at least two decades to develop. [H](#) As for technology, the PRC remains dependent on foreign technology by coercing, purchasing, or stealing what they need to achieve civil and military objectives. [M](#)

Discussion

For decades and still today, China has benefited from the maritime security provided by the U.S. Navies' 5th and 7th fleets. The two Fleets operate in the Indo-Pacific and the Middle East to ensure freedom of navigation from the coast of Africa to East Asia. [H](#) Tension between the U.S. and Beijing is high as ever, and Beijing faces the reality that the U.S. Navy dominates the SLOC and is a severe vulnerability. [M](#) The Malacca Strait is a strategic choke point that the United States can use to bring China's economy to a halt. China refers to this situation as the Malacca Dilemma [M](#). China is the world's most significant oil import from the middle east, equating to 40 percent of their oil exported. [M](#) More than 70 percent of China's oil and LNG and 60 percent of the PRC's maritime trade transit the Malacca Straits. [H](#) The latest projections estimate that 2023 will be a record-setting year based on the increased amount of crude oil expected to come into the country from the Middle East since China relaxed COVID-19 travel restrictions. [M](#)

The Malacca Strait is the second most used strait based on volume globally, only behind the Strait of Hormuz. This strait is vital in maritime because it connects the Persian Gulf and the Indian Ocean. [M](#) This strait is also the shortest route from the Middle East to East Asia. Beijing is reducing its dependency on oil imports from the Middle East to mitigate this potential crisis. China is working to create alternative over-land corridors that transit through Russia, Central Asia, Pakistan, Myanmar, Turkey, and Iran. [H](#)

China's second vulnerability that persists today is its [reliance on foreign technology](#) is evident based on the large sums of money it pays to use intellectual property (see figure 19). The United States is China's number one exporter of intellectual property. China also acquires technology from foreign countries by either theft or coercion. [M](#)

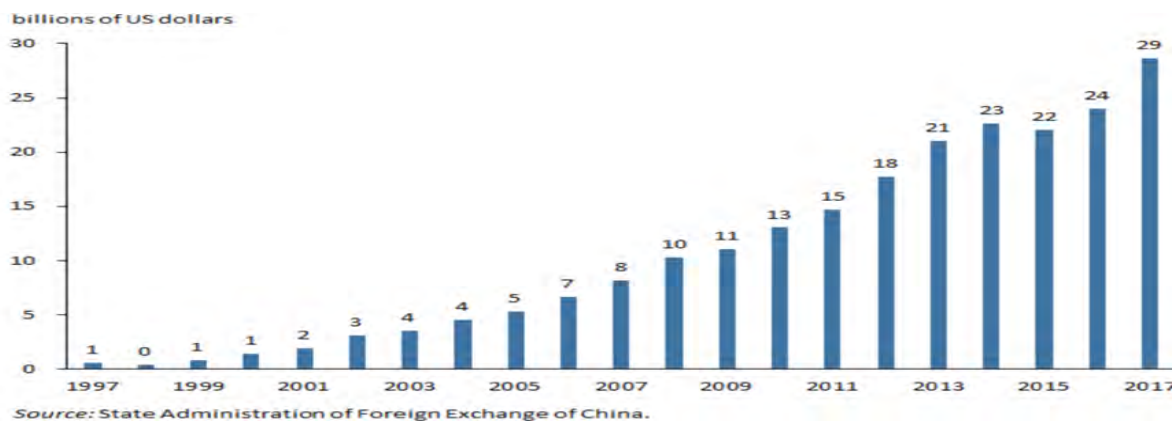


Figure 19: Chinese payments for the use of foreign intellectual property, 1997-2017

Another area where China lags in technology is domestic [semiconductors](#) production. They rely heavily on foreign technology to produce semiconductors. Semiconductor Manufacturing International Corporation (SMIC) is working to make a 3-nanometer chip to reduce their reliance. Even though they create their own chips, they still rely on foreign technology. SMIC can only produce a 28-nanometer chip for televisions and automobiles domestically. China depends on imported technology to create smartphone chips and high-tech military products. ^H To curb China's military ambitions, the U.S. restricted the sale of advanced computer chips and computer-making equipment to China. Reliance on foreign technology leaves China vulnerable to geopolitical tension, which is valid for SMIC and Huawei, who have now lost access to high-tech semiconductors. ^H This move is so significant that the actual impact is currently unmeasurable. China consumes over three-quarters of global semiconductors but only makes 15 percent of global outputs. ^H

With their dependence on foreign technology, the risk for Beijing leaves China dependent on other countries providing it with intellectual property rights, semiconductors, and capital equipment. ^H Dependence on SLOC security provided by the U.S. Navy also leaves the PRC in a situation where a geopolitical situation could jeopardize the PRC oil and LNG imports and potentially bring the Chinese economy to a halt.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: William Prince Jr.

Individual Topic Reports



Maritime Forces Capabilities and Global Power Projection

China Likely To Have Five Carrier Strike Groups By 2030

Executive Summary

The People's Republic of China (PRC) is likely (55-80%) to have five carrier strike groups by 2030. [H](#) They possesses the largest navy in the world but is rapidly growing the total number and size of its ships, focusing on producing carriers and destroyers. [MH](#) Experts estimate China will field up to five aircraft carriers and 60 mostly modern cruisers and destroyers by 2031 despite the growing cost of maintaining such a large fleet. [H](#)

Discussion

The People's Liberation Army Navy (PLA-N) has the largest navy in the world, with 355 ships and submarines. The current makeup of the fleet is primarily modern platforms designed to perform multiple roles. Recent improvements include long-range fires and anti-submarine technologies. [H](#)

Historically, China has been aggressive with its naval modernization efforts. In 1996, their surface fleet consisted of 57 destroyers and frigates. The PLA quickly expanded its naval platforms over the past decades and overtook the United States (U.S.) Navy as the largest navy in the world by the total number



Figure 20: Chinese Aircraft Carrier

of ships in 2015. [H](#) China continued modernizing and expanding its fleet even with the largest numerical navy. From 2014 to 2018, the PLA put more vessels with more tonnage to sea than several experienced naval countries combined. [H](#) From 2021 to 2022, the PLA-N commissioned seventeen non-carrier ships, including orders for destroyers, amphibious assault ships, and submarines. [H](#) On June 17, 2022, the PLA-N launched their new Chinese-designed aircraft carrier, the Fujian, bringing the total number of aircraft carriers in their fleet to three. [H](#)



Figure 21: Chinese Aircraft Carrier “Fujian” During Construction

Despite having the most ships, China does not have maritime parity with the U.S. or Japanese navies. However, projections are to achieve parity with peer competitors concerning naval platform capabilities over the next decade. Until then, the PLA-N matches or exceeds the U.S. Navy on paper but struggles with modern naval capabilities, naval airwing assets, lack of maritime operational experience, and reliance on many older naval systems. It will take China many years to overcome these deficiencies. [M](#)

China is building more ships. By 2030, experts estimate the PLA-N will have between 420 and 460 ships, including at least five operational aircraft carriers. [M](#) China distributes its naval assets across three PLA-N fleets: the Northern (Beihai) Fleet, Southern (Nanhai) Fleet, and Eastern (Donghai) Fleet. The PLA-N’s first aircraft carrier, the Liaoning, is part of the North Sea Fleet, whose area of responsibility includes Japan and Russia. The South Sea Fleet’s area of operation is from Dongshan to the Gulf of Tonkin. It operates primarily to seize islands in the area and intimidate other vessels in its area of operation. The South Sea Fleet received China’s second aircraft carrier. The East Sea Fleet’s area of operation centered on encompassing Taiwan and defending the adjacent Chinese coastal area. [M](#) The East Sea Fleet currently does not have an aircraft carrier. Their third aircraft carrier entered service in 2022 and operates independently of a specific fleet. [L](#)

| PLA NAVY ¹⁴⁷ | | | |
|---------------------------|------|------|-----------|
| Platform | 2021 | 2026 | 2031 |
| Aircraft Carriers | 2 | 3 | 5 (1 CVN) |
| Cruisers | 2 | 12 | 16 |
| Destroyers | 32 | 45 | 45 |
| Frigates | 47 | 54 | 63 |
| Patrol/Coastal Combatants | 206 | 196 | 194 |
| SSBNs | 6 | 8 | 10 |
| SSNs | 10 | 14 | 18 |
| SSKs | 46 | 44 | 49 |
| Principal Amphibs | 7 | 12 | 19 |

Figure 22: Chinese Naval Platform Numbers Over Time

The cost of maintaining a large modern fleet is high. ^H China's aspiration to expand its presence globally to protect its resources, energy supplies, and influence requires investment in its maritime capabilities and facilities. ^H The PRC is likely to invest in creating and maintaining at least five carrier strike groups to achieve its goals, despite its high cost. ^H

Analytic Confidence

The analytic confidence for this estimate is *moderate*. The sources were plentiful, and data corroborated across multiple articles. There was adequate time, but the analyst worked alone and did not use a structured method. The analyst does not have a Chinese language, military, strategy, or policy background.

Author: Christopher A. Wilson

China Unlikely Capable Of Conducting Successful Amphibious Assault on Taiwan by 2035

Executive Summary

The People's Liberation Army (PLA) is unlikely (20-45%) to conduct amphibious assaults on Taiwan due to its inability to achieve joint operations, manpower challenges, and lack of amphibious assets. Despite having the world's largest navy, the maritime component has concentrated on building aircraft carriers for global power projection rather than amphibious capabilities to invade Taiwan.

Discussion

Modernizing its defense department has enabled the PLA to increase its power projection capability. With its increased investment in domestically produced aircraft carriers, Beijing is more capable of projecting its maritime power throughout the South China Sea and beyond the region. However, in a 2022 annual report to Congress, the Pentagon assessed that the People's Republic of China (PRC) still needs to demonstrate a credible amphibious and airborne capability to invade Taiwan. [H](#)

The force's ability to conduct joint operations with other parts of China's military remains a work in progress, as does its proficiency in anti-submarine warfare, long-range targeting, at-sea resupply of combatants deployed far from home, inexperienced crews, and lack of relevant combat experience, according to the 2022 Congressional Research Service report. [H](#) An invasion of Taiwan will require an effective integration with similar ground forces and marine units; carrying out operations in complex or degraded environments; transcending their lack of relevant combat experience; and obtaining adequate air support. [M](#) The military lacks the expertise to coordinate the employment of all four services and support and logistics to support such a complex operation. Additionally, it has not conducted amphibious exercises above the battalion level and lacks the training support system to implement such training. Conducting an amphibious invasion poses several problems, requiring units to work in concert with multiple outside elements and theatre commands. Furthermore, the operational requirements of support by militia and civilian assets add to the complexity.

The PLA Navy (PLA-N) needs to have mastery of multi-dimensional domain operations in the contested maritime environment to achieve the desired effects on the battlefield. It cannot mature the force in amphibious operations due to a lack of tactical development teams, experimental units, training schools, and certification processes. [M](#) With the technological modernization of the navy, its expansion rate outpaces the service's ability to provide human capital for the crews, staff, and technical jobs ashore to maintain the maritime force. Matthew P. Funairole from the Center for Strategic and International Studies

noted that while a country can accelerate its ability to produce naval vessels, creating the workforce needed to operate them effectively is not as simple. [H](#)

China is actively building large aircraft carriers, escort cruisers, and amphibious transport dock (LPD) ships, indicating a clear shift towards blue-water naval operations and smaller expeditionary missions. [M](#) This suggests that the Chinese military is preparing to expand its capabilities and project its power beyond its shores. The Navy needs to invest in landing ships and crafts necessary for conducting large-scale amphibious operations. [H](#) To compensate for the lack of necessary ship-to-shore connectors, the PLA-N will attempt to use civilian lift vessels. However, such vessels may not be suitable in a contested environment. In an exercise in 2022, the PLA-N operated civilian car ferries to transport troops and amphibious assault crafts to develop expeditionary warfare capabilities. [H](#) China has tried to address the critical impediment to its ability to mount an all-out invasion of Taiwan by rapidly constructing three Type 075 amphibious assault ships to join six Type 071 landing platform docks already in service; its relatively modest high-end amphibious assault capabilities are a significant obstacle. [H](#)



Figure 23: Chinese Military Amphibious Exercise Integrating PLA-N And Civilian Ferries.

From an operational perspective, having modernized surface combatants and airpower to cover landing operations would be more crucial, as such capabilities for sea control are indispensable. As such, the rate at which the PLA-N acquires new assets will likely decrease to enable its forces to fully operationalize these capabilities by addressing integration and training imperatives. [M](#)

Analysis

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. Due to government secrecy, obtaining detailed and up-to-date information on the PRC's capabilities and timelines is difficult. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Sung G. Kim

China Likely To Start Using Its Naval Fleet To Protect Oil And Gas Shipments From The Middle East By 2035

Executive Summary

The People's Republic of China (PRC) is likely (55-80%) to use its naval fleet to protect its oil and gas shipments from the Middle East by 2035. [H](#) This is a change from their current strategy, where they do not currently use their People's Liberation Army Navy (PLA-N) assets to protect shipments from the Middle East. [M](#) As part of efforts to decouple from the United States (U.S.) to economically shelter themselves, they will leverage their growing maritime power and start protecting shipments of critical resources and energy products before taking any actions where the U.S. will stop providing security and freedom of navigation for their shipments. [MHH](#) This occurs despite their current reliance on relationships with Iran and other Middle East oil and gas suppliers to ensure the security of their shipments. [M](#)

Discussion

The PRC does not use its naval assets to escort oil and gas tankers from the Middle East to Chinese ports. [M](#) In 2019, the United States proposed that other nations provide maritime support to protect their oil and gas shipments from the Middle East. China is one of the nations invited to participate in this new coalition of maritime escorts. Still, the idea has yet to materialize beyond PRC officials saying they are considering the proposal. [H](#) Suppose there is a conflict where the United States opposes PRC actions against Taiwan or other activities in the South China Sea. In that case, the current security construct, where the United States Navy provides nearly all security in the region, does not guarantee freedom of the seas for Chinese oil and gas tankers.

The PLA-N does participate in some United Nations (UN) anti-piracy efforts near Africa out of their base in Djibouti. Beijing claims they've escorted over seven thousand ships during these UN operations. [H](#) However, none of the operations are to secure their economic shipments, and the anti-piracy efforts are the current extent of their known naval operations in the region. [H](#)

The PLA-N is the largest navy in the world, yet the PRC continues to build ships and shipyards to expand and modernize its fleet. [M](#) Most of the current PLA-N fleet are amphibious landing and transport ships, missile-armed coastal craft, Corvettes, and Frigates. [H](#) However, China's third aircraft carrier launched in 2022, and efforts to add Type 055 Cruisers, like United States Navy Destroyers, to the fleet are ongoing. [H](#)

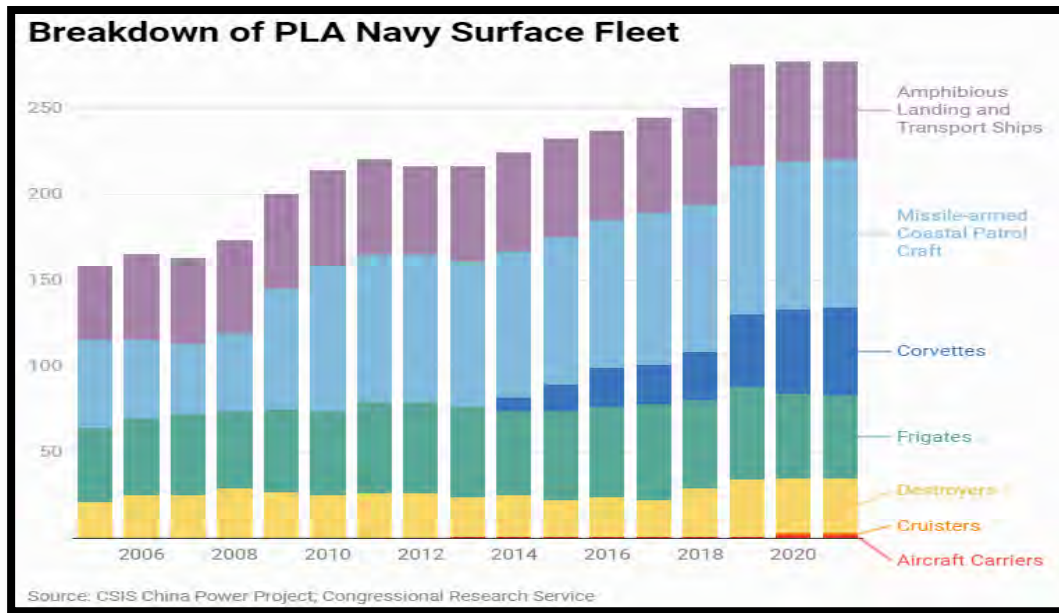


Figure 24: Current Chinese Naval Surface Fleet Composition

The PRC is investing in ships, but it is also investing in improving its base in Djibouti. The role of the Djibouti base evolved from the principal function of a logistics base to now existing as a PRC strategic force projection facility in the region. ^H Since its inception, the Djibouti base received significant upgrades to support the docking of aircraft carriers and amphibious assault vessels. ^H The execution of the UN anti-piracy missions does not require aircraft carriers and amphibious assault vessels, so the base's expansion does not support China's UN support. Djibouti is expanding its capability to support robust military operations in Africa and the Middle East. ^H

Some argue that Iran will protect Chinese oil shipments if a conflict in the South China Sea or Taiwan occurs due to the significant Chinese investment in Iran's energy sector. ^M However, the potential coalition of naval power against China in the event of war will quickly degrade Iran's ability to protect and ensure China's required energy shipments to maintain wartime and domestic requirements. The PRC will use its growing number of naval platforms and expanding support infrastructure abroad to ensure critical resource shipments from the Middle East, and Africa continue before entering a conflict where the United States opposes China. ^{HH}

Analytic Confidence

The analytic confidence for this estimate is moderate. The sources were plentiful, and data corroborated across multiple articles. The analyst does not have a Chinese language, military, or economic policy background.

Author: Christopher A. Wilson

China Likely Establish Five Permanent Military Bases Outside Its Territory By 2035

Executive Summary

The People's Republic of China (PRC) will likely (55-80%) establish five permanent military bases outside of Chinese territory by 2035. The primary criteria for site selection are proximity to China and their investments, political stability, and overall lack of current violence. [H](#) It is almost certain (95-99%) that Cambodia is the next People's Liberation Army Navy (PLA-N) base site. [H](#) The PRC will likely establish the other three military bases in Pakistan, Myanmar, Bangladesh, or Sri Lanka. Further expansion of a base in West Africa is also likely beyond 2035 despite some experts claiming the United States (U.S.) is making basing claims on speculation and political rhetoric. [HM](#)

Discussion

The first Chinese naval base opened in Djibouti in 2017 as a logistics facility to support limited regional missions such as humanitarian operations and support to the United Nations anti-piracy effort. [H](#) The purpose of the Djibouti base quickly evolved. In 2021, General Stephen Townsend, U.S. Africa Command, testified to the U.S. Congress that the base in Djibouti is evolving to support naval operations beyond anti-piracy and humanitarian assistance. The pier systems expanded to a length able to accommodate China's new aircraft carriers, signifying an expanded role for the base. [M](#)

Djibouti is only the first Chinese military base outside its territory. It is almost certain that China will build additional military bases to project power and protection of interests in the coming years. [H](#) The potential sites for other Chinese military bases are in the Second Island Chain in the Pacific, South Asia, the Middle East, Africa, and potentially South America. [H](#) An emerging mission of the PLAN is sea lane protection. [H](#) It is very likely (80-90%) that China will build additional bases in areas to enhance the security of Chinese economic interests between the Middle East and South Asia. [H](#)

It is almost certain that Cambodia is the site of the next PLA-N base. [H](#) Cambodia is desirable for basing due to its location in the South China Sea, political stability, long history of cooperation with the PRC, and its openly stated support for China's position that Taiwan is Chinese territory. [HM](#) New buildings and piers under construction at the secretive Ream Naval Base in Cambodia, as seen in recent reports and satellite imagery, suggest that the PRC will soon establish a PLA-N base there. [M](#)



Satellite imagery of Ream Naval Base from 5 February 2023, annotated to show the shape of the pier extension. Original image courtesy of BlackSky

Figure 25: Satellite Imagery of Ream Naval Base

The PRC will likely establish the other three military bases in Pakistan, Bangladesh, Sri Lanka, or Equatorial Guinea. ^H Each of these locations is desirable to the PRC for its proximity and China's investments, political stability, overall lack of current violence, and status as a Belt and Road participant. Each country passes the feasibility test for permanent PRC military basing due to each country's voting history being in alignment with Chinese interests, siding with the PRC over Taiwan, history of corruption, and history of authoritarian rule. ^H

It is also likely that the PRC will seek to establish permanent military bases in West Africa. As part of its Belt and Road Initiative, the PRC is quickly expanding its military reach globally and developing stronger trade ties with African nations. Beijing desire for Africa's natural resources and China's ability to excavate minerals on the continent are too vital for China not to expand permanent basing. ^H The recently published China-Africa Cooperation Vision 2035 does not mention military basing efforts or agreements, but this does not remove the threat of other Chinese bases in Africa. ^H The PRC's reputation for secrecy means that openly discussing military expansion to Africa could be seen as aggressive. U.S. military leadership identifies Equatorial Guinea as a specific country where China is pursuing permanent military basing. ^M Therefore, the lack of open rhetoric is unsurprising and does not implicate a status quo goal for military basing options in Africa or elsewhere.

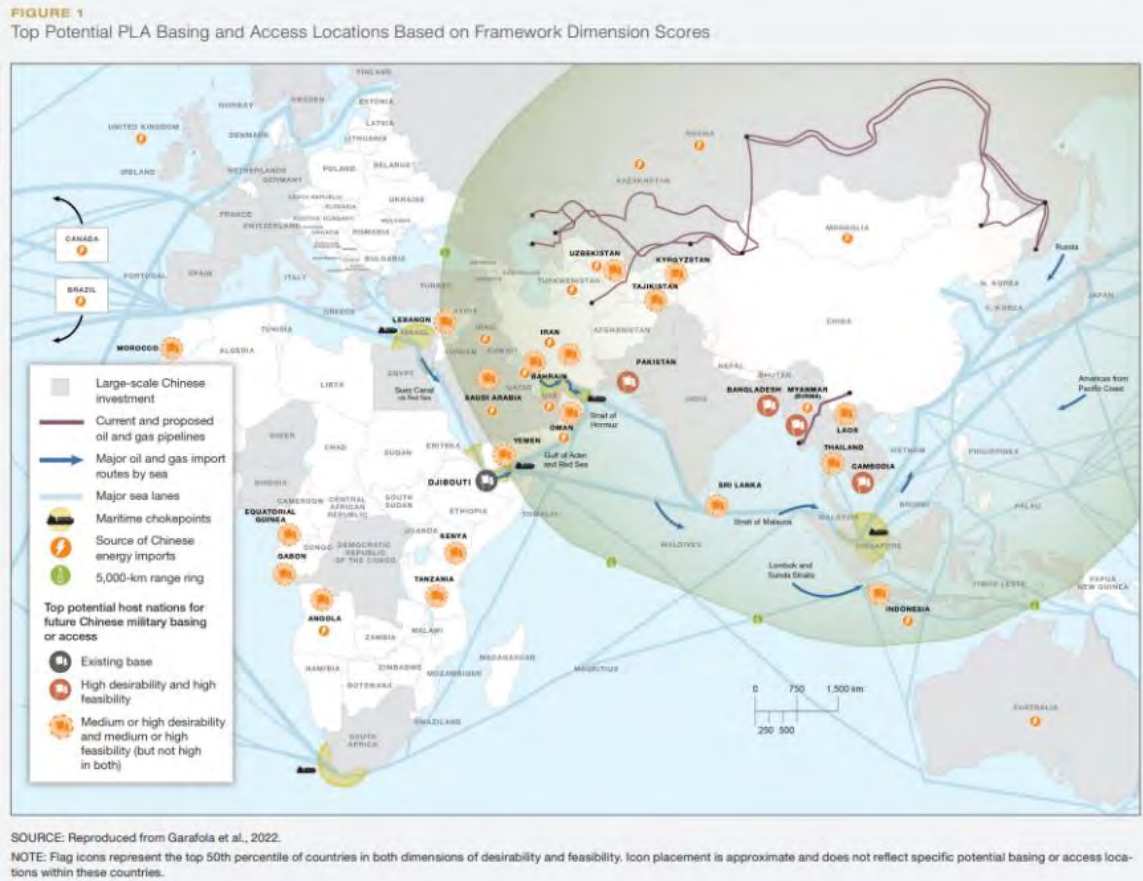


Figure 26: Chinese Global Basing Options

Some experts challenge the U.S. assertions that China is looking to expand its military presence in Africa, claiming that the U.S. arguments are speculative and political rhetoric rather than an analysis of existing evidence. ^M Most agree with the assessments that China is seeking to expand its military presence closer to its shores along key shipping lanes but claims that Beijing seeks to base in West Africa are misleading. The countering view of China's intentions in Africa does not change the assessment that it is very likely they will build bases in areas to enhance the security of their economic interests between the Middle East and South Asia rather than bases farther from their territory and primary economic sea lanes at this time. ^H

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Exact quotes or other indicators of precise PRC plans for military basing expansion are hard to find due to the PRC's levels of secrecy. The analyst does not have a background in Chinese military and economic policy.

Author: Christopher A. Wilson

Commodity Security And Resilience



不战而胜

China Likely To Stockpile Food Prior To Armed Conflict

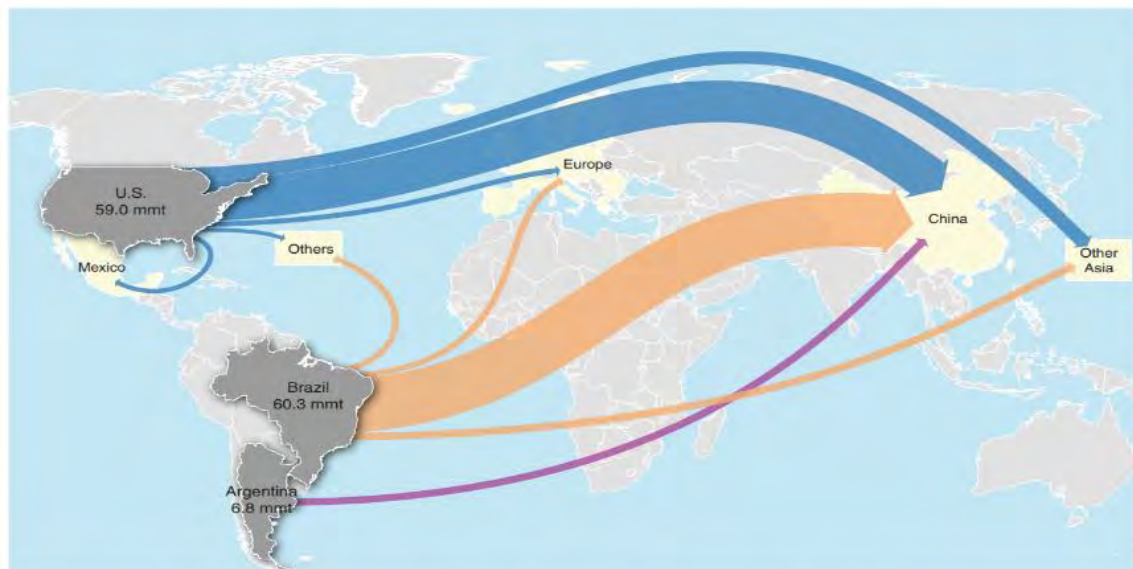
Executive Summary

China is likely (55-80%) to stockpile food and agricultural products prior to armed conflict with Taiwan due to a lack of arable land and heavy reliance on imports. Despite the focus on domestic food security initiatives, it is unlikely (20-45%) China will gain a level of agricultural self-sufficiency by 2033 due to the demand for crops exceeding the output capacity of arable land.

Discussion

China relies heavily on agricultural imports to feed its population and support domestic livestock feed. In the past several decades, rising income, living standards, and urbanization increased daily food consumption nearly double between 1965 and 2018. [M](#) This shift in dietary consumption includes a 32 percent increase in meat consumption, quadrupled soybean oil consumption, and tripled milk intake. [M](#) China has a cropland shortage of 90 million hectares due to rapid urbanization, pollution, and using agricultural land for other purposes. [H](#) The Ministry of Agriculture is mitigating the shortage by prioritizing self-sufficiency for higher-yielding crops such as wheat and rice while importing feed grains, oilseeds, food oils, meat, dairy, and processed foods. [H](#) This strategy stabilized the food gap at 100 to 150 million tons by primarily importing soybeans and feed corn, to sustain domestic meat production. [M](#)

China's largest and most essential agricultural import is soybeans, representing over 66



Note: Chart shows production of soybeans by United States, Brazil, and Argentina during 2016/17. Width of arrows represents volume of exports. mmt = million metric tons.

Figure 27: Leading Soybean Exporters and Destinations During 2016/17

percent of the global soybean market. [H](#) These imports predominantly originate from the

United States and Brazil. ^H In 2021, imports accounted for over 80 percent of soybeans consumed in China, with over 85 percent used for animal feed. ^{MM} The reliance on imported feed enables the domestic livestock market to produce and supply more than 90 percent of the meat consumed annually. ^H The United States (U.S.) Department of Agriculture forecasts for 2023 show China's total soybean consumption exceeds domestic production by 96 MMT.^M The PRC plans to increase the domestic yield of soybeans by over 40 percent by 2025; however, this is insufficient to meet annual domestic consumption requiring imports of approximately 95 MMT to meet projected demand. ^H The Chinese Agricultural Ministry recognizes the vulnerability in reliance on the U.S. for soybean imports through the tensions experienced during the Trump era trade disputes.

Armed conflict with Taiwan will very likely (80-95%) disrupt China's maritime imports of agricultural products. Chinese ports on its east coast used to import all seaborne bulk and container cargo require shipping passage through the East and South China Seas. ^H The U.S. will likely impose sanctions; however, it is unlikely that all soybean exporting countries will adopt the sanctions and continue to ship agricultural products to China. Observations of the Russia-Ukraine conflict demonstrate the potentially disruptive impacts to trade from deteriorating diplomatic relations, sanctions, and armed conflict. ^M The Ukraine conflict demonstrates a significant impact on maritime shipping, with major shipping lines such as MSC and Maersk suspending sailings in the region. Additionally, companies continuing to sail in the region raised rates exponentially due to significant increases in insurance premiums. ^H In an armed conflict with Taiwan, it is very likely that these same conditions will occur and significantly limit maritime agricultural imports.

Despite China's strategic food reserves and policies increasing domestic food production, disruption of agricultural imports will likely strain the ability to sustain the population for an extended period. The country's strategic food reserves would initially meet the minimal subsistence needs of the country; however, livestock producers would deplete feed stores in one to two years. ^M China's ability to increase its domestic crop yield will very likely take over ten years to realize significant gains.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another; however, due to the secrecy of the Chinese Government, most internal Chinese figures are estimates by Western governments and scientific and academic experts. Furthermore, due to the lengthy time of the estimate, it is subject to change and new information.

Author: Adam S. Camarano

PRC Very Likely To Increase And Modernize Its Grain Storage Capacity To Secure Its Strategic Food Reserves

Executive Summary

China will very likely (80-95%) invest in securing its strategic grain reserves through modernization and the creation of regional storage facilities. Current storage techniques are outdated, resulting in significant pre-consumption food wastage due to spoilage and infestation. Most grain reserves stored on farms in rural agriculture areas far from the consumers create inefficiency and additional wastage. Despite food security modernization being a natural evolution of a developing nation, impending conflict with Taiwan will very likely accelerate the construction of modern grain storage facilities.

Discussion

One of China’s main vulnerabilities is food security, as analyzed in the analytic report titled “[China Likely To Stockpile Food If Armed Conflict With Taiwan Is Anticipated Prior to 2033](#)”. ^M Major considerations of stockpiling grain are the ability to safely store the product and have it readily available to the population. The People’s Republic of China (PRC) will very likely modernize its storage methods and distribution network to achieve food security.

The PRC’s 14th Five Year Plan’s Food Security Strategy emphasizes the need to modernize food storage and development of regional emergency supply bases for agricultural products. ^H In March 2023, Premier Li Keqiang emphasized the importance of food storage in remarks at the annual meeting of China’s parliament by introducing policies to support the grain-producing regions and building storage facilities in suburban areas for the emergency supply of daily items. ^H

A 2020 Ministry of Agriculture report found that China annually loses more than 35 billion kilograms of grain in storage, transport, and processing, noting that despite sufficient grain reserves, the country maintains a tight balance between supply and demand. ^H A 2016 report by the Academy of State Administration of Grain in Beijing stated that rural farms store approximately 50

Table 1 The average loss ratio of farmer’s grain storage in China.

| Cereal | The average loss ratio of farmer's grain storage |
|--------|--|
| Corn | 11% |
| Paddy | 6.5% |
| Wheat | 4.7% |

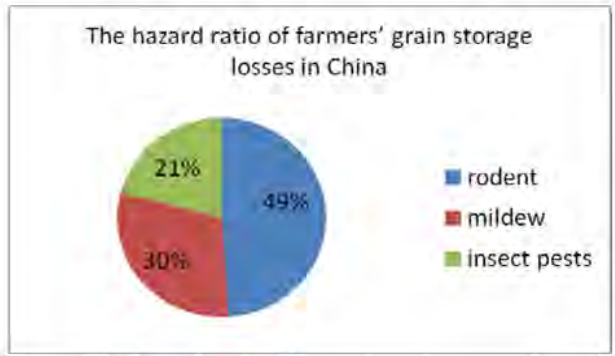


Figure 28: The Hazard Ratio Of Farmer’s Grain Storage Losses In China

percent of the total annual grain output. [H](#) The average loss rate of these farms totals 20 billion kgs or eight percent of annual crop yields, equivalent to grain output from 41 billion m² of fertile land. [H](#) This report concluded that the main cause of grain loss derived from crude storage facilities which left the crops vulnerable to rodents, birds, insects, and mildew. [H](#)

The plains in the North, the Northeast, and the middle/lower Yangtze River plain are the concentration of the PRC's domestic grain production and storage. [H](#) Although the Chinese government reports that the overall grain reserves are enough to sustain the population for over a year, the dispersion of storage in rural areas limits availability in population centers. [M](#) In a 2021 statement, Liang Yan, Deputy Head of the National Food and Strategic Reserves Administration, stated that rice and flour products in 36 big and medium-sized cities could meet the market demand for more than 15 days compared to three to six months of demand in the grain-producing areas. [M](#)

Despite the PRC's claims of sufficient food stockpiles, the COVID-19 pandemic provided evidence of the disparity between government food reserves and the ability to feed the population. [M](#) Anecdotal reports from urban centers show residents claiming food shortages inducing a sense of panic. [M](#) Based on the recent emphasis on food security, it is very likely that the PRC has recognized the capability gap and views food storage modernization as an essential condition to sustain and maintain popular support during a crisis.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. Due to government secrecy, obtaining detailed and up-to-date information on PRC food stockpiles is difficult. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Adam S. Camarano

China Likely To Expand Dry Port Capacity To Mitigate Disruption Of Maritime Trade During Conflict With Taiwan

Executive Summary

The Chinese Ministry of Transport will likely (55-80%) increase dry port capacity at international railroad border crossing sites to allow for expansion of multimodal transportation of goods. International rail cargo can provide an alternative line of communication for the import and export of bulk cargo to mitigate disruption of maritime trade due to conflict in the East and South China Seas. Despite rail cargo's demonstrated capability of increased reliability and security during the conflict, it is very unlikely (5-20%) to provide a significant alternative option without significant investment in railroad transfer stations due to system incompatibility.

Discussion

A central theme in the Central Committee of the Chinese Communist Party's (CCP) "Outline for Building a Powerful Transportation Country" focuses on multimodal transportation, particularly rail transport, along its six economic corridors. [H](#) Over the past ten years, the Silk Road Rail Routes between East Asia and Europe increased by 50 percent in volume and 100 percent increase in value transported. [H](#) Despite this increase, the throughput of rail cargo only accounted for four percent of total trade in 2020. [H](#) Maritime transport still dominates all transport methods, accounting for over 60 percent of the People's Republic of China's (PRC) global trade. [H](#) The war in Ukraine has demonstrated the disruption conflict can cause to oceangoing trade. Major shipping lines such as MSC and Maersk suspended sailings in the region, companies continuing to sail in the region raised rates exponentially, and insurance companies increased premiums adding significant costs to operations. [H](#) In an armed conflict with Taiwan, it is very likely (80-95%) that these same conditions will occur and significantly limit maritime trade to and from China. In contrast, the China-Europe freight train line continues to operate largely unaffected by the events that disrupted other shipping methods during the pandemic and the Ukraine war. [M](#)

A major restriction on the Silk Road Rail Routes occurs at China's borders. Except for the Democratic People's Republic of Korea (DPRK), all of their neighbors use different gauge railways due to historical legacies. [H](#) The PRC built transfer stations to solve this problem along its three main cargo lines in Kazakhstan, Russia, and Mongolia, which support most international rail shipments. [H](#)

Khorgos, Kazakhstan, is the gateway between the Silk Road Railway's largest line and the rest of the world. [H](#) The Khorgos dry port, completed in 2015 as part of the Belt and Road Initiative, serves as a crucial transshipment and train processing location. [H](#) The port facility project demonstrates how an investment in infrastructure can quickly expand rail

lines of communication regionally, linking Asia and Europe. The joint Kazakh Chinese project doubled the capacity of the international rail terminal and contributed to the significant growth of cargo throughput. ^H Statistics from Khorgos Customs showed that in the past five years, it took three years to increase from the first Eurasian Freight Train to 5 thousand trains; then 14 months to increase from 5 to 10 thousand and it took only ten months to increase from 10 to 15 thousand. ^H In addition to Khorgos, the China National Railway Group approved capacity expansion and reconstruction projects at three additional border points to growing rail capacity. ^H

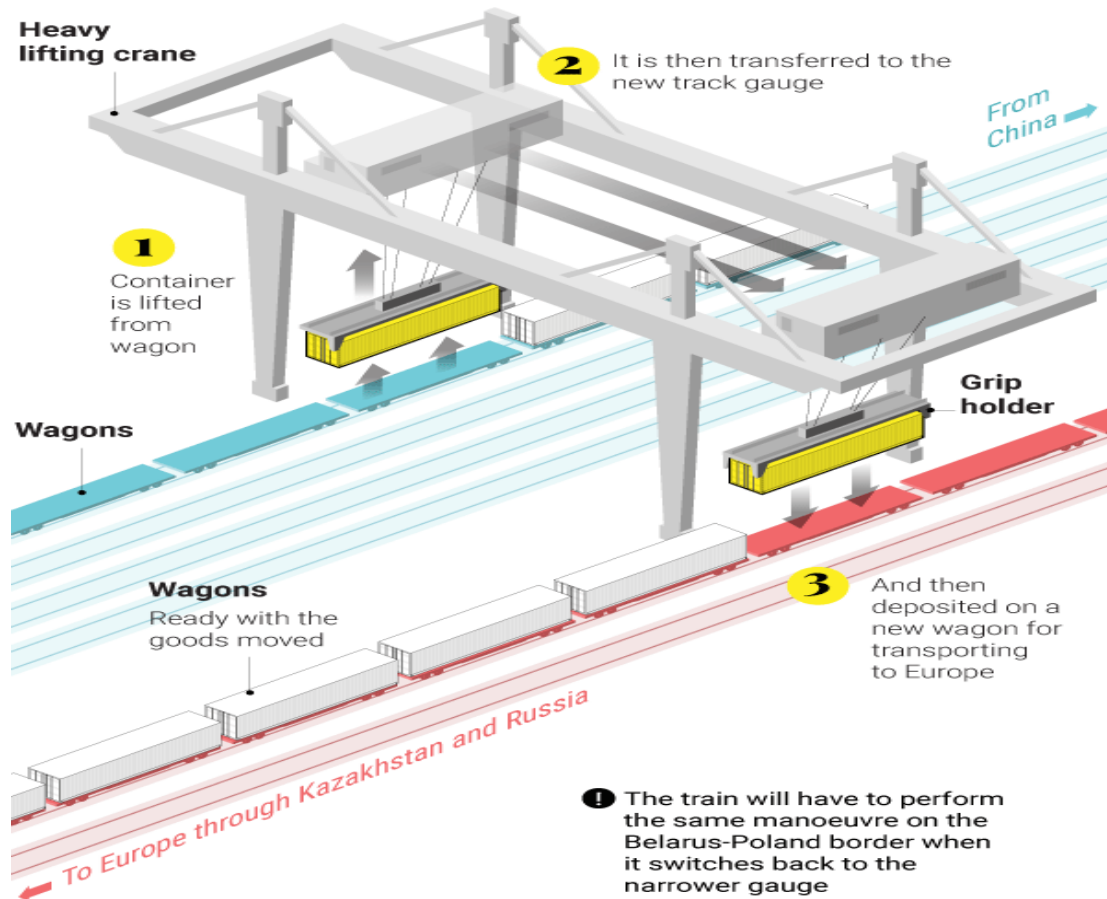


Figure 29: Gauge Change Station at Khorgos Dry Port

Despite the infrastructure expansion as seen in Khorgos, rail is very unlikely to offset the PRC's reliance on maritime trade without significant investment and construction of new rail facilities. The China Railway Group reports that China-Europe freight trains transported 1.6 million Twenty-Foot Equivalent Unit (TEUs) of goods in 2022. ^H In comparison, the port of Shanghai handled over 8 million TEUs in just the first quarter of 2022. ^H There is also evidence that despite the expansion at Khorgos, the current demand is close to exceeding the capacity of the port, with multiple cases of stagnated traffic on

the Chinese-Kazakh border. [M](#) In view of the significant difference in cargo transported by rail versus sea and the rail system operating at or exceeding the capacity of transfer points, it is likely the PRC will increase investment to rapidly build additional dry ports and transfer points prior to conflict with Taiwan.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. This report focuses on capacity and not various means of transportation. Further research analysis is required to determine the significance of the type of cargo by mode. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information and technology.

Author: Adam S. Camarano

China Is Likely To Establish Energy Security Before An Attack On Taiwan

Executive Summary

China will likely (55-80%) achieve energy security based on its 2030 energy plan. ^M The 2030 energy plan mandates that 25 percent of their energy comes from non-fossil fuels. They will reduce their dependency on coal and transition to non-fossil fuels, reducing their dependence on foreign resources and establishing an overland solution when the United States (U.S.) The Navy dominates the Sea Lines of Communication. Despite the People's Republic of China's (PRC) addiction to oil from the Middle East, Beijing's 2030 plan mandates that the PRC will diversify its energy sources. Beijing will also explore overland corridors and pipeline liquid natural gas from Russia. These initiatives will reduce the volume of oil that transit the Straits of Malacca and provide China with the desired energy security. ^M

Discussion

China is now the largest importer of oil from the Middle East. ^H The PRC surpassed the U.S. oil imports in 2017 and continues to rise. ^H Beijing imports 70 percent of the oil it uses for domestic use, and 47 percent of the oil that they import comes from the Middle East. Saudi Arabia is the largest oil supplier to China, followed by Oman, Iraq, Kuwait, United Arab Emirates, and Iran. The fact that 47 percent of the country's oil comes from one region is a vulnerability the PRC must address. ^H They use oil tankers that transit from the Middle East through the Indian Ocean, through the Malacca Straits, and finally to the South China Sea. ^H Any sanctions or a blockade on Chinese oil tankers could be a disaster for the their economy. ^H The Strait of Malacca is a strategic choke point that the U.S. can use to bring China's economy to a halt because the U.S. Navy controls it. The PRC refers to this situation as the Malacca Dilemma ^M. The PRC is working on an overland solution to transit energy from Pakistan, Myanmar, Russia, Central Asia, Iran, and Turkey. This plan requires a vast amount of coordination from the PRC. The challenge with this option is the Himalayan mountains and the instability in the region. ^M

The PRC has established a 2030 energy plan that mandates that 25 percent of its energy comes from non-fossil fuels. Across China, 30 provinces have reported exceeding the 2030 plan timeline and will meet the initial goals by 2025. In addition, the plan calls for the installation of renewable energies that include wind, solar, nuclear, and hydropower. Based on this progress, the PRC will likely increase the 2030 plan goals to produce more renewable energy domestically.

Realizing this vulnerability, the PRC has been working to reduce its dependency on foreign oil by increasing what they produce domestically for several years. ^M Beijing is also

diversifying its energy mix by investing in renewables. China National Offshore Oil Corporation (CNOOC), one of China's state-owned offshore oil companies, has increased the percentage of oil that they produce domestically. Still, the state-owned oil industry must do more to turn the tide as Beijing attempts to reduce the amount of oil imported from the Middle East. CNOOC has revealed its 2022 business strategy and development plans that call for increasing oil and gas production over the next three years, including green energy.^H



Figure 30: Offshore Oil Rig

China signed a deal with Russia to receive gas via pipeline. They have agreed to a 30-year contract to provide 10 billion Cubic meters of gas per year.^H The pipeline will connect the Far East of Russia with China's Northeast region, with service anticipated to start within two or three years (roughly around 2025).^H This new contract brings to a total of three pipelines that Russia provides to China to diversify the energy the PRC needs instead of getting most of its power from the Middle East.^H

Analytic Confidence

The analytics confidence for this estimate is moderate. Sources were generally reliable and tended to corroborate with one another. We had sufficient time to prepare this estimate. The data detailed in this estimate is solid and new data for future imports will change based on future consumption rates of China's foreign energy imports.

Author: William Prince Jr.

Economic Security



不战而胜

China Will Likely Seek Complete International Derecognition of Taiwan Before an Attack

Executive Summary

China will likely (55-80%) seek complete international derecognition of Taiwan before an attack. The People's Republic of China (PRC) aims to have the international community derecognize Taipei before attacking Taiwan because it makes the fight to reclaim Taiwan easier. ^H The decision of Honduras to cut diplomatic ties with Taipei and strengthen economic relations with the PRC shocked Taiwan and the world. ^H The question that the world is asking is who is next. What country will Beijing use its growing influence to officially cut diplomatic ties with Taiwan? That country looks like it is Paraguay. ^M Over the past two decades, while the United States (U.S.) focused on the Middle East, China was busy putting money into Latin America, investing in infrastructure and energy projects. ^H Despite China's efforts to isolate Taiwan, Taipei used unofficial relationships to maintain an international presence. The U.S. may have ended its diplomatic recognition of Taiwan in 1979, but their relationship is more vital now than ever. ^H

Discussion

The PRC believes that as more countries cut diplomatic ties with Taiwan, the economic, diplomatic, and military penalties for China will be less, and the fight to reclaim Taipei will be easier. ^H Beijing believes that as the number of countries willing to help or stand up for Taiwan decreases, the greater its isolation. ^H Having countries that officially recognize Taipei can be beneficial to a point. In October 2022, 10 of the 14 countries that recognized Taiwan formally signed and submitted a letter to the United Nations Secretary-General Antonio Guterres to object to Taiwan's exclusion from the U.N. The countries that submitted the letter and the remaining countries that have official diplomatic ties to Taipei are small and have very little influence. ^H

Honduras is the last country to cut diplomatic ties with Taiwan and strengthens economic ties with China (see figure 31). ^H Nicaragua was the latest country to cut diplomatic relations with Taiwan before Honduras. Eighth countries have cut diplomatic ties with Taiwan and established relations with Chin in the past seven years. Around the world, only 13 countries remain who continue to maintain diplomatic with Taiwan (Belize, Guatemala,

Paraguay, Haiti, Saint Kitts and Nevis, Saint Lucia, Saint Vincent, the Grenadines, the Marshall Islands, Nauru, Palau, Tuvalu, and Eswatini in Africa and the Vatican City).^H

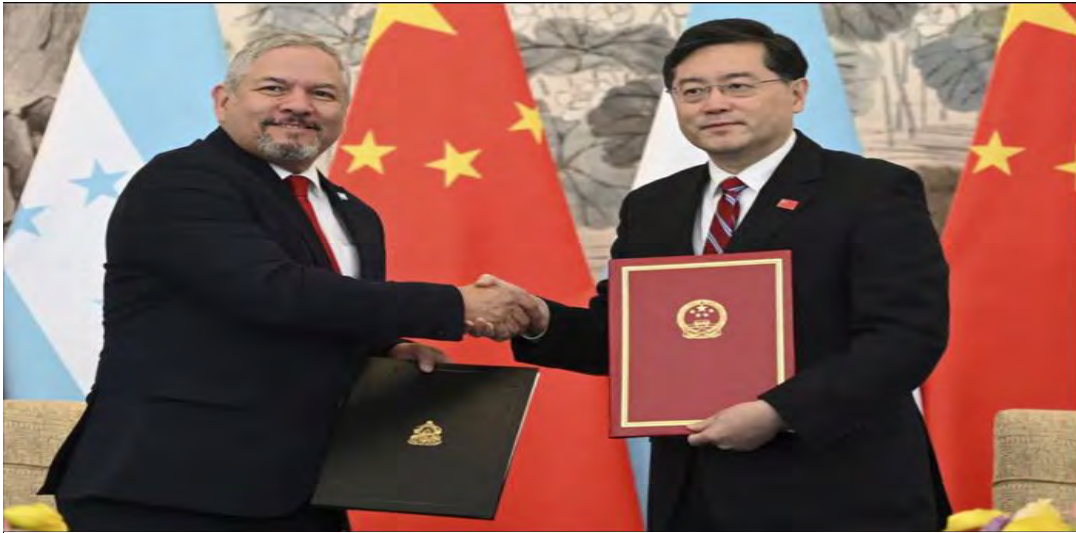


Figure 31: Honduras Foreign Minister Eduardo Garcia And Chinese Foreign Minister Wang Wenbin Shake Hands Following The Establishment Of Diplomatic Relations Between The Two Countries

The question that everyone is asking is, who is next? What country will Beijing use its growing influence to persuade to cut diplomatic ties with Taipei officially? That country looks like it is Paraguay.^M In an announcement in late 2022, the President of Paraguay, Mario Abdo Benitez, strongly urged Taipei to invest one billion dollars into the country.^H His rationale for asking Tsai to do so was based on Taipei spending USD 6 billion on countries that have cut off economic ties with Taiwan. He feels that Taiwan should take one billion from one of those countries and spend it in Paraguay.^H Tsai Ing-wen interpreted his request as paying for Paraguay's loyalty, which she refused to do. Taiwan believes that Paraguay is not 100 percent on board with staying with Taipei as he is receiving growing domestic pressure to do more trading with China instead of Taiwan.^H

Over the past two decades, while the U.S. focused on the Middle East, the PRC was busy investing money into Latin America and infrastructure and energy projects.^H Thus far, the PRC has invested USD 130 billion in Latin America and projects to spend up to USD 700 billion by 2035. For example, in Honduras, the PRC built a hydroelectric dam in central Honduras constructed by the Chinese company Sinohydro with about USD 300 million in financing from China.

To change the minds of the remaining 13 countries that maintain official diplomatic ties with Taiwan, Beijing uses a tactic known as "dollar diplomacy," defined as a country's use of economic power to further foreign policy goals.^H Taiwan President says they refuse to participate in this meaningless contest with the PRC.^H

Taiwan used unofficial relationships to maintain an international presence. The United States may have ended its diplomatic recognition of Taipei in 1979, but their relationship is more vital than in decades. The lack of diplomatic ties did not stop former House Representative Nancy Pelosi from visiting Taipei in August of 2022. A minister from Germany also visited Taipei in March of 2023. ^H Taiwan also established an exchange student program with North Atlantic Treaty Organization (NATO) for a six-month training program. ^H The U.S. military influence guarantees the safety of Taiwan. ^H The U.S. annually provides Taipei with arms sales, including advanced defensive weapons, if the PRC decides to invade Taiwan's role as the world's leading producer of advanced semiconductors, which accounts for 90 percent, keeps it immersed in the international community. Taiwan's unofficial relationships worldwide are far more important than its current formal alliances with weaker countries. ^H

Analytic Confidence

The analytics confidence for this estimate is high. Sources were generally reliable and tended to corroborate with one another. We had sufficient time to prepare this estimate. The data in this estimate is solid, and new data for future developments will be consistent with the current data in this report.

Author: William Prince Jr.

China Likely Use Economic Coercion To Deter A Cooperative Alliance With The U.S. Before An Invasion Of Taiwan

Executive Summary

China will likely (55-80%) use economic cohesion to deter Asian countries from a cooperative alliance with the United States (U.S.) before an invasion of Taiwan. Beijing's use of economic cohesion across the Indo-Pacific area of responsibility (AOR) is becoming a tool of choice for the People's Republic of China (PRC). By doing so, Beijing utilizes its economic might to influence foreign governments, organizations, and industries. ^H Despite the PRC's use of economic cohesion to persuade cooperation with the U.S. in the South China Sea (SCS), on February 2, 2023, the Philippian and U.S. governments agreed to allow the U.S. military access to 9 militaries based within the island nation. ^H

Discussion

Before an armed conflict with the U.S., China will likely leverage economic cohesion to dissuade Asian countries from cooperating with the U.S. to achieve the People's Liberation Army's (PLA) military objectives. Economic cohesion is "a threatened or actual imposition of economic costs by a state on a target to extract a policy concession," which is the method of choice for China's foreign policy. ^H Unlike economic sanctions, Beijing uses informal economic cohesion methods that allow Beijing to deny these actions officially. ^H

The PLA utilizes trade restrictions to impose their will on foreign governments' economies by restricting imports and exports. ^H Forms of trade restriction implemented by Beijing are tariff increases, license denials, targeted customs, and unofficial trade embargos (see figure 32).

| PRC Trade Coercion | | | |
|--------------------|-------|--|--|
| Country | Year | Precipitating Action | Punishment |
| Norway | 2010 | Liu Xiaobo granted Nobel Peace Prize | Curtail salmon imports; freeze FTA talks |
| Japan | 2010 | Chinese fishing captain arrested | Block rare earth exports |
| Philippines | 2012 | Confrontation at Scarborough Shoal | Block tropical fruit imports/cut tourists |
| Mongolia | 2016 | Dalai Lama visit | Impose fees on commodity imports |
| South Korea | 2016 | THAAD deployment | Boycott South Korean products |
| Taiwan | 2016* | Refusal to endorse "one China" | Restrict tourists, boycott fruit |
| Australia | 2017* | Campaign against interference/5G policy/ call for investigation into origins of Covid19 | Limits on coal, wine, barley copper, sugar, timber, and lobster imports |
| Canada | 2018 | Arrest of Huawei CFO Meng Wanzhou | Ban some Canadian agricultural goods |
| New Zealand | 2019 | Huawei blocked from 5G rollout | China-NZ year of tourism postponed |
| Sweden | 2019 | Culture Minister gives rights prize to Gui Minhai | Trade/business delegations canceled |
| Czech Republic | 2019 | Prague signs sister city deal with Taipei | Shanghai cuts ties, ends official contacts |
| United Kingdom | 2020 | UK support for Hong Kong protesters | Suspend Shanghai-London stock connect |
| Sweden | 2021* | Ban on Huawei in 5G telecom market | Reduced Ericsson's share in tender |
| Lithuania | 2021* | Taipei opens "Taiwan" office in Vilnius | Suspend rail freight, stopped trade |

*ongoing ■ successful ■ partly successful (This list is selective; there are additional cases not included)

Figure 32: PRC trade coercion

The Chinese Communist Party (CCP) used trade restrictions against Lithuania when they allowed Taiwan to open an office in Vilnius and called it the "Taiwan Representative Office" instead of the Taipei Representative Office. ^H Their actions angered Beijing, and Lithuania's exports could not get past Chinese customs. The government informed Lithuania, and the European Union (E.U) that any source items made in Lithuania exported to China would face restriction. Eventually, China restricted Germany's exports from the Chinese markets because of the Lithuanian parts they used on items they exported to China. The EU filed a claim with the World Trade Organization on behalf of Germany, Lithuania, and several other EU countries, who were too afraid to comment publicly out of fear of retaliatory trade restrictions from Beijing. ^H

Tourism Curbs are another form of economic tool utilized by the CCP to restrict their citizens from visiting a particular country. ^H This form of cohesion can drastically affect a country's gross domestic product (GDP), especially if tourism is a significant portion of their annual income. China first used this tactic against the Filipinos in 2012 when they attempted to arrest personnel from a Chinese fishing vessel illegally fishing in the Scarborough Shoals. ^H To punish the Filipinos Government, Beijing banned their tourists from visiting the area based on a false narrative of strong anti-Chinese sentiment in the Filipin and deemed the area unsafe for Chinese citizens to travel. ^H

Another form of economic cohesion the PRC utilizes is actions against foreign companies and industries. China uses this as punishment against foreign companies and industries. Beijing uses this form of trade restrictions when efforts by a company or industry go contrary to what the PRC considers acceptable or may have shamed them publicly. The Chinese government first used it in 2017 when the United States stationed Terminal High Altitude Area Defense (THAAD) anti-missile systems on the Korean peninsula. ^H As punishment, the CCP rejected all Korean lithium batteries from L.G. Chem and Samsung SGI battery production companies. ^H The following year, China used the same tactic to punish Western airlines for identifying Taiwan as a country on company websites, and China threatened to act against them. ^H In 2019, once again, the CCP threatened to ban digital streaming of the Houston Rockets games in China because the Houston Rockets manager verbally expressed support for the Hong Kong protests. To avoid a loss of revenue, the NBA issues an official apology to the Government of China. ^H

Analytic Confidence

The analytics confidence for this estimate is high. Sources were generally reliable and tended to corroborate with one another. We had enough time to prepare this estimate. The data in this estimate is solid, and new data for future developments will be consistent with the current data in this estimate.

Author: William Prince Jr.

China Very Likely To Enact Strict Emigration and Monetary Transfer Controls Prior To Conflict With Taiwan

Executive Summary

The Chinese Communist Party (CCP) will very likely (80-95%) institute strict emigration and wealth transfer policies prior to conflict with Taiwan. Wealthy Chinese are leaving for more stable countries due to fear for the future of their wealth and personal safety, conditions which will likely (55-80%) worsen under a spectrum of conflict with Taiwan. President Xi Jinping will use his complete control of the CCP in line with the Common Prosperity Policy to preserve capital and influence in its borders through regulation and coercion as increasing tensions threaten economic and social stability. Despite the People's Republic of China (PRC) beginning a cultural shift towards more traditional socialism, preparations for war in the next ten years will very likely see more severe controls to retain capital and wealthy influence.

Discussion

The 20th National Congress of the CCP affirmed President Xi Jinping's power and dominance as China's core leader and "Chairman of Everything." [H](#) Xi is increasing efforts to consolidate control over the country's public and personal wealth in line with the long-standing Common Prosperity Policy. The 14th Five Year Plan for national economic and social development, published in March 2021, outlines goals for greater government control of the economy, wealth distribution, increased taxation, and restrictions on the wealthy. [H](#) There is evidence that the Chinese population sees Xi's policies as instituting a dramatic social change aimed at remaking their society. [M](#)

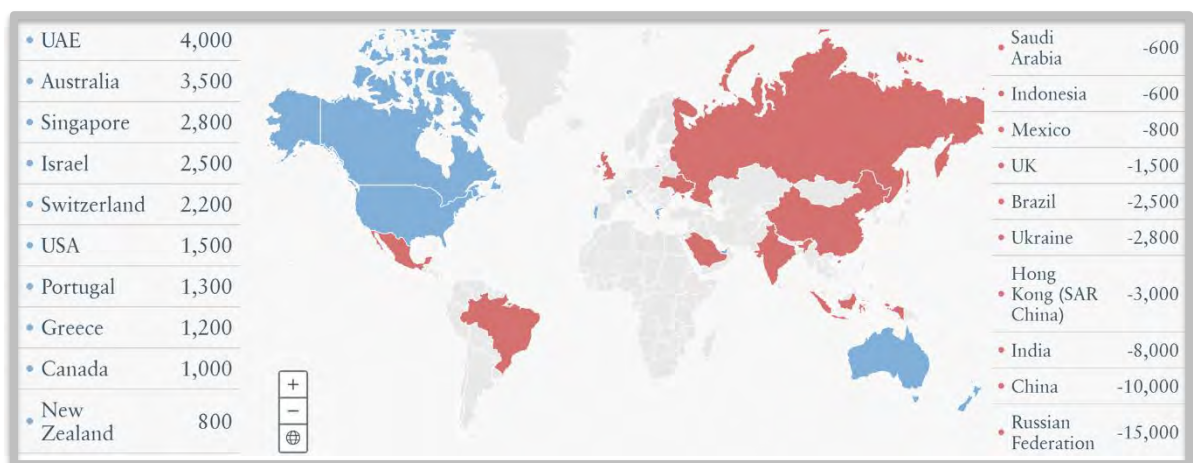


Figure 33: Projected Net Inflows and Outflow of High-Net-Worth Individuals in 2022

The changes in the PRC's approach towards the Common Prosperity Policy create tension with its wealthy citizens, highlighted by Xi's August 2021 remarks it was "necessary to

regulate excessively high incomes and encourage high-income people and enterprises to return more to society. [H](#) Wealthy Chinese, nervous about the future of their individual wealth, have begun looking for safe havens to protect their fortunes. [M](#) New World Wealth, a global intelligence partner of the immigration consultancy Henley and Partners, projected that over 10 thousand high net worth individuals (HNWIs) emigrated from China in 2022, second only to Russia. [H](#)

The Rhodium Group, an independent research firm focusing on Chinese economic issues, projects conflict would disrupt more than USD 270 billion in trade between Beijing and the rest of the world without accounting for the impacts of sanctions. [M](#) Additionally, foreign investors are likely to sell off Chinese securities as tensions rise, like the lead-up to the Ukraine conflict. By February 24, 2022, the Russian MOEX stock index fell 30 percent from its October 2021 peak. [H](#) A similar sell-off would hold hundreds of billions of dollars at stake and would very likely trigger Beijing to implement strict capital controls, preventing money movement out of China.

The PRC has a recent history of employing strict government regulations to control and influence its population and wealth. If China plans or foresees conflict with Taiwan, Beijing will very likely implement more restrictive controls on monetary flow, international travel, and dissenting opinions from the wealthy elite. China's closed capital account policy prevents money from freely moving into and out of the country unless it abides by strict foreign exchange rules, which take two to three months to navigate. In a recent interview, [H](#) Mark Mobius of Mobius Capital Partners discussed his challenges in extracting his investment money from HSBC in Shanghai due to the capital account policy. [H](#) In addition to its restrictive monetary policies, the PRC employed coercive tactics to exert control over billionaires who possess the potential to wield considerable power and influence. [M](#) Over the past decade, highly influential businesspeople such as Jack Ma of Alibaba, tech industry deal maker Bao Fan, and real estate tycoon Ren Zhiqiang mysteriously disappeared after making critical remarks regarding President Xi and his policies. [M](#) The COVID-19 pandemic and China's Zero COVID-19 Policy demonstrated the capability of the government to ban its citizens from traveling. [H](#)

Suppose the PRC implements strict controls on the wealthy. In that case, it may likely signal a commitment towards a cultural shift from an era of wealth-building to a more traditional socialist ideology of Common Prosperity. With Xi's solidification as the CCP's leader, he will likely maintain a base of power to implement the National Economic and Social Development Plan fully. [H](#) Despite explaining a natural progression towards socialism, it is very likely that the government will impose severe monetary and emigration controls to preserve capital, maintain control over the wealthy and influential population, and shape the narrative of popular support for the party.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another; however, sources tended to derive analysis from a Western cultural perspective and may not fully consider Chinese perspectives across economic demographics. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Adam S. Camarano

Increase in Defense Spending Very Unlikely to Increase People's Liberation Army Readiness

Executive Summary

The People's Liberation Army (PLA) is very unlikely (5-20%) to increase its military readiness due to the population decline, increase in the ratio of retirees to the working population, and lack of ability to recruit the highly educated. Despite economic growth of five percent and expansion of its dense budget by seven percent in 2023, it is very unlikely that the readiness of the PLA will increase due to the quality of its human capital to keep up with technological advances.

Discussion

China's military envisions a professional fighting force, but its main challenge is recruiting, training, and retaining servicemembers with the capacity to maximize technological advances. ^H The struggle is a direct result of its one-child policy and reverberating effects. Although the military has made significant progress in developing modern military technologies, the quality of its human capital is struggling to keep up with its technological advances. ^H The PLA is unable to recruit from the highly educated to operate and maintain sophisticated equipment. The country experienced impressive economic growth and the rise of large and successful state-owned and private companies for decades. The PLA found it very hard to compete with the civilian sector, which pays better salaries and does not impose the same disciplinary obligations. ^H

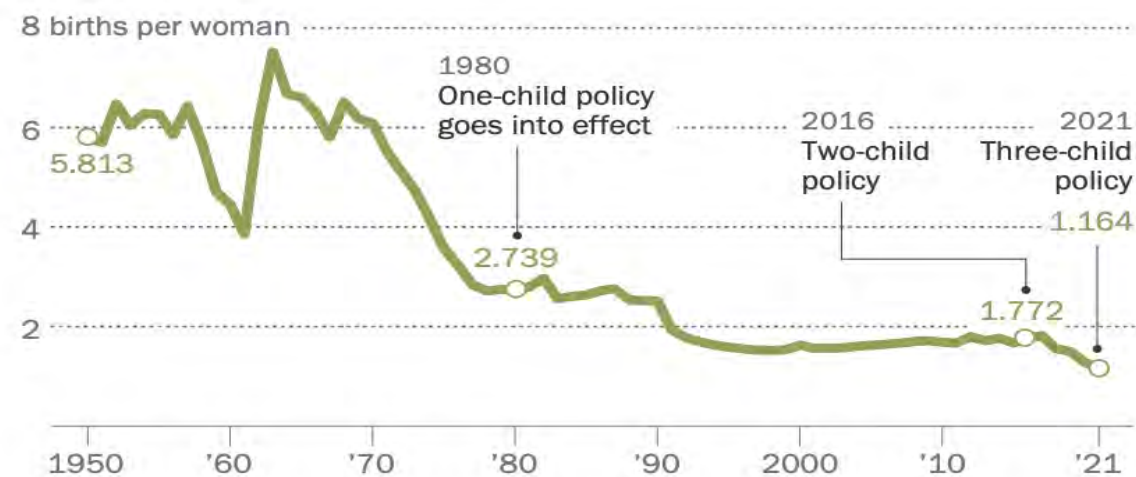


Figure 34: China's Fertility Rate Has Decreased Precipitously In Recent Years, Despite Its Loosening Of The One-Child Policy

The population plummeted by 850 thousand to 1.4 billion in 2022, down from the previous year. [H](#) Fewer children simply mean fewer soldiers, conscripts, non-commissioned officers, and officers. Additionally, the one-child policy has created a situation in which one child has to look after two parents. As a result, many families are reluctant to see their children follow a military career. [H](#)

As its population ages, the ratio of retirees to working people increases. In 2016, the country had 16 retirees per 100 working people. Based on current projections, by 2050, it will have 64 retirees per 100 working persons. Although Beijing has relaxed the one-child policy, it will take years to reverse its effects. [H](#)

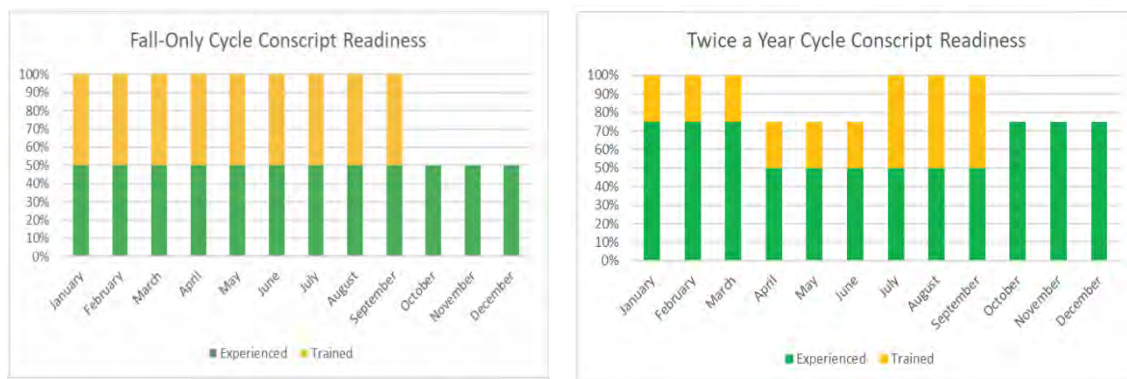


Figure 35: Fall-Only System Allows For 50 Percent Conscripts Available To Support Basic Combat Operations Vs. The Twice-A-Year System Which Is Projected To Have 75 percent Conscripts

President Xi Jinping and senior military leaders agree that fixing the PLA's people problems is at the core of increasing combat readiness and becoming a world-class military. Due in part to social factors beyond their control, the timeline to solve the personnel management challenge is decades or a generation in the future, not years. [H](#)

China's science, technology, engineering, and mathematics (STEM) workforce is insufficient in quantity and quality to meet demand, and pervasive gender inequality might exacerbate potential labor shortages. [H](#) "The Chinese economy is entering a critical transition phase, no longer able to rely on an abundant, cost-competitive labor force to drive industrialization and growth," said HSBC chief Asia economist Frederic Neumann. [M](#) China's economy is already in trouble, expanding by just 3 percent in 2022 – one of the worst performances in nearly half a century due to months of COVID-19 lockdowns and a historic downturn in the property market. [H](#)

As China plans to use force, its officials will announce implementing a PLA-wide stop loss, halting the demobilization of enlisted personnel and officers. Additionally, the PLA would end most regular training and perform maintenance on virtually all major equipment three to six months before a future invasion. [H](#)

Analytic Confidence

The analytic confidence for this estimate is moderate. Sources were generally reliable and consistently corroborated with one another. However, the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame and measure of the effectiveness of contributing factors, this report is sensitive to change due to underminable factors that may contribute to its outcome.

Author: Sung G. Kim

China Almost Certainly Insulate Itself From U.S. Sanctions Before An Invasion Of Taiwan

Executive Summary

China will almost certainly (95-99%) insulate itself from United States (U.S.) sanctions before an invasion of Taiwan. They learned a few lessons from Russia's failures and seeks to pre-empt U.S. Sanctions. ^H The Chinese Communist Party (CCP) established an anti-foreign sanction law that allows Chinese authorities to develop countersanctions on entities deemed harmful to their country. The U.S. possesses two of the world's most powerful sanctions. Despite the People's Republic of China's (PRC) efforts to insulate themselves from U.S. sanctions, sanctions rarely change the minds or ideology of the targeted regimes. ^M History shows that the use of weaponized sanctions is very limited. Sanctions alone are unlikely to achieve the effects the United States desire. ^M

Discussion

The PRC seeks to pre-empt U.S. sanctions in the situation of a clash with Taiwan. Beijing learned a few lessons from Russia's war with Ukraine and saw first-hand the effect of U.S. sanctions on Russia. As China seeks to insulate itself from U.S. sanctions, they realize the jointness of the U.S. and Chinese economies. If the PRC does not act now, what happened to Russia will eventually happen to the PRC, but with more significant consequences. ^H Tensions between the Washington and Beijing are so high right now as Western businesses restrain from public criticism of Chinese politics as a reduction strategy. ^H The U.S. believes that China is not ready to invade Taiwan yet. The U.S. acknowledges China learned a few lessons from Russia's mistakes about what happens when you overplay your hand or overestimate your current capabilities. ^H

In June 2021, the PRC established an Anti-Foreign Sanctions Law. This law allows Chinese authorities to develop countersanctions on harmful entities. ^H This law also enables China to sanction foreign U.S. companies that operate within their borders. This includes Apple, McDonald's, and Starbucks, which currently have stores and factories across China. China's goal when sectioning foreign entities is not just for financial gain but more of a signal to the organization that the CCP is not pleased with its actions. ^H The Anti-Foreign Sanctions law forces companies to choose between access to either the Chinese or U.S. markets. Companies can also file for losses because of the U.S. Sanctions. This law also forbids Chinese companies' compliance with U.S. Sanctions. ^H

The United States alone possesses two of the world's most powerful sanctions. The first of those sanctions is the ability to shut countries out of the dollar and global capital market. The second most powerful sanction in the world is the U.S. control of high-tech components, which can completely shut a county out of that market. ^H China has a

technology vulnerability and depends on foreign technology (see figure 36) to fulfill its military and domestic needs. China's sanctions can only affect domestic markets or trade-related restrictions. ^H To determine their vulnerability to U.S. Sanctions, China ordered a stress test to prepare for the effects of potential U.S. Sanctions. A stress test aims to identify the vulnerable areas and their potential impact and develop workarounds. ^H To ensure the loyalty of senior government and military personnel, the CCP barred them from maintaining funds in foreign banks or owning foreign property to prevent the U.S. from seizing their personal property abroad. ^H

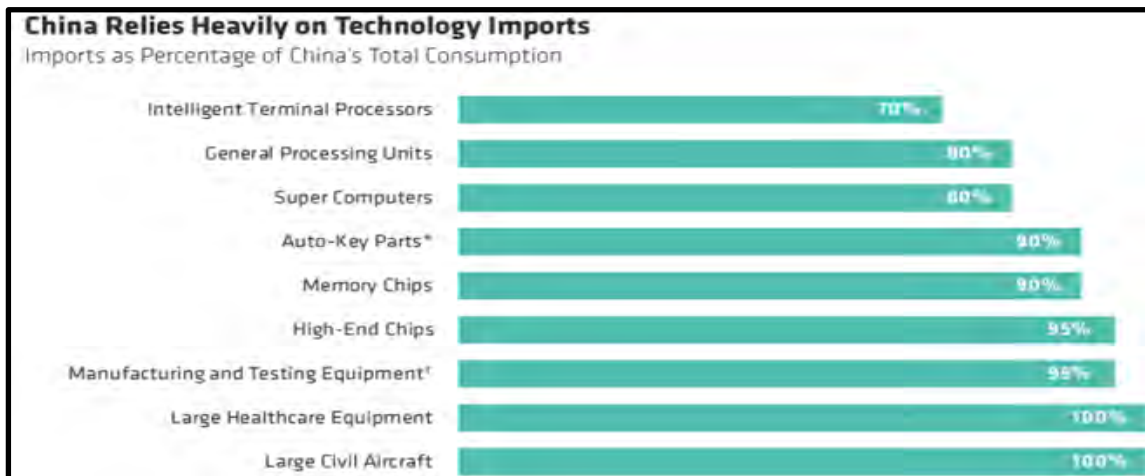


Figure 36: China Relies Heavily On Tech Imports

Analytic Confidence

The analytics confidence for this estimate is high. Sources were generally reliable and tended to corroborate with one another. There was adequate time given to put this estimate together. The data in this estimate is solid, and new data for future developments will be consistent with the current data in this report.

Author: William Prince Jr.

China Likely To Increase Renminbi Internationalization To Evade United States Sanction

Executive Summary

The People's Republic of China (PRC) will likely (55-80%) increase the internationalization of the Renminbi (RMB) to evade sanctions in the event of a conflict with Taiwan due to the increased use of the Cross-Border Interbank Payment System (CIPS), their digital currency, the Yuan's growing prominence as a reserve currency, and lessons learned from the Russia-Ukraine conflict. Despite the United States' ability to impose and monitor sanctions using the Society for Worldwide Interbank Financial Telecommunications (SWIFT) system, the current dominant reserve currency is the dollar.

Discussion

The three pillars of U.S. financial hegemony are the U.S. dollar, SWIFT, and the Clearing House Interbank Payments System (CHIPS). [M](#) SWIFT is a global secured messaging system that allows banks to communicate with each other efficiently and cheaply. It has over 11 thousand participating institutions in 200 countries. [H](#) CHIPS clears and settles both domestic and cross-border U.S. dollar transactions and connects to SWIFT for cross-border messaging.

In response to Russia's attack on Ukraine, the U.S. and a coalition of cooperating countries imposed financial sanctions on the Russian government, corporations, and individuals. These sanctions bar Russian banks from using SWIFT to facilitate cross-border payments, prohibit banks from doing most forms of business with Russian entities, and freeze assets held abroad by the Central Bank of Russia in treasury securities and bank deposits. [H](#) In 2015, a year after Russia annexed Crimea, Beijing created its first version of CHIPS to evade U.S. and European Union sanctions. The People's Bank of China (PBOC) created CIPS to complement the Yuan. [H](#)

China is very likely (80-95%) looking to alter the status quo away from the dollar by pushing the Yuan even more aggressively into the world stage with the use of CIPS. [H](#) Direct participants can message one another through either messaging system. SWIFT sends and receives instructions from indirect participants, and 80 percent of CIPS payments use SWIFT messaging. Today, over one thousand institutions and 103 countries use China's system well behind the international system, but the constraint is not because of the capacity of the messaging system but non-Chinese institutions' translators for messaging. [H](#) More banks worldwide will likely join CIPS as a contingency plan.

With a two percent share, the RMB positioned itself as the fifth most active currency for global payments by value. [M](#) SWIFT data shows that the dollar remains the most active currency for global payments accounting for 41 percent of global payments in February 2023, followed by the Euro, the British Pound, the Japanese Yen, and the Renminbi. [H](#) Financial institutions, such as Citigroup and Goldman Sachs, predict that the Yuan will very likely become the third-most-used currency in international payments and as a reserve currency by 2030. [M](#)

China is very likely collaborating on de-dollarization – the process of reducing an economy's reliance on the dollar for international trade and finance. Moscow is rapidly intensifying its use of the Yuan in two main ways: increasing its share in Russia's reserves and switching to direct Ruble-Yuan trade instead of using the dollar as an intermediary. Russia is the first large economy to embrace the Yuan this way, allowing the PBOC to experiment with financial and monetary policies in a controlled environment while easing the Yuan into a more international role. [M](#)

In August 2023, at Brazil, Russia, India, China, and South Africa (BRICS) leadership summit, they will likely announce the transition to a digital or alternative form of groundbreaking digital currency soon backed by not only gold but also by other assets, including rare-earth elements or even land. Several other countries intend to join the economic bloc, including Argentina, Iran, Indonesia, Turkey, Saudi Arabia, and Egypt. [H](#) China will very likely recommend the use of its digital Yuan. The digital Renminbi, or e-CNY, is a digital version of China's sovereign currency created in 2014. It is not a cryptocurrency like Bitcoin but is issued and controlled by the PBOC. [H](#) today, Russia, Iran, and Brazil trade in RMB using CIPS, ditching the dollar as an intermediary. Saudi Arabia is considering accepting Yuan instead of dollars for Chinese oil purchases after a 48-year relationship solely with the dollar for oil sales. [M](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Robert H. Topper Jr.

United States Likely To Remain The Security Partner Of Choice In South And East Asia Beyond 2035

Executive Summary

The United States (U.S.) is likely (55-80%) to remain the security partner of choice in the South and East Asia regions beyond 2035. This is due to recent basing agreements with the Philippines, the new agreement between the U.S., the United Kingdom (UK), and Australia to build and operationally rotate nuclear-powered submarines in the region and improving relations between Japan and South Korea. The U.S. remains the security partner of choice in the region despite China's attempts to use economics to coerce its neighbors to abandon U.S. security agreements.

Discussion

The recent expansion of the Enhance Defense Cooperation Agreement (EDCA) between the U.S. and the Philippines provides conditions to expand the permanent basing of U.S. service members and equipment at four additional locations. The stated purpose of the expanded presence of the U.S. military is to forward base disaster relief and

humanitarian response forces while simultaneously expanding interoperability and training opportunities between U.S. and Philippine military forces. [M](#) The Philippines Defense Secretary Carlito Galvez Jnr insists the expanded basing agreement enhances security and does not exist to prepare for a war with any neighboring country. [M](#) With the EDCA expansion, the U.S. has nine military sites strategically situated across the Philippine islands. [H](#) Under the agreement, the U.S. can rotate military personnel into the locations, build facilities as needed, and operate those facilities as necessary. [M](#)



Figure 37: U.S. Philippine Basing Announcement Video

On March 13, 2023, the White House released a fact sheet on the Trilateral Australia-UK-US Partnership on Nuclear Powered Submarines. [H](#) This partnership demonstrates a significant change in Australia's defense capabilities and aims to provide nuclear-powered submarines to the Australian Navy as soon as possible. [H](#) Another significant change highlighted by this agreement is one of force posture. The agreement provides for the rotational deployment of U.S. and UK submarines to a naval base in Western Australia to increase the speed of allied deterrence in the region. [H](#) This is a shift in Australian U.S.

relations by Australia taking a significantly more active role in supporting U.S. military operations in the region. [H](#)



Figure 38: Chinese Reaction to AUUKUS Agreement Video

Improving relations between the Republic of Korea (ROK) and Japan illustrates another example of improved U.S. influence and security posture in the region. On March 5, 2023, the governments of ROK and Japan announced, "the de facto resolution of their dispute over wartime conscripted labor-a major achievement that signals the arrival of a durable and much closer partnership between Seoul, Tokyo, and Washington." [M](#) Republic of Korea and Japan have a long way toward a regional security partnership. However, resolving their conscripted labor dispute provided the basis for the first meeting in twelve years between leaders of the ROK and Japan. [H](#) During this meeting, South Korean President Yoon Suk Yeol, and Japanese Prime Minister Fumio Kishida met in Tokyo where "intelligence sharing, the resumption of bilateral security dialogues, suspended since 2018, and, potentially, the establishment of an information-sharing framework on Democratic People's Republic of Korea (DPRK) ballistic missile launches" occurred. [M](#) Improved relationship between two U.S. allies in the region further bolsters the U.S. as the security partner of choice in the region.

The U.S. and most U.S.-aligned allies and partners praise the efforts to improve forward positioning in the U.S. Indo-Pacific Command region. However, not all regional leaders agree that an expanded U.S. presence benefits security. Some Philippine lawmakers argue that the expanded U.S. presence is for the potential defense of Taiwan rather than the role of security partner, as stated. Malaysian Prime Minister Anwar Ibrahim believes that added

U.S. presence in the region "would escalate tensions between China and other claimants in the disputed waters." [M](#) The Philippines Defense Secretary Carlito Galvez Jr expressed his understanding of the differing opinions but insisted his focus is on ensuring Philippine security. The U.S. basing agreement accomplishes this requirement. [M](#)

Despite China's efforts to coerce neighbors from entering security agreements with the U.S., their own aggression in the region is pushing neighboring countries toward the U.S. and the security it can provide. [HH](#) Recent incidents of Chinese naval elements using lasers on Philippine vessels and efforts to stop Vietnam from drilling on islands under disputed claims damage efforts to push the U.S. out of the region. [MMH](#) As a result, the U.S. position as the security partner of choice is strengthening as China's hostile actions toward their neighbors persists.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. The analyst does not have a background in East and South Asia security issues.

Author: Christopher A. Wilson

Vietnam Very Likely Remains Neutral In Any Conflict Between China and the United States

Executive Summary

It is very likely (80-95%) that Vietnam remains neutral in any conflict between China and the United States (U.S.) due to disputes over Taiwan's independence or issues in the South China Sea. [MH](#) Despite increased Washington and Beijing's diplomatic, military, and economic engagement with Vietnam, including the recent Chinese-Vietnam technology cooperation, it is also very likely that Vietnam does not allow military basing of Chinese or U.S. personnel or equipment in their territory. [MHMMM](#)

Discussion

Vietnam is not taking a side in a potential conflict between the U.S. and China. [MM](#) It maintains its economic cooperation policy with both nations while explicitly stating that neither side can base military personnel or equipment in its territory. [M](#) It retains its One China policy toward Taiwan and openly designates China as its most important strategic partner. [MM](#)



Figure 39: Chinese President Xi Jinping Is Greeted By The General Secretary Of The Communist Party Of Vietnam Central Committee In Beijing, November 2022

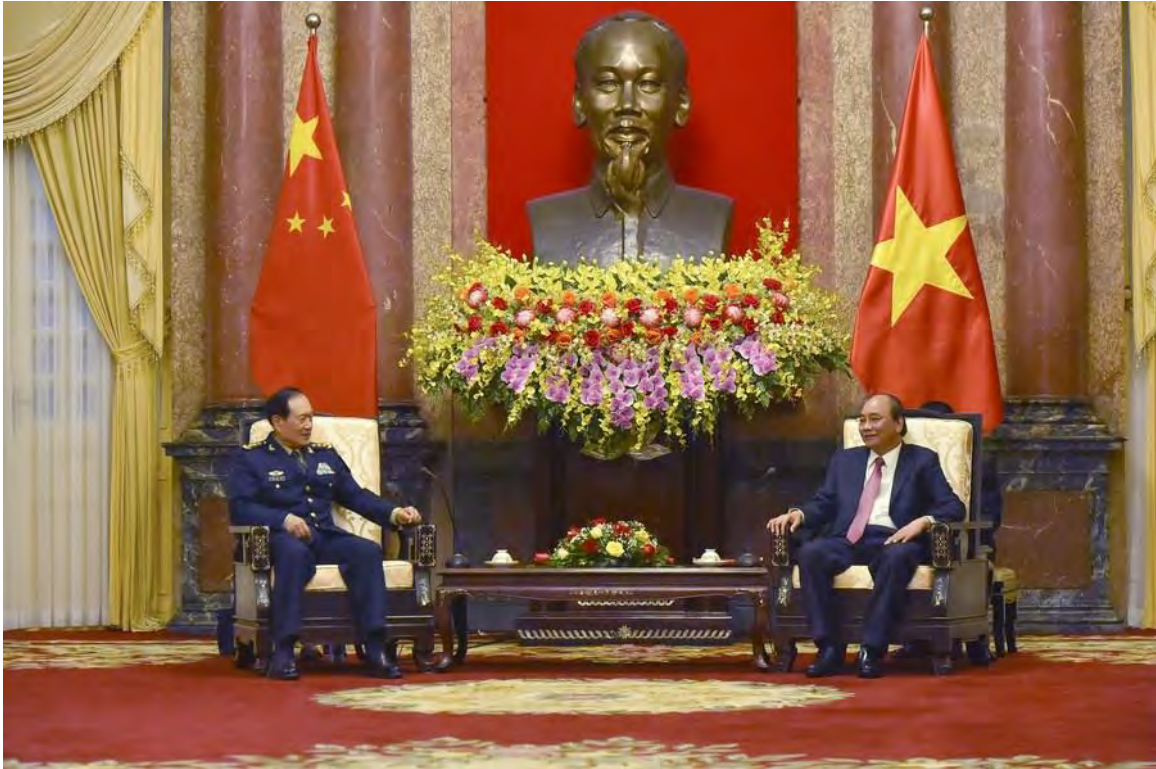


Figure 40: Vietnamese President Meets With Chinese Minister Of Defense In Hanoi, April 26, 2021

Vietnam's war with the U.S. lasted from 1954 to 1975. [H](#) The diplomatic and economic efforts over the last 20 years repaired their relationships. The 2013 U.S.-Vietnam Cooperation Agreement and the 2016 lifting of the arms embargo are two critical milestones in the relationship. [M](#) President Barack Obama even visited Vietnam in 2016. [M](#) Military-to-military engagement and exchange is happening. As a result, a Vietnamese officer is attending the academic year 2023 resident class at the United States Army War College. However, despite the vastly improved relationship, it is unlikely (20-45%) that Vietnam will enter into a military alliance or agreement with the U.S. based on its history. [MM](#)

China is attempting to assure Vietnam's neutrality toward conflict with the U.S. at a minimum but prefers closer military cooperation where Vietnam supports them during a conflict. [M](#) They are using their economic investments and agreements to achieve their goals. [HH](#) However, despite positive economic relations with the U.S. and China, Vietnam is very likely to remain neutral in any military conflict between the two powerful nations. [MH](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. The analyst does not have a background in South Asia security and economic issues.

Author: Christopher A. Wilson

Technology Security



不战而胜

China Unlikely To Fully Implement Military-Civil Fusion Strategy by 2035

Executive Summary

The People's Republic of China (PRC) is unlikely (20-45%) to fully realize its military-civil fusion (MCF) strategy by 2035 due to obstacles to diversified competition with private enterprises, lack of an integrated ecosystem that enlists companies in military projects and procurement, and limited scope and scale of high-tech enterprise engagement with the military. Despite China's long-standing commitment and strong central control of the economy, integration of the civil-military strategy has been challenging.

Discussion

The MCF strategy reinforces the PRC's ability to build the country into an economic, technological, and military superpower by fusing the country's military and civilian industrial and science and technology resources. ^H The strategy eliminates barriers between civilian research and commercial sectors and its military and defense industrial sectors. It will exploit quantum computing, semiconductors, fifth generation (5G), advanced nuclear technology, aerospace technology, and artificial intelligence to exploit both military and civilian applications. ^H



Figure 41: Informative Government Poster. Translated: "Military Civil Fusion Strategy: All Elements, Highly Efficient, Development Of Military Civil Integration"

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 goal is to strengthen all of China's instruments of national power by fusing aspects of its economic, military, and social governance. [H](#) Currently, the state-driven strategy through deeper melding between the two sectors seems to remain more aspirational, and specific problems persist. [H](#)

There is a high level of separation between the defense industry and the civilian economy, with little integration or communication. Defense academics and industry leaders often look abroad, including the U.S., for inspiration. The lack of diversity and information sharing has negatively impacted stated goals, particularly in the science and technology sector. The PRC uses imports, foreign investments, commercial joint ventures, mergers and acquisitions, and industrial and technical espionage to help achieve its modernization ambitions. [H](#) Active pursuit of foreign technology through foreign direct investment, talent recruitment, and research and development through academic collaboration expects to continue for the foreseeable future.

Despite governmental control, leading technology companies appear less directly engaged in supporting defense initiatives. In a fiercely competitive ecosystem, commercial considerations often motivate the country's technology companies. Not all are eager to pursue or prioritize closer collaboration with the People's Liberation Army. Some Chinese technology companies with economic and international aspirations, such as Alibaba, are less open or transparent about partnerships with the Chinese military and defense industry. [H](#) The recent issuance of a USD 3 billion fine on the e-commerce company Alibaba Group is a prime example of a rift between the government and the country's most influential tech giant. [H](#)

Finally, the scope and scale of effort under MCF may not directly translate into impact and quality of results. The People's Liberation Army must grapple with the challenge of effectively incorporating commercial technologies, which has required changing its approach to procurement and reaching beyond the typical defense industry players. Some Chinese companies that take up the mantle of military-civil fusion may seek to take advantage of the resources available more than providing tangible contributions to military modernization. The surge in funding for military-civil fusion, including the launch of guidance funds dedicated to military-civil fusion, could exacerbate corruption issues in the Chinese military and defense industry. [H](#)

Beijing attempts to have both "guns and butter," creating synergy between central and local government regulatory agencies, military end-users, and defense, civilian, and commercial research, and development ecosystems in critical domains. [H](#) The PRC is facing challenges

to achieving its longer-term goal of unifying the government's various security and development strategies to create a strategic posture to bring all capabilities to bear in competition with other nations. It has not yet been successful in helping the People's Liberation Army absorb critical and emerging technologies from civilian channels. The MCF strategy faces legal, regulatory, and cultural obstacles that could impede its pace and intensity. [H](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another; however, sources derive analysis based on publicly available information. Due to the central control of information by the PRC and the need for more transparency, it is challenging to distinguish between facts and assumptions. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Sung G. Kim

People's Liberation Army Conscripts Unqualified to Implement Technological Modernizations By 2035

Executive Summary

The People's Liberation Army is very unlikely (5-20%) to achieve the required military readiness due to its inability to professionalize the non-commissioned officer (NCO) Corps and meet the recruiting and training demands for its conscript force despite being the world's largest fighting force. Due to the lack of qualified personnel and professional development, it cannot implement the technologically advanced systems to execute the missions envisioned by the People's Republic of China (PRC). Despite the exceptional scope and speed of its campaign to modernize its military over the past twenty years, the force's readiness does not match the technological advancements achieved by modernization.

Discussion

President Xi Jinping prioritized the path to modernization as the only way toward national rejuvenation, including its military modernization. [H](#) The PRC has stocked its arsenal with increasingly high-tech weapons; the Army with its DF-17 hypersonic missiles, the Navy with nuclear-capable submarines, and the Air Force with J-20 stealth fighter jets. [H](#) Still, success in increasing military modernization comes at a price; it cannot fill the ranks with the right people to operate and maintain the equipment.

China needs more adequately skilled personnel to operate the high-tech hardware implemented by Xi's party. This 'equipment awaiting talent' phenomenon became increasingly severe as recruiting and retaining qualified personnel worsened. [M](#) The booming private sector attracts the younger, well-educated Chinese, whom the military wants, causing recruitment issues. [M](#) Recruits from poor rural backgrounds stay for the perks of higher wages. However, the same perks of military service do not impress or satisfy educated city dwellers. Their inability to retain talented personnel beyond the initial period of conscription has hampered the effort to build a professional military. [H](#)

The largely conscript-based Chinese military is struggling to develop the same level of motivation and competence required to achieve the Chinese Communist Party's strategic objectives. [M](#) Xi questioned the People's Liberation Army (PLA) for lacking effective, realistic training styles. The challenge for the PRC is not the production of technological advancements to increase its military capacity but the force's capability—creating a workforce capable of operating them effectively.

People's Armed Police (PAP), dubbed China's "Other Army," continues to require attention to deal with the internal security situation. During the COVID-19 pandemic, protests broke out in Beijing and other cities over the restrictions to combat the virus. The government quashed the upheavals of protesters calling for the party and Xi to step down. With extensive expenditures and widespread internal security networks, the PRC is well equipped to suppress and expression of dissent. The government maintains PAP's readiness through a high workforce readiness and costly financial investments. Experts estimate that internal security spending is comparable to defense spending, and the annual costs have outpaced the economy's growth rate. ^M The PAP, which serves as the mainland's core paramilitary and anti-riot force, operates separately from the PLA. ^H The distinction between the two forces further impacts the pool of qualified personnel when it comes to recruiting, complicating the recruitment and retention of talent.

The PLA relies on approximately 800 thousand two-year conscripts, requiring 460 thousand conscripts each year to fill the ranks and overcome a 15 percent attrition rate. ^M Most of these conscripts are in the Army as it requires the least technically capable soldiers.

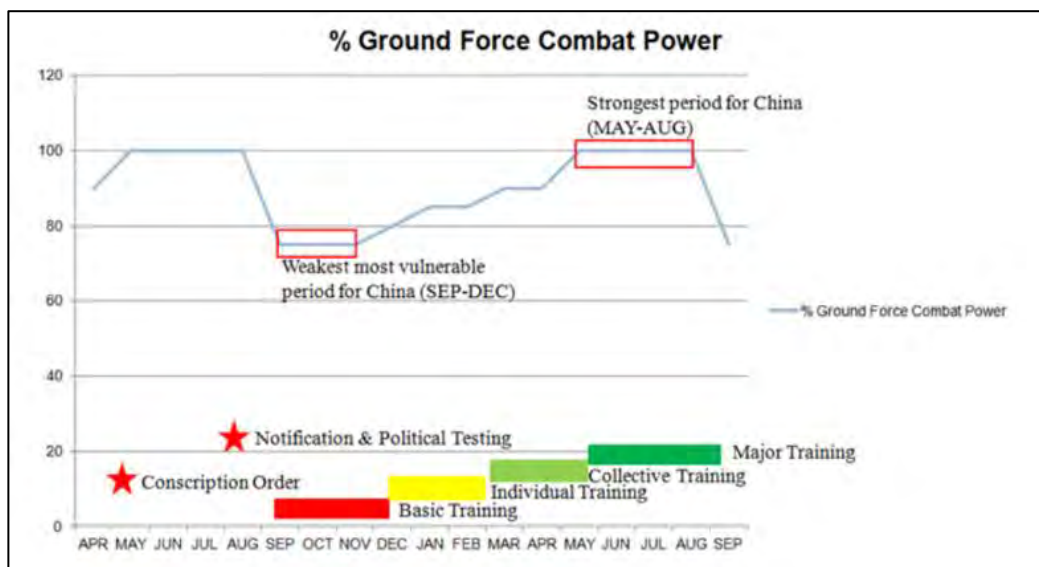


Figure 42: Annual PLA Conscript Ground Combat Power And Training Cycle

Additionally, it loses up to 25 percent of capacity for three to four months annually and never achieves the level of combat proficiency of a professional force due to the fluctuation of its human resources. ^M In addition, the PRC needs to professionalize its non-commissioned officer corps and attract qualified talent to enlist after the conscript period. The PLA took various measures to increase pay and benefits. However, the gap between the enlisted force and officers remains wide while on active duty and after demobilization. ^M Lastly, the top-down party control hinders the development of decentralized command at the lower levels stunting the growth of enlisted leader development.

Despite the advancements in technology and weapons system, its military modernization still does not address its weakest links; the quality of its recruits, increasingly unstable internal security situation, and recruiting and training cycle.

Analytic Confidence

The analytic confidence for this estimate is moderate. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Sung G. Kim

China Very Unlikely To Take Military Action On Taiwan Due To Its Dependence On Semiconductors

Executive Summary

China is very unlikely (5-20%) to take military action on Taiwan due to its dependence on high-end semiconductor chips. The 7 nanometers (nm) chips produced by Taiwan Semiconductor Manufacturing Company (TSMC) are crucial to economic growth and military equipment. Despite China's best efforts to improve its semiconductor industry, it is very unlikely to achieve self-sufficiency to bridge the gap between chip consumption and chip manufacturing in the next ten years.

Discussion

TSMC, which produces around 90 percent of advanced chips globally, manufactures semiconductors that have various applications in high-performance computing, smartphones, the Internet of Things, automotive, healthcare devices, and digital consumer electronics - items used daily by everyone. [H](#) As the world becomes more dependent on high-tech gadgets, the demand for the most technologically advanced chips has increased. However, as seen during the COVID-19 pandemic, labor shortages, a lack of raw materials, and trade conflicts continue to impact the availability of the chips to consumers. 7nm semiconductors are essential components that allow the development of technologies crucial for economic growth, national security, and global competitiveness. [M](#)

As tension between Taiwan and China increases, international consumers have identified the semiconductor supply chain as one of the most significant hazards. [M](#) If the Chinese took action to cut off the semiconductor supply chain, it would have catastrophic impacts on the global economy. Taiwan and the international community have a vested interest in the security and resiliency of the semiconductor supply chain. To mitigate this risk, TSMC continuously looks for opportunities to relocate some of its production outside Taiwan. [H](#) Recently, the company announced its plans to establish new plants in the United States (U.S.), Japan, China, and Taiwan.

Due to Beijing's dependency on technology for economic and military growth, the country has spent more money importing chips than oil. China consumes over 90 percent of highly developed nodes and 50 percent of global semiconductors produced by TSMC. In 2020, the Chinese spent USD 350 billion on semiconductor chips; this number will increase in 2021 and 2022. [H](#) Despite massive investments, China is very unlikely to achieve independent semiconductor manufacturing capabilities in the next ten years. [H](#) Chinese companies are unable to compete against top-tier firms because of limited access to semiconductor manufacturing equipment and software, and their overall lack of industry knowledge hinders the development of a self-sufficient supply chain. [H](#)

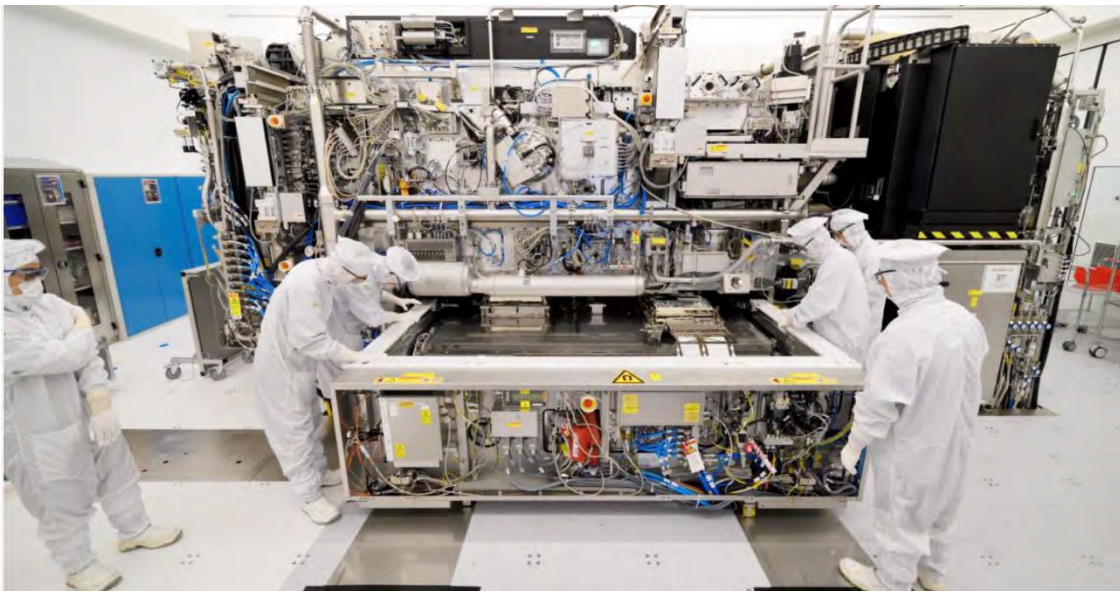


Figure 43: ASML Advanced Extreme Ultraviolet Lithography System Being Assembled

Due to China's inclusion on the U.S. Entity List, it cannot obtain the necessary extreme ultraviolet lithography (EUV) machines from ASML of the Netherlands to further advance its technology to a 7nm process. ^H China does not yet have the capability or capacity to produce the chip technology; therefore, it cannot decouple itself from Taiwan.

Chinese firms have attempted to domestically produce advanced chips to address the dependency on Taiwan, the U.S., and the Republic of Korea (ROK). Although it has successfully created mid-tier conductors, it needs advanced tools, foreign technology, and materials to fabricate chips locally. ^H Due to its inability to procure complex and precise machinery (such as the extreme ultraviolet lithography system and its components), it is very unlikely to achieve the requisite 75 percent self-sufficiency to bridge the gap between chip consumption and chip manufacturing in the next ten years.

The disruption in the supply of semiconductor chips would cause a global crisis if Taiwan were a target of a blockade or invasion. A crisis of this magnitude will impact China, and there are no guarantees that Beijing will gain access to TSMCs cutting-edge capabilities after a successful invasion. ^M China is ten years behind the leading edge in its indigenous semiconductor technology development. ^H Even if it could replicate today's technology a decade from now, the cutting edge of the industry will have moved forward. China's true challenge is to catch up to the technological advancements that continue to move forward exponentially. It is precisely this dependency that will force China to seek a peaceful and diplomatic reunification of Taiwan.

Analytic Confidence

The analytic confidence for this estimate *is moderate*. Sources were generally reliable and consistently corroborated with one another. However, the analyst did not use a structured method in the analysis. Finally, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Sung G. Kim

China Very Unlikely to Establish Independence from Foreign Technology Before an Invasion of Taiwan

Executive Summary

China is very unlikely (05-20%) to establish independence from foreign technology before an invasion of Taiwan. They are heavily dependent on foreign technology to fulfill its annual technological requirements. China acquires foreign technology through various methods, including both legal and illegal means of developing new technology. Data shows that China only produces 15 percent of the technology internal to the country base on its current demand. All other technology comes from intellectual property theft, purchase of rights from technology use, or import of foreign computer chips and intelligent components to fuel its technological requirements. Experts believe the People's Republic of China (PRC) will retaliate and restrict rare earth exports. Despite China's anticipated restriction of rare earth sales to the U.S., America possesses 13 percent of rare earth. It is cheaper and environmentally friendlier for Americans to import it instead of mining it. ^H

Discussion

Recent geopolitical confrontations with the United States (U.S.) expose China's technology vulnerability. ^H Their dependence on foreign technology means that their technological advancements depend on a foreign country's supply chain to supply it to them. ^H Brain drain is one of the reasons China is lagging due to the departure of educated professionals from one country to another for better pay or living conditions. ^{HH} Chinese students are coming to U.S. universities, earning doctorate degrees in science, technology, engineering, and math, and are pursuing their careers in the U.S. instead of returning to China. Data shows that 90 percent of Chinese students who obtain a doctorate in the U.S. stay well after graduation. ^H As part of the PRC regulations of advancements within the country, any company with over 50 employees, the Chinese Communist Party (CCP) requires a representative there and reports back to the party. Having a CCP representative reporting to the government on protected business practices compromises the company's proprietary information and eliminates its competitive advantage. This CCP practice also dissuades individuals in a company from innovation. Why innovate and simply have it stolen from you by the government? ^H

Others believe China is failing in innovation because its communist system stifles innovation. Chinese companies look for quick wins when it comes to innovation. They look for innovations that can make money immediately. If it takes over two years to succeed, that endeavor will end. Long-term innovation that may have world-changing effects is not the priority. ^H

Secondly, China's place in the world is a nation where American companies go to have high-tech devices assembled. As a result, China today serves as the world factory. Companies around the globe use China as their warehouse because of several reasons. First, labor is cheap; the price to produce an item in the U.S. compared to what it costs to make the same item in China means more profit by creating it in China vs. the U.S. ^H

China also relies on foreign technology is evident based on the large sums of money it pays to use intellectual property (see figure 44). The United States is China's number one exporter of intellectual property. China also acquires technology from foreign countries by either theft or cohesion. ^M

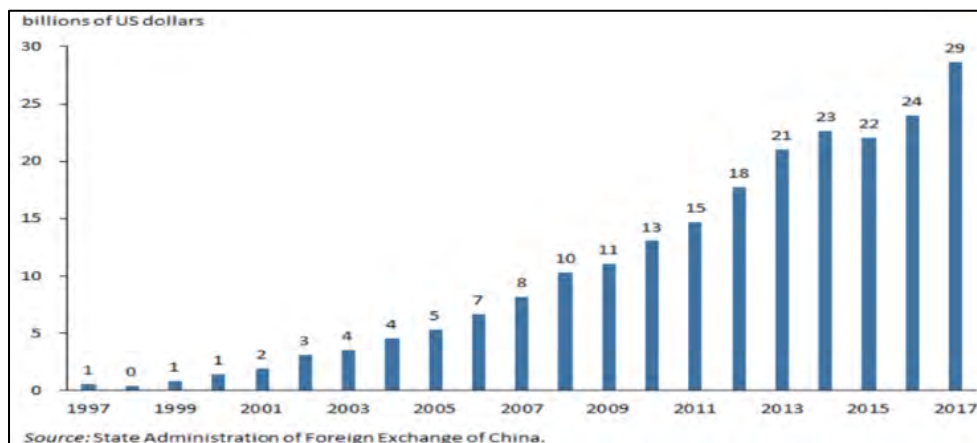


Figure 44: Chinese Payments For The Use Of Foreign Intellectual Property, 1997-2017

China lags in domestic semiconductor production. They realize their dependency on foreign technology to produce semiconductors. Semiconductor Manufacturing International Corporation (SMIC) is working to make a 3-nanometer chip to reduce their reliance. Even though they create their own chips, they rely on foreign technology. SMIC can only produce a 28-nanometer chip for televisions and automobiles domestically. China depends on foreign technology to create smartphone chips and high-tech military products.

^H To curb the People's Liberation Army's ambitions, the U.S. restricted the sale of advanced computer chips and computer-making equipment. Reliance on foreign technology leaves China vulnerable to geopolitical tension, which is valid for SMIC and Huawei, who have now lost access to high-tech semiconductors. ^H This move is so significant that the actual impact is currently unmeasurable. The PRC consumes over three-quarters of global semiconductors but only makes 15 percent of global outputs. ^H

There is no response from the CCP to the U.S. restriction of high-tech semiconductor sales in China, hoping that the U.S. will reverse its course and return to the negotiating table. Experts believe Beijing will eventually restrict rare earth sales to the U.S. in retaliation. ^H

Analytic Confidence

The analytics confidence for this estimate is high. Sources were generally reliable and tended to corroborate with one another. There was adequate time given to put this estimate together. The data in this estimate is solid, and new data for future developments will be consistent with the current data in this SFAR.

Author: William Prince Jr.

US Likely To Experience Rare Earth Magnet Supply Chain Disruptions As China Prepares for War

Executive Summary

China will very likely (80-95%) leverage its dominance to destabilize the rare earth element neodymium-iron-boron (NdFeB) magnet market in preparation for conflict through restrictive export quotas and market manipulation. Despite the global abundance of rare earth elements and the United States (U.S.) initiatives to increase its domestic supply chain, U.S. commercial industry will likely (55-80%) remain dependent on Chinese-produced magnets for the next decade due to the time required to revitalize the industry.

Discussion

This assessment focuses on rare earth magnets due to China's ability to dominate all stages of the US supply chain for this essential component. NdFeB magnets are critical components of the equipment, technology, and devices that permeate daily life and productivity. These technologies are present in a range of applications, including computers, medical equipment, electric vehicles, and defense systems. [H](#)

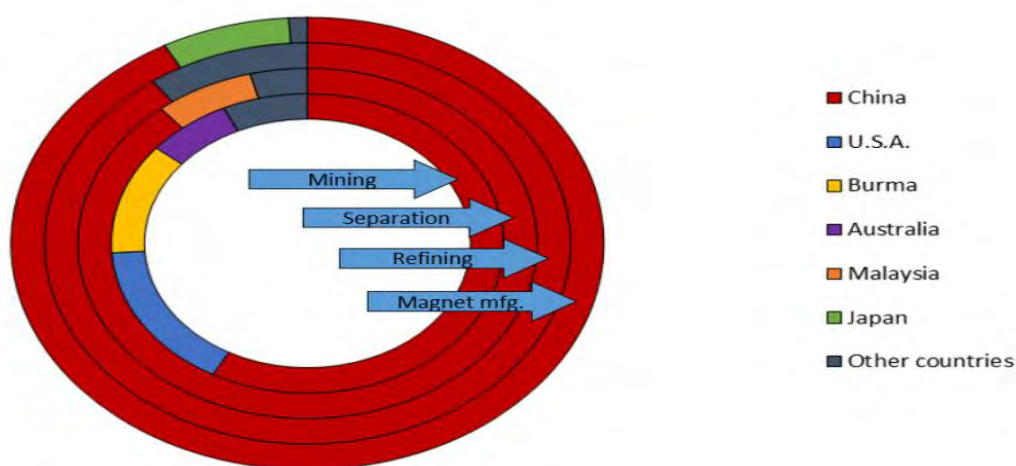


Figure 45: Geographic concentration of Supply chain stages for NdFeB magnets

China is the center of the NdFeB supply chain, dominating all facets of production from mining, refining, and magnet manufacturing. [H](#) The concentration increases significantly through the manufacturing stream, from a 58 percent share of global mining to a 92 percent share of global magnet manufacturing. [H](#) The U.S. Department of Energy's Response to Executive Order 14017, "America's Supply Chains," highlights several vulnerabilities derived from the over-concentration of the magnet supply chain. These vulnerabilities include increasing global demand, market instability, Chinese firms that influence global markets at the direction of the People's Republic of China (PRC), and barriers to U.S. industrial competition due to environmental concerns. [H](#)

Only one company in the U.S. currently produces NdFeB magnets, accounting for seven percent of the U.S. market, while China supplied 75 percent last year. [H](#) Market analysis predicts that the global consumption of rare earth magnets will triple by 2035. [M](#) To illustrate the effect the projected growth will have, the Paulson Institute, a Chicago-based think tank that specializes in U.S.-China economic, technology, and political issues, estimated that without a significant increase in production, electric vehicles and wind turbines alone will require 100 percent of the NdFeB magnet supply by 2030. [M](#) This increased demand implies all sectors, including defense applications and consumer goods, could face supply bottlenecks and rising prices as soon as 2025. [M](#)

China's coercive use of its rare earth monopoly is not new. In 2010, they employed a trade embargo on Japan due to a territorial dispute over fishing rights, halting all exports of rare earth minerals. [H](#) In 2021, the Chinese Ministry of Industry and Information Technology began exploring how controls on the production and export of rare earth minerals would impact U.S. and European companies during a bilateral dispute. [M](#) Beijing already imposed sanctions specifically against U.S. defense companies such as Boeing, Lockheed Martin, and Raytheon with the most recent in February 2023 stemming from arms sales to Taiwan. [H](#) In preparation for conflict, China is very likely to employ a coercive economic campaign of restricting rare earth minerals and magnets to disrupt potential adversaries' ability to mobilize for war and create stress on international supply chains, eroding the U.S. and its potential allies will power.

Despite President Joe Biden's focus on securing domestic supply chains for rare earth elements, it is very unlikely (5-20%) that the U.S. will avoid the impacts of Chinese actions aimed at disrupting supply due to significant barriers toward rapid self-sufficiency. The U.S. Department of Energy White Paper "Critical Materials Rare Earth Supply Chain" outlines the four main challenges to expanding U.S. rare earth mineral mining and production: permitting, technology transfer, workforce development, and market volatility. [H](#) Jane Nakano, a senior fellow at the Center for Strategic and International Studies (CSIS) Energy Security and Climate Change program stated in a Consumer News and Business Channel (CNBC) interview that it would take 10 to 20 years for the U.S. to create a truly domestic rare earth element supply chain. This requires massive government and private sector investment. [H](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. Due to the lengthy time frame of the estimate, this report is sensitive to change due to new information and emerging technology.

Author: Adam S. Camaran

Increase Space And Cyber Activities



不战而胜

China Likely To Conduct Cyberattacks During The Invasion of Taiwan

Executive Summary

China will likely (55-80%) conduct cyberattacks against Taiwan's critical infrastructure simultaneously with an invasion due to evidence of previous occurrences against foreign adversaries and lessons learned from the Russian-Ukraine war. Despite China's ability to attack Taiwan's vulnerable undersea internet cables before an invasion and their inability to secure internet redundancy, this will eliminate China's critical access to conduct additional cyberattacks.

Discussion

China is likely conducting ongoing cyberattacks on Taiwan with the intention of disrupting, interfering with, or undermining the confidence of the government. The three types of cyber operations are low impact Distributed Denial-of-Service (DDoS) attacks, disinformation operations, and cyber espionage. [M](#) They are likely compiling a list of cyberattacks on physical infrastructure for future operations. According to Dyadic Cyber Incident and Campaign Data, in the last 12 years between China and Taiwan, there were 13 cyber operations, of which eight were cyber espionage, and four were disruptive. None of the incidents caused physical damage. [H](#) Taiwan's cyber defense aims to counter Chinese cyber-enabled disinformation campaigns and defend its networks and systems infrastructure. [M](#)

China has a long history of launching cyberattacks against Indian government organizations, critical infrastructure, the private sector, and human rights activists using the same techniques as in Taiwan. These attacks are indicative of an elaborate and existing cyber espionage campaign. [M](#) Compared to Taiwan, the People's Republic of China (PRC) faces difficulty in misinformation operations in India because of language and social norms complexities. [M](#) India and Taiwan will likely increase bilateral collaboration on cybersecurity despite the risks of escalating offensive cyber operations by the Chinese Communist Party against them. [M](#)

An early warning of invasion is a Chinese cyberattack against Taiwanese civilian critical infrastructure or a cyberattack that disrupts or degrades Taiwan's military assets. [H](#) They almost certainly (95-99%) observed Russia's January 14 cyberattack on Ukraine, using malware that affected computers and government websites. This attack undermined its long-standing digital sabotage campaigns by exposing its covert access to the Ukrainian network and providing them over a month to recover before Russian forces invaded. If they waited for the beginning of the war, the impact would be more prominent, said Victor Zhora, deputy head of Ukraine's cybersecurity agency. [H](#)

Taiwan saw 272 instances of misinformation during the visit of House Speaker Nancy Pelosi in August 2022. [M](#) Taiwan took the threat seriously and implemented measures to deal with it, but no real damage occurred. The cyber operation came as China's largest-ever military drills encircled the island. The online offensive caused worry about whether it is vital infrastructure and essential servers have robust enough firewalls and the ability to withstand determined cyberattacks. [M](#) Tseng Yisuo, a research fellow at Taiwan's Institute of National Defense and Security Research, said the cyber operations during the recent live military drills are not unique and is an initial demonstration of China's cyber warfare plan. [M](#)

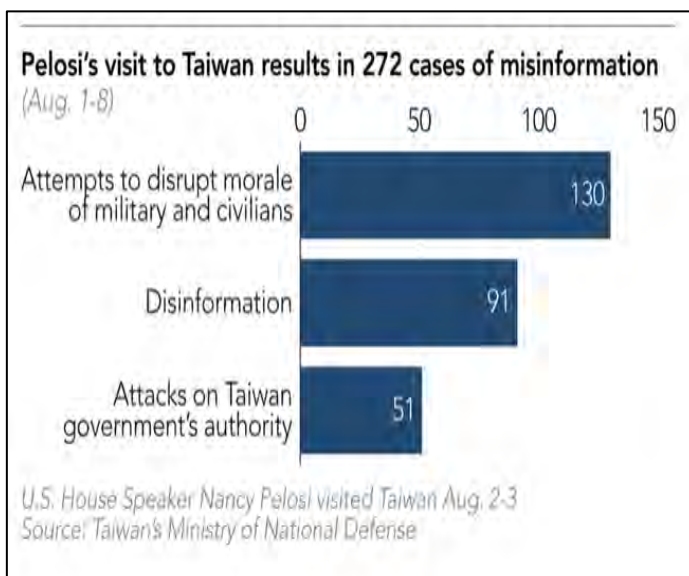


Figure 46: Pelosi's Visit To Taiwan Cyber Instances

Cyberattacks combined with People's Liberation Army live-fire exercises provide Taiwan's leaders with a preview of what an invasion will be. [H](#) The PRC will very likely (80-95%) use lessons from the Russia-Ukraine war to combine cyberattacks and military invasion simultaneously rather than lead with cyber followed by an invasion. [H](#) Previously, thinks tanks in Taiwan and the U.S. thought China would launch a debilitating cybersecurity attack on Taiwan's critical infrastructure, such as its power grid, before a military assault on Taiwan before an attack. [M](#)



Figure 47: Taiwan undersea internet cables with PLA-N exercise

China will unlikely (20-45%) cut Taiwan's sea cables or attack cable landing stations before an all-out attack, a move that will cause panic, paralyze commercial activity, and help

Beijing gain initial control over the narrative. ^L Based on lessons learned from the Russia-Ukraine war, China will lose the cyber access it worked so hard to obtain. Taiwan will very likely bolster redundant communications in the next seven years. Its military prepared backup plans, including a fiber-optic network for communications in Taiwan, satellites, high-frequency radio, and microwave systems. Taiwan's Ministry of Digital Affairs said it would prioritize Taiwan's offshore islands for the satellite trial program and will further increase the bandwidth for microwave communications with outlying islands by 2024 to create redundancy for the civilian infrastructure. ^H

Analytic Confidence

The analytic confidence for this estimate is *Low*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Robert H. Topper Jr.

China Very Likely To Use Ground-Based Anti-Satellite Weapons Prior To Conflict With Taiwan

Executive Summary

The People's Republic of China (PRC) is very likely (80-95%) to improve destructive and nondestructive ground-based anti-satellite (ASAT) weapons to use prior to an invasion of Taiwan. The People's Liberation Army (PLA) will likely (55-80%) use ground-based ASAT weapons, directed energy weapons, and electromagnetic warfare satellite jammers to target surveillance, communications, navigation, and early warning satellites. Despite the United States' dominance in space, the Space Force is planning to switch from geostationary satellites to constellations of smaller satellites in low and medium Earth orbits to counter China's ASAT weapons.

Discussion

China almost certainly (95-99%) conducted a third ground-based, midcourse anti-ballistic missile (ABM) test in 2021 using Spacecraft-19 (SC-19) ABM interceptor. There were likely two previous successful tests in 2010 and 2013 using the ground-based midcourse missile interception technology [L](#) against a ballistic target. [L](#) In 2007, the PLA likely used the SC-19, with a kinetic kill vehicle, to conduct a successful direct-ascent ASAT test against one of their defunct weather satellites. [HH](#) The first successful s intercept test since 1985 when the United States (U.S.) destroyed the Solwind satellite with an ASAT missile released by an F-15 Eagle. [H](#) China and the U.S. are the only countries conducting ground-based midcourse anti-missile tests. [H](#) Professor Tan Kaijia with the PLA's National Defense University said, "If the ballistic missile is regarded as a spear, now we have succeeded in building a shield for self-defense," [H](#)

China is very likely developing a directed energy weapon (DEW) for counter space [H](#) that targets intelligence, surveillance, and reconnaissance (ISR) satellites. It can temporarily or permanently blind imagery satellites and other strategic sensors, denying the ability to monitor, track, and target forces. [H](#) It is unlikely (05-20%) the U.S. understands the operational status of these weapons. [H](#) By 2025, combat platforms will likely have directed energy weapons and deploy them alongside conventional weapons. [M](#) The U.S. National Reconnaissance Office director confirmed a ground-based laser operated in China illuminated (dazzled/blinded) an American satellite in 2007. [M](#) In the next seven years, they have an even chance (45-55%) to field higher power systems that extend the threat to the

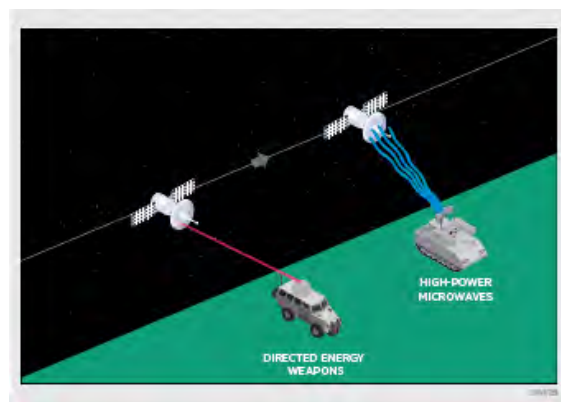


Figure 48: Directed Energy Weapons

[M](#) The U.S. National Reconnaissance Office director confirmed a ground-based laser operated in China illuminated (dazzled/blinded) an American satellite in 2007. [M](#) In the next seven years, they have an even chance (45-55%) to field higher power systems that extend the threat to the

structures of non-optical satellites. [M](#) Also, Chinese researchers, using late U.S. 1980 research, rearranged the layout of the Relativistic Klystron Amplifiers. They scaled the prototype and produced an output of 510 megawatts, with room for improvement in computer modeling. A physicist in the U.S. who studies high-power microwave technology said it is unlikely to threaten Starlink and new combat drones using Ka-band for now. [M](#) The device requires more than a gigawatt of power to jam or damage a modern satellite effectively, but they will very likely utilize it in other roles. [M](#) The six known ground stations will likely use these weapons to dazzle and damage satellite imaging sensors, buses, or subsystems. [M](#)

China views ground-based electronic warfare capabilities as critical to suppress or deceive enemy equipment. [H](#) The current jamming techniques deny space-based communications, radar systems, and global positioning systems' navigation support to the military movement and precision-guided munitions employment. They are likely developing these to target synthetic aperture radar to protect terrestrial assets by denying imagery and targeting any potential conflict involving the U.S. or its allies. They are also likely developing jammers to target satellite communications (SATCOM) over various frequency bands, including military-protected extremely high frequency communications. These are likely key to preventing the U.S. and U.S.-affiliated commercial satellite firms from maintaining a clear picture over Taiwan, as they are in Ukraine. [H](#)

The U.S. Space Force is likely pivoting away from geostationary orbit (GEO) constellations to a more resilient system in low Earth orbit (LEO) and medium Earth orbit (MEO). The pivot is due to the expansion of the satellite architecture provided to protect the U.S. from the recent advances in ASAT weapons. [H](#) The 2024 Space Force budget request doubled from USD 1 to 2 billion to fund LEO and MEO satellites and transition to a more diversified architecture to stay ahead of our pacing challenge. [M](#) The Space Warfighting Analysis cell at the U.S. Space Force made the recommendation to transition soon. [M](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Robert H. Topper Jr.

PLA Very Likely Maneuver Space-Based Weapons Prior To Conflict With Taiwan

Executive Summary

The People's Liberation Army (PLA) will very likely (80-95%) maneuver destructive and nondestructive space-based anti-satellite (ASAT) weapons to counter United States (U.S.) space capabilities before a conflict with Taiwan. Despite Chinese statements on space warfare claiming to adhere to the peaceful uses of outer space, they designated space as a military domain. They will continue to field higher capacity systems keeping them on track for space dominance by 2045. Despite the lack of American long-term goals in space, China is unlikely (20-45%) to outpace the United States economically, diplomatically, and militarily as the leading space power.

Discussion

China is almost certainly (95-99%) working to become the world's dominant space power "economically, diplomatically, and militarily" by 2045, according to U.S. Space Force, Defense Innovation Unit, and Air Force officials. ^M The U.S. lacks a clear and cohesive long-term vision or grand strategy for space that sustains economic, technological, environmental, social, and military leadership for the next half century and beyond. ^M The political landscape impacts the development of a long-term vision for space due to changes in presidential administrations, shifting political priorities, and budget constraints. The fragmentation of responsibilities and priorities challenges a cohesive vision across multiple government agencies, including NASA, the Department of Defense, and the National Oceanic and Atmospheric Administration. The U.S. space economy will likely (55-80%) continue to boom with new capital investment by the private sector investment and venture capital. The recent establishment of the Space Force as a separate military branch highlights the growing importance of space in national defense. ^M The proposed 2024 Space Force budget of USD 30 billion shows the U.S. urgent action to prevent the People's Republic of China (PRC) from overtaking the United States by 2045. ^{MH}

China is preparing to send almost 13,000 satellites into low-Earth orbit to compete with—and monitor directly—SpaceX's Starlink constellations in the coming years. The China Satellite Network Group Company made claims about wanting to track and even disable Starlink satellites with their constellations. By launching their fleet of devices, they obtain space

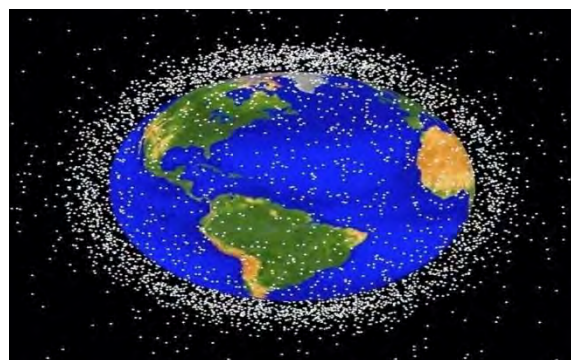


Figure 49: Satellites In Low Orbit Earth

maneuverability and likely enable themselves to target and destroy other objects in space before the conflict in the region. ^M

China will likely continue conducting space surveillance using the Tongxin Jishu Shiyan Weixing-3 (TJS-3) satellite deployed into geostationary orbit (GEO) in 2018 as an experimental communication satellite. ^H The TJS-3 made a close approach and is likely to continue making close approaches to U.S. satellites to conduct space surveillance. ^L In 2022, the United Kingdom Orbital Focus Satellite Dashboard, a web tool that collects and analyzes space situational awareness data, observed TJS-3 likely conducting space surveillance on U.S. military communication satellites. ^M There is little known about the TJS-3 satellite, but the U.S. and other nations will very likely watch its movements closely to understand China's surveillance capabilities. ^M

Chinese state media indicates that the experimental space debris mitigation satellite, Shijian 21 (SJ-21), will "test and verify debris mitigation technology," but it is very likely an offensive space weapon. ^{HM} In GEO, it docked with a defunct satellite, released to a graveyard orbit, and within five days returned to its original orbit. ^M The U.S. Space Force's 18th Space Control Squadron cataloged a new object alongside SJ-21, likely its apogee kick motor (AKM) ^M but with an even chance of a subsatellite. ^{MM} The classified nature of this mission very likely suggests China will use it in the future for military objectives. ^H



Figure 50: SJ-21 Conducted A Space Tug With A Dead Satellite.

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Robert H. Topper Jr.

China Likely To Leverage 6G For Supersonic Missiles By 2030

Executive Summary

China will likely (55-80%) leverage sixth generation (6G) wireless technology for supersonic missile tracking by 2030. The government is actively encouraging the development of 6G technology in the private sector and likely gained a significant advantage compared to the United States (U.S.). The military intends to utilize this technology to enhance its communication capabilities for supersonic missiles and improve its ability to detect and track targets on the future battlefield. By trying to control innovation, China's bureaucratic and authoritarian approach to civil-military fusion will likely waste considerable time and delay next-generation advancements despite their current advantage in fifth generation (5G) technology.

Discussion

China is leading the U.S. in 6G because the government is actively encouraging development in the private sector. [H](#) China deployed over two million 5G base stations, and almost certainly (95-99%) will reach over 6 million by 2024. [H](#) Comparatively, the U.S. is well behind and deployed just over one million 5G base stations [M](#) because the private sector lacks the support of the U.S. government. 6G will achieve data-transmission speeds up to 10 times faster than 5G [H](#) by using high-frequency terahertz waves and revolutionizing supersonic innovation.

According to the Chinese Ministry of Science and Technology, two teams oversee research: one composed of government departments executing 6G technology and a second consisting of 37 experts from universities, science institutions, and corporations providing technical advice to the government. [H](#) As a result,



Figure 51: China Launches First 6G Satellite Into Space.

China owns 35 percent of all 6G patents and launched the first 6G satellite into space. [H](#) They will likely use telecommunication technology to modernize its fighting forces, even though the country is implementing 5G technology and 6G exists only in theoretical studies.

For the first time, 6G technology is likely to have the capability to put China ahead of the U.S. because of its vastly superior bandwidth, extremely low latency, and high connectivity properties. [H](#) The autonomous combat of the future is reliant on data-driven artificial intelligence. [H](#) Chinese scientists showed that hypersonic vehicle detection and tracking is possible using 6G



Figure 52: Sixth generation competition

technology. [HH](#) This advancement will likely solve some blackout problems when attempting to establish communications with missiles or space vehicles traveling at five times the speed of sound or faster. [M](#) If these assertions are likely factual, China could have reached a significant milestone in hypersonic and 6G technology programs. [M](#)

The telecommunications industry is still several years away from agreeing on 6G specifications; therefore, it is an even chance (45-55%) the trialed technology will make it into the final standard. The China National Intellectual Property Administration (CNIPA) claimed that 35 percent of patents came from China and 18 percent from the U.S. The difference is quite significant, but it is very likely (80-95%) the U.S. intends to close the patent gap by 2030 to capitalize on the financial gains of patent ownership and establish itself as a leader in advanced technology. [M](#)

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Author: Robert H. Topper Jr.

Appendix



不战而胜

Appendix 1 - Terms of Reference

Terms of Reference:

Chinese Indicators and Warnings of Action Against Taiwan

For:

**MG David C. Hill
Commandant, US Army War College**

By:

**Team Sun Tzu Panda
USAWC**

January 3, 2023

Terms of Reference:

Chinese Indicators and Warnings of Action Against Taiwan

Requirement:

- What are the strategic conditions likely required to achieve reunification of China and Taiwan? Over what time frame will China likely attempt to establish these conditions.
- What are the opportunities that establishing the conditions form reunification sets for other elements of China Grand Strategy?

Methodology:

The team intends to gather information through a variety of means and sources. Data will be gathered from open-source outlets, academic resources with specialties in the region, civilian and military strategists, interviews with regional experts, and think tank products.

The team will execute the project in the following four steps. This timeline is notional. We will maintain flexibility in the process to take advantage of developments as we progress in our research.

- Data organization and initial research (November 2022 – January 2023)
 - Improve our historical understanding of the situation and identify existing sources that attempt to answer all or part of our project questions. Over the next ten years, what are the likely strategic indicators and warnings of impending Chinese action against Taiwan?
 - Develop initial models to guide and organize our work.
 - Evaluate previous work's assumptions and assertions concerning our project topic.
 - Conduct initial analysis to determine knowledge gaps and create potential interview questions to fill those gaps.
 - Identify Chinese studies institutes across the United States with the potential to fill in knowledge gaps and provide timely insights into current activities in China and Taiwan.
- Fill in the knowledge gaps (February 2023 – March 2023)
 - Conduct interviews with the individuals identified in step 1.
 - Synthesize data collected and assess data sources.
 - Refine our models and update them as required.
- Compile the report and create visual depictions (April 2023)

- Complete a comprehensive report that includes the team's findings.
- Create a visual depiction of potential indicators, warnings, and actions associated with the team's findings.
- Out-brief MG David C. Hill and team (April 2023).

Challenges:

- The team's personnel are executing this study to complete a US Army War College requirement in addition to a full course load for a graduate degree.
- This estimate and out-brief must be completed by April 2023.
- Research will be conducted in English. The team is dependent on translations of information.
- Due to time and equipment constraints, the team has access to mostly open-source information, and the final product will be unclassified.
- Chinese sources may be limited as they seek to minimize disclosure of information that indicates potential action from their adversaries.

Resources:

- The team comprises five Department of Defense professionals with vast experience as practitioners, each with over 20 years of experience.
- The team will utilize the US Army War College databases and other commercial and educational resources such as the Army Heritage and Education Center at Carlisle Barracks.
- The team will interview International Fellows with ties to the region and additional subject matter experts from the region associated with the Army War College.
- The team will contact Academic Institutions with China Programs such as MIT-China Program, East Asian Studies at Dickinson, U-M LSA International Institute – University of Michigan and other programs.
- The team will use the AWC March PLA conference for engagement and assessment tool of research conducted.

Administration:

- The final product will be completed by the end of April 2023 and will consist of an oral brief and briefing document-
- The team consists of the following members:
 - Team Point of Contact:

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LTC Christopher A. Wilson
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Appendix 2 - Intelligence Community Directive 203

The study used the Intelligence Community Directive ([ICD](#)) 203 for words of estimative probability (WEP)

| Almost No Chance | Very Unlikely | Unlikely | Even Chance | Likely | Very Likely | Almost Certain |
|---------------------|------------------|----------|----------------|--------|-------------|-------------------|
| 1-5% | 5-20% | 20-45% | 45-55% | 55-80% | 80-95% | 95-99% |

Appendix 3 - Source Reliability

The analyst annotated source reliability throughout the document as high (H), medium (M), or low (L) based on the Standard Primary Source Credibility Scale, Trust Scale, and Website Evaluation Worksheet. ([Appendix 3](#)) When the analyst produced the estimate, they directly hyperlinked the citation to the open-source content. The analyst hyperlinked the source of any figures and photos embedded in this estimate.

| Standard Primary Source Credibility Scale (<i>"The Paul Scale"</i>) | | | |
|--|--|--|---|
| <u>Importance</u> | <u>Factor</u> | <u>Description</u> | <u>Satisfies Criteria (Yes /No)</u> |
| HIGH | Has a good track record | Source has consistently provided true and correct information in the past | |
| | Information can be corroborated with other sources | Information provided by the source corroborates with information from other primary and/or secondary sources | |
| | Information provided is plausible | High probability of the information being true based on the analyst's experience of the topic/subject being investigated | |
| | Information is consistent and logically sound | Information provided is consistent when queried from different angles and is logically sound | |
| | Perceived expertise on the subject | Source is perceived to be an expert on the subject / topic being investigated and/or is in a role where subject knowledge is likely to be high | |
| | Proximity to the information | Source is close to the information – a direct participant or a witness to the event being investigated | |
| | Perceived trustworthiness | Source is perceived to be truthful and having integrity | |
| MEDIUM | No perceived bias or vested interest in the subject / topic being investigated or on the outcome of the research | Source has no perceived bias or vested interest in the subject / topic being investigated or on the outcome of the research | |
| | Provides complete, specific and detailed information | Information provided is specific, detailed and not generic | |
| LOW | Is articulate, coherent and has a positive body language | Source is articulate, coherent, has a positive body language and does not display nervousness or body language that can be construed to be evocative of deceptive behavior | |
| | Recommended by another trusted / credible third party | Source is recommended by others the analyst trusts but the analyst herself does not have any direct experience working with the source | |
| | Sociable | Source comes across as outgoing and friendly. Easy to get along with and talk to | |
| | Perceived goodwill to the receiver | Perceived intent or desire to help the receiver or the analyst | |

| Trust Scale and Web Site Evaluation Worksheet (Updated OCT 2013) | | | | | | | | | | | | | | |
|---|--|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------------------|
| Piece of Evidence #: | | | | | | | | | | | | | Score: | Trust Scale: |
| Criteria | Tips | Value | Y or N | Y or N | Y or N | Y or N | Y or N | Y or N | Y or N | Y or N | Y or N | Y or N | 0 | 15-20 High |
| Content can be corroborated? | Check some of the site's facts | 2 | | | | | | | | | | | | 11-15 Moderate |
| Recommended by subject matter expert? | Doctor, biologist, country expert | 2 | | | | | | | | | | | | 6-10 Low |
| Author is reputable? | Google for opinions, ask others | 2 | | | | | | | | | | | | 5-0 Not Credible |
| You perceive site as accurate? | Check with other sources; check affiliations | 1.5 | | | | | | | | | | | | |
| Information was reviewed by an editor or peers? | Science journals, newspapers | 1.5 | | | | | | | | | | | | |
| Author is associated with a reputable org? | Google for opinions, ask others | 1.5 | | | | | | | | | | | | |
| Publisher is reputable? | Google for opinions, ask others | 1.5 | | | | | | | | | | | | |
| Authors and sources identified? | Trustworthy sources want to be known | 1 | | | | | | | | | | | | |
| You perceive site as current? | Last update? | 1 | | | | | | | | | | | | |
| Several other Web sites link to this one? | Sites only link to other sites they trust | 1 | | | | | | | | | | | | |
| Recommended by a generalist? | Librarian, researcher | 1 | | | | | | | | | | | | |
| Recommended by an independent subject guide? | A travel journal may suggest sites | 1 | | | | | | | | | | | | |
| Domain includes a trademark name? | Trademark owners protect their marks | 1 | | | | | | | | | | | | |
| Site's bias is clear? | Bias is OK if not hidden | 1 | | | | | | | | | | | | |
| Site has professional look? | It should look like someone cares | 1 | | | | | | | | | | | | |
| Total | | 20 | | | | | | | | | | | | |

19 Dec 2001: The criteria and weighted values are based on a survey sent to 66 analysts. For details see: <http://documents.google.com/doc/summary>. Edited for simplicity by Kristen J. Wharton.

OCT 2013

2 Feb 2012: Excel Spreadsheets which guide instructors was produced by Bill Welch, Director, Director, Center for Intelligent Research Analysis and Training, Maryhurst College.

26 Jan 2013: Trust Scale and Web Site Evaluation Worksheet is in the PUBLIC DOMAIN.

Appendix 4 –Assessing Analytic Confidence

Peterson Factors

- How reliable are the sources?
- How well do the independent sources corroborate each other?
- What is my/my team's level of expertise?
- How effective was my analytic collaboration?
- Did I use any structured techniques in my analysis?
- How difficult did I perceive the task to be?
- Did I have enough time to complete the task?

Analytic Confidence

The analytic confidence for this estimate is *moderate*. Sources were generally reliable and tended to corroborate one another. There was adequate time, but the analyst worked alone and did not use a structured method. Furthermore, given the lengthy time frame of the estimate, this report is sensitive to change due to new information.

Appendix 5 – Data Visualization



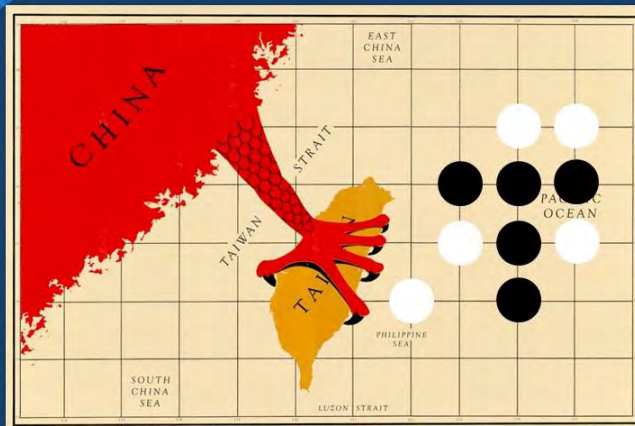
Appendix 6 – Briefing Slides



不战而胜

"The greatest victory is that which requires no battle."

China's Divine Move



Title: Divine Move, also known as the Hand of God, refers to the perfect game of Go.

Sun Tzu Panda



不战而胜

"The greatest victory is that which requires no battle."

COL Adam Camarano

LtCol Sung G. Kim

LTC Will Prince

LTC Robert Topper

LTC Christopher Wilson

3

Questions

1. What are the strategic conditions likely required to achieve the reunification of China and Taiwan? Over what time frame will China likely attempt to establish these conditions?
2. What are the opportunities that establishing the conditions from reunification sets for other elements of China's Grand Strategy?

4

Executive Summary



Within the next 10 years, increasing maritime capabilities, securing commodities, financial and technology resources, and expanding cyber and space maneuvers likely indicate China's attempt to reunify with Taiwan.

5

Road Map



5 Strategic Conditions



3 Options



24 Indicators

6

Strategic Conditions

Maritime Forces Capable of Power Projection

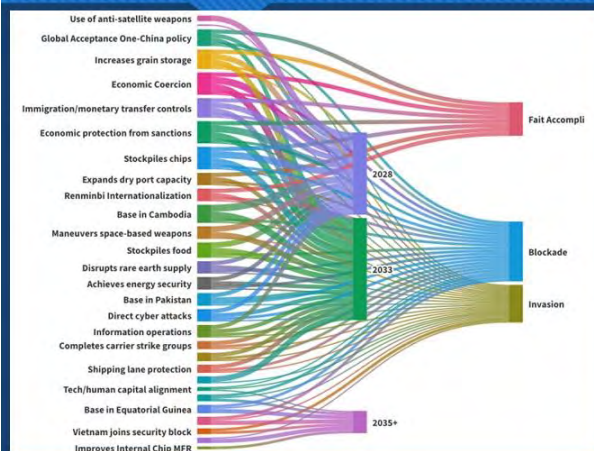
Commodities Security and Resilience

Economic Security

Technology Security

Increase Cyber and Space Activity

Options Available to China



Fait Accompli by 2028

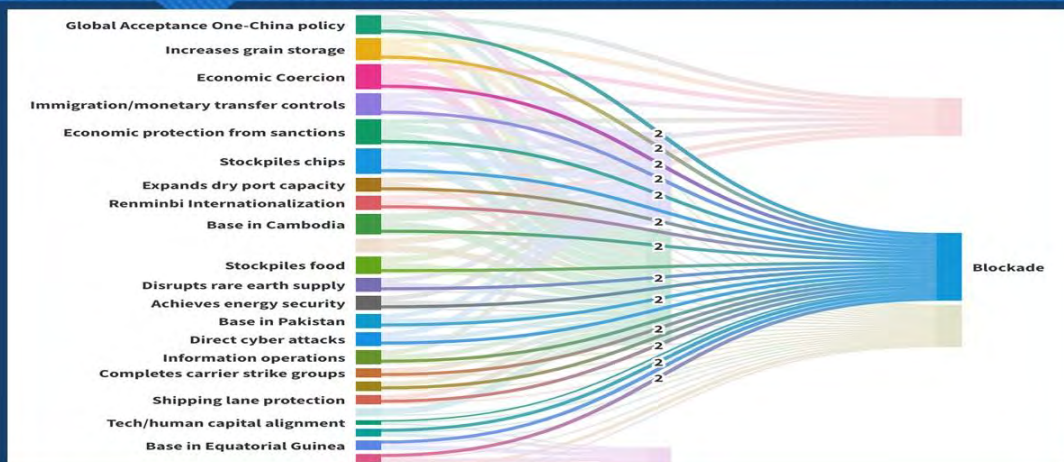
Blockade by 2033

Invasion by 2035+

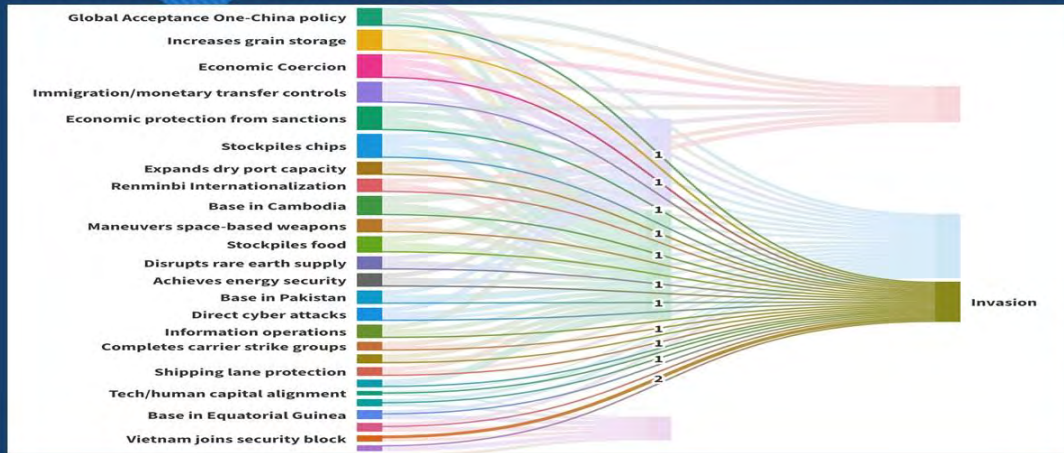
Fait Accompli Achievable by 2028



Blockade Achievable 2033



Invasion Unachievable by 2033



Strategic Condition 1



Maritime forces capable of regional and global power projection

Maritime Indicators



PLA-N fleet of five fully operational carrier strike groups

13

Maritime Indicators



Rate of building Type 075 and 076 amphibious assault ships

14

Maritime Indicators



Increase in joint amphibious training; emphasis on amphibious assault, over-the-horizon, ship-to-shore, and vertical lift

15

Maritime Indicators



Building bases along key shipping routes to protect energy and economic trade shipments

16

Maritime Indicators



PLA achieves military readiness of 75% or greater

17

Strategic Condition 2



Commodities Security and Resilience

18

Commodities Security Indicators



Soybean and grain imports increased by 25% or greater

19

Commodities Security Indicators



Construction of regional grain storage facilities near urban centers

20

Commodities Security Indicators



Agricultural storage construction projects on over 30% of rural farms

21

Commodities Security Indicators



China doubles dry port capacity

22

Commodities Security Indicators



PRC achieves energy diversification

23

Strategic Condition 3



Economic Security

24

Economic Security Indicators



BRICS leadership adopts digital currency

25

Economic Security Indicators



Secure Renminbi as the third most currency in global trade

26

Economic Security Indicators



Cross-Border Interbank Payment System (CIPS) volume increases by 25% annually

27

Economic Security Indicators



Economic coercion against foreign companies and industries

28

Economic Security Indicators



50% annual reduction of
Chinese high net-worth
individual emigration

29

Strategic Condition 4



Technology Security

30

Technology Security Indicators



China fully implement its
Military-Civil Fusion Strategy

31

Technology Security Indicators



PLA matches technological
and human capital

32

Technology Security Indicators



China domestically produces high-end semiconductor chips

33

Technology Security Indicators



Prevent brain-drain and feed education pipeline in sectors of interest

34

Strategic Condition 5



Increase cyber and space activities

35

Cyber and Space Indicators



Increase cyber operations

36

Cyber and Space Indicators



Disable Taiwanese undersea Internet cables

37

Cyber and Space Indicators



Maneuver surveillance and offensive satellites near U.S. space assets

38

Cyber and Space Indicators



Destructive anti-satellite attack of U.S. and allies space assets

39

Cyber and Space Indicators



Increase use of electromagnetic warfare in the Western Pacific

40

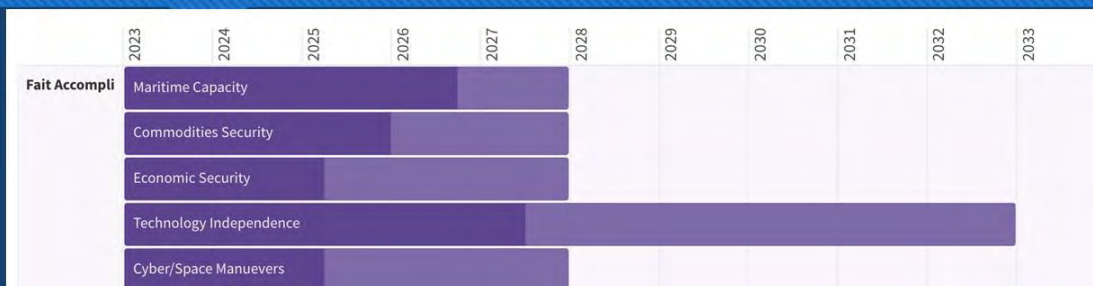
Fait Accompli



Accepting fait accompli will become Taiwan's only option. It is the least disruptive and most readily available for the international community to accept.

41

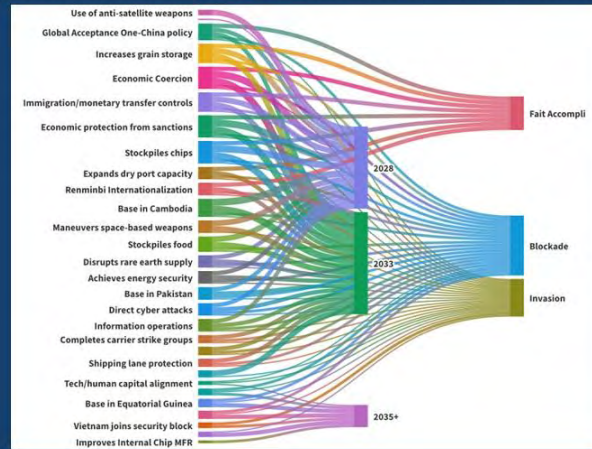
Fait Accompli



China sets strategic conditions where Taiwan has no better options but to reunify.

42

Fait Accompli



43

“The whole secret lies in confusing the enemy, so that he cannot fathom our real intent.”



不战而胜

(谢谢 - Xièxiè - Thank You)

44

Technology Used To Create The Video



AI Tools

D-ID (AI-Generated Face to Speech Video)

11 Lab (Voice Cloning)

Voice Over Speech (AI Voice Generator)

Other Tech

HitPaw Video Converter (Video File Converter)

Wave Pad (Audio Editor)

Audacity (Multi-track Audio Editor and Recorder)

iMovie (Movie Creation and Editing)

Video Credits

News Anchor Voice Cloned of Actress Li BingBing

General Li Shangfu and Minister Jin Zhuanglong Voices Generated

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LTC Robert Topper

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LTC Christopher Wilson

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46

Hidden Slides

47

Words of Estimative Probability

| Almost No Chance | Very Unlikely | Unlikely | Even Chance | Likely | Very Likely | Almost Certain |
|---------------------|------------------|----------|----------------|--------|-------------|-------------------|
| 1-5% | 5-20% | 20-45% | 45-55% | 55-80% | 80-95% | 95-99% |

48

Analytic Confidence

Our overall estimate is *moderate*.

49

Appendix 7 – Briefing Hand Out

BLUF

1. What are the strategic conditions likely required to achieve the reunification of China and Taiwan? Over what time frame will China likely attempt to establish these conditions?

China must set conditions in five areas to mitigate vulnerabilities and achieve the capabilities necessary to reunify Taiwan. These conditions integrate into the larger People's Republic of China's (PRC) grand strategy aimed at ascendance towards global dominance and serve multiple purposes to achieve that goal. Despite the broad application across the breadth of Chinese grand strategy, it is very likely (80-95%) these conditions are the key strategic indicators that demonstrate Beijing sufficiently mitigated the risk to national interests and established the capability to reunify with Taiwan.

2. What are the opportunities that establishing the conditions from reunification sets for other elements of China's Grand Strategy?

When viewing China's actions in the context of greater national interests, President Xi likely sees reunification with Taiwan as a fortunate by-product of overall ascendance to global leadership. Setting strategic conditions across maritime, commodities, economic, technology, space, and cyber is very likely to result in opportunities for China to achieve reunification via fait accompli. The goal for the PRC is to establish a dynamic where Taiwan and the global community see the result as a net positive or, at the very least, an outcome that outweighs the costs of conflict. Despite the military rhetoric and focus on Taiwan, the PRC is likely using the auspice of conflict to distract adversaries from broader global ambitions and focus on domestic urgency to align the population.

Words of Estimative Probability

The study used the Intelligence Community Directive 203 (ICD 203) for words of estimated probability (WEP).

| Almost No Chance | Very Unlikely | Unlikely | Even Chance | Likely | Very Likely | Almost Certain |
|------------------|---------------|----------|-------------|--------|-------------|----------------|
| 1-5% | 5-20% | 20-45% | 45-55% | 55-80% | 80-95% | 95-99% |

Analytic Confidence

In determining the analytic confidence of the report, the Peterson's Analytic Confidence Worksheet was used.

- How reliable are the sources?
- How well do the independent sources corroborate each other?
- What is my/my team's level of expertise?
- How effective was my analytic collaboration?
- Did I use any structured techniques in my analysis?
- How difficult did I perceive the task to be?
- Did I have enough time to complete the task?

Based on the factors, we assess that:

Our overall estimate is *moderate*.

Road Map

5 Strategic Conditions

- Maritime Forces Capable of Power Projection
- Commodities Security and Resilience
- Economic Security
- Technology Security
- Increase Cyber and Space Activity

3 Options

- Fait accompli
- Blockade
- Invasion

24 Indicators

- **Maritime Forces Capable of Power Projection**
 1. PLA-N fleet of five fully operational carrier strike groups
 2. Rate of building Type 075 and 076 amphibious assault ships
 3. Increase in joint amphibious training
 4. Building bases along key shipping routes
 5. PLA achieves military readiness of 75% or greater

- **Commodities Security and Resilience**
 - 6. Soybean and grain imports increased by 25% or greater
 - 7. Construction of regional grain storage facilities near urban centers
 - 8. Agricultural storage construction projects on over 30% of rural farms
 - 9. China doubles dry port capacity
 - 10. PRC achieves energy diversification
- **Economic Security**
 - 11. BRICS leadership adopts digital currency
 - 12. Secure Renminbi as the third most currency in global trade
 - 13. Cross-Border Interbank Payment System volume increases by 25% annually
 - 14. Economic coercion against foreign companies and industries
 - 15. 50% annual reduction of Chinese high net-worth individual emigration
- **Technology Security**
 - 16. China fully implements its Military-Civil Fusion Strategy
 - 17. PLA matches technological and human capital
 - 18. China domestically produces high-end semiconductor chips
 - 19. Prevent brain-drain and feed education pipeline in sector of interest
- **Increase Cyber and Space Activity**
 - 20. Increase cyber operations
 - 21. Disable Taiwanese undersea Internet cables
 - 22. Maneuver surveillance and offensive satellites near U.S. space assets
 - 23. Destructive anti-satellite attack of U.S. and allies space assets
 - 24. Increase use of electromagnetic warfare in Western Pacific