



# 10 Ways the United States Is Falling Behind China in National Security

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## Key Points

- While the United States still enjoys advantages over China in many key fields of national security competition, recent trends illustrate that American military dominance is stagnating and China is rapidly catching up.
- China is successfully leveraging asymmetric structural advantages, such as its authoritarian military-civil fusion and geographical position in the Indo-Pacific, to rapidly reach parity with or exceed the United States' military capabilities.
- Further complacency about these issues will only ensure that Chinese capabilities surpass those of the United States sooner than expected.

In military capability and capacity, the People's Republic of China (PRC) and the United States may soon be on an equal footing. US House Armed Services Committee Chairman Rep. Mike Rogers (R-AL) recently affirmed that "China is rapidly approaching parity with the United States."<sup>1</sup> A few years ago, the Defense Department's 2020 China military power report similarly noted, "China has already achieved parity with—or even exceeded—the United States in several military modernization areas."<sup>2</sup> The report highlighted land-based conventional ballistic and cruise missiles, shipbuilding, and integrated air defense systems as key areas of concern.

A recent development in these concerning trends is a memo that US Strategic Command sent to Congress in January 2023.<sup>3</sup> That memo revealed a startling finding: China now has more land-based (stationary and mobile) intercontinental ballistic missile launchers than the United States. This is but one instance in a string of examples of China rapidly catching up and exceeding the United States in military capability and capacity.

Beijing continues to leverage key structural advantages that are accelerating these gains. According to the

Pentagon, China's national strategy considers military modernization a key component of its effort to revise the international order to support Beijing's system of governance and national interests.<sup>4</sup> It demonstrates this intention through strategies such as military-civil fusion, which blurs or eliminates barriers between government and commercial sectors to build a more capable military at a rapid clip. Compared to the US, China develops and produces advanced capabilities at a fraction of the cost and time by avoiding burdensome bureaucratic processes that provide oversight and allow for open competition.

China also benefits from its geography in the Indo-Pacific: The likely near-term theaters of conflict are close to the PRC's shores and thousands of miles from the US mainland. For this reason, China need not even wait to surpass America's raw capabilities to obtain the competitive advantage in several key areas. Following is an overview of 10 areas in which the US national security apparatus has fallen behind or is due to fall behind the Chinese military, absent significant efforts and intervention.

## Total Military Investment

When it comes to overall defense spending, Beijing's nominal defense budget is larger than it seems. Sen. Dan Sullivan (R-AK) revealed on the floor of the Senate in June 2023 that US intelligence officials “came out and said the real Chinese budget, in terms of the military, is probably close to about \$700 billion,”<sup>5</sup> a figure far higher than the budget of \$224.79 billion announced in March 2023<sup>6</sup> and nearly equal to the United States' defense budget.

China's reported \$224.79 billion figure lacks considerable transparency, and official disclosures are narrow in detail, dividing spending into only three simple categories: personnel, training and maintenance, and equipment.<sup>7</sup> Furthermore, much of the PRC's hard power is not directly classified under the military and therefore goes unrepresented in Beijing's budget. According to the Stockholm International Peace Research Institute, China's defense budget top line does not include many military-relevant expenses such as space activities, large portions of research and development, construction, and paramilitary forces.<sup>8</sup>

Calculating a clear top-line estimate is further complicated by the PRC's policy of military-civil fusion, in which increasingly blurred lines between commercial enterprise and dual-purpose investments make unclear where a dollar spent for a civilian purpose ends and a dollar spent for a military purpose begins.<sup>9</sup> China's numerous paramilitary and civilian reserve organizations make up a significant portion of Beijing's military might but are not included in its defense budget. For example, the China Coast Guard, which operates military frigates and other vessels, is organized under the People's Armed Police, separate from the central Chinese military.<sup>10</sup> Owing to the blurred lines of military-civil fusion, the PRC has created armed civilian reserve forces, such as the People's Armed Forces Maritime Militia, which can be quickly mobilized for conflict.<sup>11</sup>

Additionally, simply converting spending from Chinese yuan to US dollars based on a currency exchange rate overstates American capacity if China pays significantly less for most things. For this reason, to conduct relevant comparisons, economies are often measured on purchasing power parity (PPP)—which is why China has the world's largest economy when accounting for PPP.<sup>12</sup> The principle holds when paying soldiers or

purchasing military hardware. The US-China military spending gap narrows even further when considering purchasing power specifically in the defense sector.<sup>13</sup>

Meanwhile, US defense spending is locked in at \$886 billion for fiscal year 2024.<sup>14</sup> While this is the highest nominal defense budget in history, as a portion of gross domestic product (GDP), it will be among the Pentagon's slimmest since before World War II. When accounting for inflation and other must-pay bills, this military's budget is actually declining by 3 percent.<sup>15</sup>

American defense spending has not grown proportionally with the nation's wealth or other federal spending. The defense budget continues to shrink as a percentage of national GDP, with the defense spending levels projected in fiscal year 2025 likely taking the budget under 3 percent of GDP for the first time since the days of the peace dividend. To keep up with economic growth, boosts to the defense budget would need to average at least 3 to 5 percent annually. However, recent defense budgets haven't even managed to keep pace with inflation, subtly chipping away at US combat power.<sup>16</sup> While the PRC's official defense top-line figure undercounts China's actual defense investments, the US figure overcounts America's investments due to extraneous nondefense spending hidden in the US defense budget.<sup>17</sup>

Cracks and strains are evident across the US military as inflation cuts into the Pentagon's buying power and further reduces the little share left to decision makers to fund new equipment, technology, concepts, and posture. For the US to properly compete on the other side of the globe, significant and costly power-projection capabilities are required. As a global power, the United States must balance priorities in the Indo-Pacific with those elsewhere, such as deterring Iran, countering Russian aggression, and shoring up allied commitments, which spreads Washington's budget thinly across multiple theaters.

## Hypersonic Missiles

Launchers are not the only area in which China has a numerical, or capacity, advantage. An advantage lies in the country's missiles themselves; as the Center for Strategic and International Studies notes, China has the “largest and most diverse missile arsenal in the world.”<sup>18</sup>

While the United States possesses categories of missiles (cruise, ballistic, and loitering munitions) comparable to those in China's vast arsenal, China has a near-assured advantage in one category: hypersonic weapons, which it is ahead in fielding. For instance, Beijing unveiled its hypersonic glide vehicle-equipped Dongfeng (DF)-17 ballistic missile at a military parade in fall 2019,<sup>19</sup> and the following year, the missile was likely fielded.<sup>20</sup> According to the chief scientist of the Defense Intelligence Agency's Directorate for Analysis, this missile "is estimated to have an approximate range of at least 1,000 miles enabling it to reach U.S. military forces in [the] western Pacific."<sup>21</sup>

Although the DF-17's supposed ability to strike US military based in the Indo-Pacific has garnered attention,<sup>22</sup> China's hypersonic program is developing other weapons, including the DF-41, DF-ZF hypersonic glide vehicle, and Starry Sky-2.<sup>23</sup> Each missile's mechanics differ, and despite their various stages of development, they could all beat US air defenses through their next-generation speed and maneuverability and threaten concentrations of military forces or even the US homeland. These glide vehicles are also nuclear capable, meaning that paired with an expansion of the strategic nuclear forces of the People's Liberation Army (PLA), Beijing's advantage in this field could alter the equation of nuclear deterrence.<sup>24</sup>

China's edge over the United States in this area is partly because of the number of tests China conducts compared to the United States. Former Under Secretary of Defense for Research and Engineering Michael Griffin noted in 2018 that China had conducted 20 times more hypersonic missile technology tests than the United States during the preceding decade.<sup>25</sup> Now the United States is belatedly developing its own hypersonic weapons, although deployment has met many challenges.

The United States' premier attempt at deploying a hypersonic missile, the Long-Range Hypersonic Weapon (LRHW), is scheduled for its first battery fielding later this year. But due to test delays, that plan may no longer be on the table, potentially setting back the schedule for fielding this weapon and making it operationally available.<sup>26</sup> If this first battery is not deployed by year's end, then the LRHW will join the military's other stalled attempts at building hypersonic weapons, which are stuck in various stages of research, testing, and development.<sup>27</sup>

While the race is on to build increasingly advanced versions of hypersonic weapons, it is far from over. Still, the United States' complacency has allowed China a valuable head start that has clearly enabled it to field such weapons more rapidly.

## Fleet Size and Strength

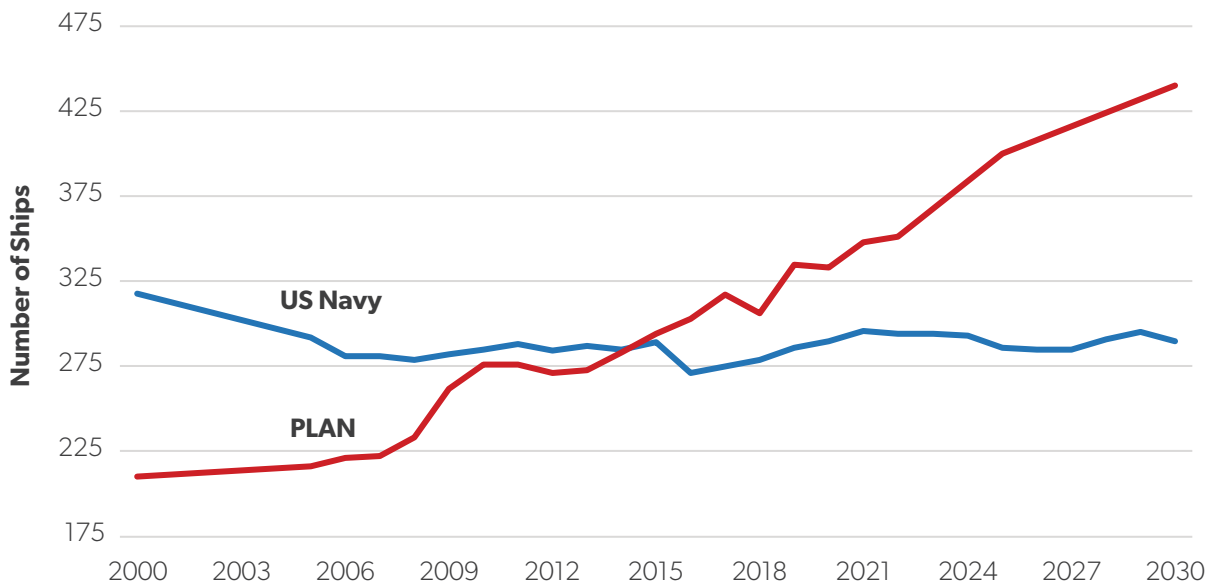
It is well-known that China has an edge over the United States in the raw size of its navy, the People's Liberation Army Navy (PLAN). China maintains the world's largest battle force ship inventory, with 340 ships,<sup>28</sup> compared to the United States' 297 ships.<sup>29</sup> And the trends for making up the difference aren't pointing in the right direction. The PLAN is expected to grow to 400 ships just two years from now and continue growing so quickly that it will reach 440 ships by the start of the next decade. According to the US Navy, the PLAN's growth will be concentrated in a few types of platforms, namely ballistic missile submarines, frigates, corvettes, cruisers, and destroyers.<sup>30</sup>

Meanwhile, the United States is stuck in neutral, with its fleet size set to decline over the next few years and all three of the Navy's most recent 30-year shipbuilding plans putting the Navy at a 300-ship fleet by 2032 at the earliest. Under the plan set forth in the president's fiscal year 2024 budget request, the Navy will construct roughly a dozen or fewer vessels per year while allowing a near-equal number of retirements. As seen in Figure 1, this results in a stagnant US fleet size while China continues to lay down more tonnage.

Of the Navy's three shipbuilding plans, only the most aggressive, which has no funding constraints and assumes real growth in shipbuilding capacity, provides the Navy with a fleet the size of China's today. In that scenario, the Navy would reach a fleet of 340 ships well over a decade from now, in 2038.<sup>31</sup>

Fueling the PLAN's rapid growth is China's large shipbuilding sector. According to the Pentagon's 2020 China military power report, China "is the top ship-producing nation in the world by tonnage."<sup>32</sup> That report also noted that the country's shipbuilding sector has made it close to self-sufficient in meeting all shipbuilding needs, since it can manufacture nearly all electronic systems, shipboard weapons, diesel engines, and naval gas turbines for its vessels.<sup>33</sup>

**Figure 1. US Navy and PLAN Actual and Projected Force Levels, 2000–30**



Source: Ronald O'Rourke, *Navy Force Structure and Shipbuilding Plans: Background and Issues for Congress*, Congressional Research Service, April 19, 2023, <https://sgp.fas.org/crs/weapons/RL32665.pdf>; and Ronald O'Rourke, *China Naval Modernization: Implications for U.S. Navy Capabilities—Background and Issues for Congress*, Congressional Research Service, May 15, 2023, <https://crsreports.congress.gov/product/pdf/RL/RL33153>.

As another sign of strength in China's shipbuilding capacity, the most recent statistics released by the United Nations said China accounted for 44 percent of the world's shipbuilding sector in 2021.<sup>34</sup> The country is also the world's largest shipbuilder in terms of production capacity, since the 2019 merger of two state-owned conglomerates, the China Shipbuilding Industry Corporation and the China State Shipbuilding Corporation.<sup>35</sup>

China's large shipbuilding capacity is largely a factor of the sheer size and number of its shipyards. The Office of Naval Intelligence has noted that dozens of Chinese shipyards exceed the United States' largest in size and throughput. Further fueling the PLAN's growth is Chinese shipyards' integration of commercial and military shipbuilding, which cuts down on overhead costs and allows greater workforce and infrastructure development.<sup>36</sup> That integration also means that foreign orders of commercial ships manufactured at Chinese shipyards may subsidize the PLAN's continued expansion. Ultimately, this means that in a conflict with naval losses, China could rebuild its fleet far faster than the United States.

For domestic commercial ships, the PRC mandates construction with certain military specifications so it can augment the Chinese fleet during a future war. When commandeered, these thousands of additional ships and their crews can be easily repurposed for activities such as transporting military personnel and equipment.<sup>37</sup>

While these trends are certainly worrying, given the varied classes and capabilities of ships in the inventories of the United States and China, fleet size can be a one-dimensional measure of naval power.<sup>38</sup> Sheer quantities of ships alone will not allow the PLAN to project sea power far beyond its home waters. Almost all US ships are considered blue-water capable with global reach, while many PLAN vessels are coastal corvettes and patrol craft. Considering only these blue-water ships, the US was estimated to have a fleet nearly twice the size of the PRC's in 2021.<sup>39</sup> The United States also still holds a payload advantage onboard its vessels. The US Navy's larger quantity of larger ships allows it to field far more long-range sea-based missiles, with US surface ships fielding nearly 9,000 vertical launch missile cells to the PLAN's estimated 1,000.<sup>40</sup>

However, Beijing recognizes its disadvantage, and the PLAN is making rapid strides as it continues to field more blue-water ships. Notably, the *Fujian*, the PLAN's third aircraft carrier, will enter sea trials later this year, having leapfrogged the advances of its predecessors.<sup>41</sup> While the United States holds the blue-water advantage, this dominance is lessened as the PRC's near-term targets such as Taiwan and other contested islands provide it with a home field advantage, since they are located close to mainland ports. For farther interests, such as those in the South China Sea, the PRC is extending its naval support infrastructure by building up artificial islands.<sup>42</sup>

America's advantages should not go overlooked. The US Navy has considerable experience conducting worldwide operations for much of the past century, while the PLAN's capabilities remain largely unproven. US allies' fleets and port networks form an even more formidable naval coalition in the Indo-Pacific.

However, the United States' advantages have also fueled its stagnancy. For the United States to catch up to the Chinese navy in size, it must first clarify what kind of navy it seeks to sail in the future. The service cannot continue submitting to Congress shipbuilding scenarios that are insufficient to quickly meet the threat of the Chinese navy. Varied plans that come consistently late to Congress signal indecision on the United States' part—hardly what is needed to deter aggression.

In addition, the United States must expand shipbuilding capacity, send a strong demand signal to the shipbuilding base with aggressive shipbuilding orders, and fund the Navy's Shipyard Infrastructure Optimization Program<sup>43</sup> to repair the country's aging public shipyards.<sup>44</sup> Military infrastructure cannot be neglected; Congress must work to ensure that the Navy can reach its stated goals. Lawmakers have proposed the SHIPS Act, which would expand American military shipbuilding and provide clear strategy to achieve a 355-ship fleet necessary to counter China.<sup>45</sup> This is certainly a step in the right direction, and similar proposals to boost America's aging Army and Air Force should complement it.

## Integrated Air Defense System

China has built an integrated air defense system (IADS) architecture that is “robust and redundant” enough that the Pentagon's 2020 China military power report

identified it as a challenge to the United States' ability to project power in the Indo-Pacific, warning that it could alter the calculus of conflict to favor Beijing and deter the US.<sup>46</sup> China's IADS covers the country's land and the waters within 556 kilometers (km) of the Chinese coastline, and this coverage is augmented through deployment of radar and surface-to-air missile systems on islands China claims in the South China Sea.<sup>47</sup> With its web of sensors and anti-aircraft weapons, China's air defense system would pose significant difficulties for US forces near China's coast and throughout the Indo-Pacific.

The number and type of long-range surface-to-air missiles in China's inventory demonstrate the country's advancements in developing its IADS. As the RAND Corporation has reported, in the late 1990s, most of China's long-range surface-to-air missile systems were aging Russian missiles with a maximum range of 35 km. A decade later, in 2010, China had fielded around 200 launchers with more advanced seekers that could strike targets up to 200 km away.<sup>48</sup> That development has continued apace with the country expanding its surface-to-air missile arsenal, purchasing Russian systems such as the S-400 and indigenously producing the HQ-19,<sup>49</sup> an antiballistic missile system roughly comparable to the THAAD system operated by the United States.<sup>50</sup>

Ranges for China's air defense system have improved with the expansion of its arsenal, as the country now possesses indigenous missiles that can engage targets within 250 km.<sup>51</sup> That increased range, coupled with the sensors, weapons, and fighters that make up China's IADS, allows China to execute an anti-access and area-denial (A2AD) strategy within the first island chain (the islands encompassing Japan, Taiwan, and portions of the Philippines and Indonesia closest to China) that will extend farther into the Philippine Sea and even the Pacific Ocean.<sup>52</sup>

Such a strategy poses significant challenges for the US military to mobilize and deploy forces to reinforce American and allied units already stationed in the western Pacific in a war scenario. Airborne assets actually in the theater will be forced to operate from extreme standoff ranges or face a high risk of loss of life or equipment, severely complicating military strategy and straining allied capabilities.

The challenges posed by these systems' buildup in and around China highlight the importance of the US



sustaining and bolstering a combat-credible presence in the Indo-Pacific to maintain deterrence and prevent conflict entirely. This includes basing military weapons, forces, and other key capabilities west of the international date line in US territories such as Guam or allied states such as Japan,<sup>53</sup> the Philippines,<sup>54</sup> and even Australia.<sup>55</sup> Despite China's growing A2AD capabilities, more US forces and increased posture in the Indo-Pacific are needed to alter Beijing's calculus for taking Taiwan by force.

## Manufacturing and Technological Industrial Base

While the United States is home to some of the most experienced and advanced shipbuilding, aerospace, technology, and defense manufacturing workforces, China is catching up. Of the 15 largest defense firms in the world, seven are Chinese state-owned companies.<sup>56</sup> These companies are manufacturing numerous key weapons and technologies that are on the same level as those produced by top non-US firms, as the Pentagon's 2022 report on Chinese military capabilities has affirmed.

The Pentagon power report also notes that China's ballistic and cruise missiles are "comparable in quality to systems of other international top-tier producers."<sup>57</sup> As for the country's ground weapon systems, the report calls these "at or near world class standards."<sup>58</sup> Furthermore, the Chinese finally are fixing long-standing problems with domestic production of aircraft engines, which previously caused engines (aircraft and naval) to make up the largest share of arms imports to China between 2015 and 2020.<sup>59</sup> In a dramatic shift, the PRC is now outfitting the J-10 and the more advanced J-20 fighters with domestically produced engines.<sup>60</sup>

Chinese military technology's growing capability is indicative of the broader state of the Chinese industrial base, which, according to the World Bank, produces nearly double the output of the United States.<sup>61</sup> Globally, China's manufacturing amounts to around a quarter of the world's total output. Moreover, roughly 50 percent of China's tremendous output can be considered dual use, applicable to both commercial and military uses.<sup>62</sup>

Another advantage for China is that for at least the past several decades, its defense industrial base has

turned out new technology and machines quickly due to its "absorptive" acquisition model.<sup>63</sup> Such a model entails acquiring foreign technologies that are either strictly for military purposes or dual use and using them to produce and develop new weapons platforms. The model also emphasizes reverse engineering over research and development, unlike the United States' technology development methods.<sup>64</sup>

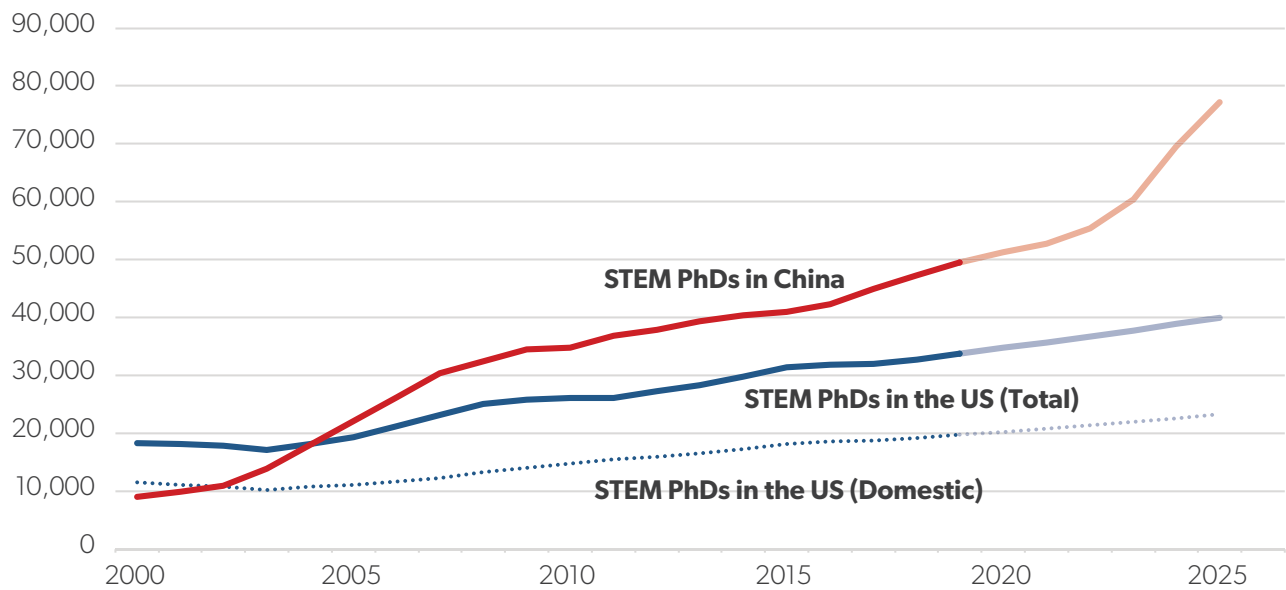
Complementing this strategy is Beijing's heavy emphasis on STEM education and critical technologies research. Human capital is key to building a technology industry, as Beijing knows. As seen in Figure 2, China has produced more STEM PhD graduates than the United States has every year since the mid-2000s,<sup>65</sup> and Chinese universities such as Tsinghua University in Beijing have become the top in the world for computer science<sup>66</sup> and engineering.<sup>67</sup> In addition, China produces the most peer-reviewed science and engineering publications of any country, at 23 percent of the global share, while the United States is second, at 16 percent.<sup>68</sup>

These developments' implications for Chinese military power are immense. Owing to the country's policy of military-civil fusion,<sup>69</sup> advances in science and technology in academia and the private sector are directly translatable to the creation of advanced military capabilities. The Australian Strategic Policy Institute has found that China leads the world in 37 of 44 critical technologies, including several with military applications, such as hypersonic weapons, drones, and advanced robotics.<sup>70</sup>

The US lead on technological research has not completely evaporated. The US is still the top destination for international students,<sup>71</sup> and American universities still make up a majority of the highest-ranked institutions.<sup>72</sup> However, as visible in Figure 2, the trajectory points toward future advantages for China. According to a Center for Security and Emerging Technology report, China may produce over twice as many STEM PhDs as the US produces by 2025.<sup>73</sup> STEM doctoral degrees are considered an indicator of the future competitiveness of a STEM workforce, and China is already gaining the upper hand.

Despite its formidable strengths, the Chinese broader defense industrial base suffers from key weaknesses, including foreign dependencies.<sup>74</sup> For instance, the PRC's most valuable import in 2021 was electronic integrated circuits, more commonly known as chips.<sup>75</sup> Key

**Figure 2. STEM PhDs in the US and China, 2000–30**



Source: Remco Zwetsloot et al., *China Is Fast Outpacing U.S. STEM PhD Growth*, Georgetown University, Center for Security and Emerging Technology, August 2021, <https://cset.georgetown.edu/wp-content/uploads/China-is-Fast-Outpacing-U.S.-STEM-PhD-Growth.pdf>.

strategic raw materials, including iron ore and crude oil, also rank high on China’s list of imports, demonstrating that China largely relies on the outside world for these commodities, which would be crucial to fueling the Chinese military in a potential conflict.

Policymakers have started to recognize the need for action on this challenge, with the Biden administration recently taking steps to limit China’s access to advanced semiconductors and the machines used to manufacture them, aiming to slow Chinese innovation in this space.<sup>76</sup> The US Department of Commerce’s limitations on China are all the more crucial due to the importance of chips in modern weapons systems and munitions,<sup>77</sup> as shortages that Russia encountered just six months into invading Ukraine illustrate.<sup>78</sup> While the US does hold an advantage in advanced chip manufacturing, policymakers must still remain cautious over China’s near monopoly on older chip-making systems, which are required to power many US military legacy weapon systems.<sup>79</sup>

Overall, Washington must get serious about reinvigorating the United States’ defense industrial base. The war in Ukraine has highlighted key shortcomings in areas such as munitions production, whose potential

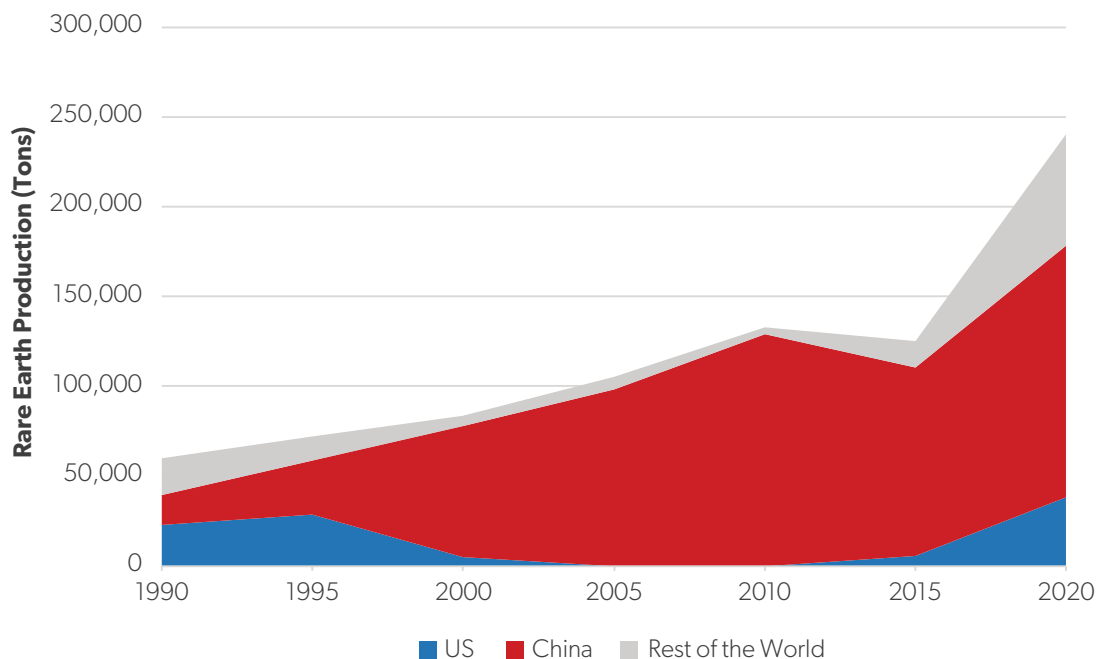
expansion is estimated to take years.<sup>80</sup> In the event of a Chinese invasion of Taiwan, the Taiwanese would need large quantities of even more advanced munitions, which, if supplied, would quickly deplete American stockpiles. To be ready for conflict tomorrow, the US must prepare today.

## Minerals and Rare Earths

Beijing seeks to employ a strategy of “dual circulation,” in which other countries increase their supply chains’ dependence on the PRC while China pursues self-reliance. This policy entails an increased focus on material extraction, processing, and manufacturing during the first and intermediate phases of the supply chain.<sup>81</sup>

China’s implementation of its dual circulation policy can be seen in its dominance over the minerals and metals used in American weapons systems. Of the 37 minerals relevant for the defense industry, only five are concentrated in Australia, Canada, and the United States, while 18 are concentrated in China, and the remaining 14 are concentrated in countries that maintain strong diplomatic and economic ties to China.<sup>82</sup>

**Figure 3. Global Rare Earth Production, 1990–2020**



Source: US Department of the Interior, US Geological Survey, “Mineral Commodity Summaries 2021,” January 29, 2021, <https://pubs.usgs.gov/periodicals/mcs2021/mcs2021.pdf>; US Department of the Interior, US Geological Survey, “Mineral Commodity Summaries 2016,” January 28, 2016, <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/mineral-pubs/mcs/mcs2016.pdf>; US Department of the Interior, US Geological Survey, “Mineral Commodity Summaries 2011,” January 11, 2011, <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/mineral-pubs/mcs/mcs2011.pdf>; US Department of the Interior, US Geological Survey, “Mineral Commodity Summaries 2006,” January 13, 2006, <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/mineral-pubs/mcs/mcs2006.pdf>; US Department of the Interior, US Geological Survey, “Mineral Commodity Summaries 2001,” January 25, 2001, <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/mineral-pubs/mcs/mcs2001.pdf>; US Department of the Interior, US Geological Survey, “Mineral Commodity Summaries 1996,” January 1996, <https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/atoms/files/mcs-1996ocr.pdf>; and US Department of the Interior, US Geological Survey, “Minerals Yearbook 1991, vol. 1,” US Department of the Interior, Bureau of Mines, 1991, <https://search.library.wisc.edu/digital/A5X7AW22D2URO8R>.

But not just the concentration of critical minerals has given China an advantage over the United States in this area; the country’s dominance in refining the minerals has done so too. On a global scale, China refines 73 percent of cobalt, 40 percent of copper, and 59 percent of lithium.<sup>83</sup> These minerals are perhaps the most important to building a modern army, with each element having critical military applications: Cobalt is used in jet engines,<sup>84</sup> copper is used in ammunition and electronics,<sup>85</sup> and lithium is used in batteries.<sup>86</sup> Even rarer minerals, such as yttrium, are necessary to advanced laser and radar systems that power next-generation platforms such as the F-35 Lightning II.<sup>87</sup>

When it comes to rare earth minerals, China maintains a grip on 60 percent of global mined production, 85 percent of the world’s processing capacity, and

more than 90 percent of manufacturing for rare earth permanent magnets.<sup>88</sup> Key to China’s hold on the market is the consolidation of Chinese state-owned rare earth metal conglomerates. As it did with its shipbuilding sector, China consolidated five of its state-owned rare earth metal enterprises into one company, a merger that created the second-largest rare earths producer in the world.<sup>89</sup>

This consolidation and China’s general shift from a decentralized economy should concern the United States. The US-China Economic and Security Review Commission has said that “the systematic penetration and consolidation of control over China’s economy allows Beijing greater leverage over U.S. supply chains concentrated in China.”<sup>90</sup> In July 2023, Beijing already demonstrated its willingness to weaponize the United



States' reliance on critical minerals when it restricted the export of gallium and germanium—two minerals necessary to constructing advanced chips and missile systems—to the United States.<sup>91</sup> Should a conflict erupt between the United States and China, the United States could find itself running dangerously low on these rare and critical materials, which are crucial to maintaining military systems.

It wasn't always like this. In fact, for much of the 20th century, the United States was the lead producer of rare earth minerals.<sup>92</sup> As seen in Figure 3, China's dominance began in the 1990s, after Beijing ramped up mining efforts to flood the market and undermine competitors—and it worked.<sup>93</sup> The Mountain Pass Rare Earth Mine and Processing Facility, which mined a large proportion of the United States' rare earth minerals, was undercut and put out of business, leading to China's unparalleled dominance in the field.<sup>94</sup>

Still, Washington can take a few actions to fight back against Chinese dominance over the rare earth mineral supply chain. The US can increase its stockpiles and reinvest in American mines, onshoring production to better insulate the defense industry from supply-chain disruptions,<sup>95</sup> which lawmakers have recently moved to do.<sup>96</sup> Such moves have even inspired reinvestment and the recent reopening of the Mountain Pass mine, which could once again begin producing vast quantities of rare earths.<sup>97</sup> Washington would also be wise to pursue “friendshoring”—relocating manufacturing and supply chains away from China into friendly countries—resources that cannot be onshored.<sup>98</sup>

## Gray-Zone Operations Short of Armed Conflict

China has an asymmetric advantage in gray-zone operations due to its comparative willingness to frequently use them. China's gray-zone actions include influence and disinformation campaigns online, economic actions intended to punish or harm nations for opposing China, and military actions short of war, such as constructing military installations on territory claimed by other nations throughout the South China Sea.<sup>99</sup>

Many of China's neighbors, such as Australia, Japan, Taiwan, and Vietnam, are victims of China's nefarious efforts in this area. *Vis-à-vis* Taiwan, Beijing has employed gray-zone operations to slowly shift the

status quo of acceptable military aggression in the Taiwan Strait. Two decades ago, incursions into Taiwan's airspace were a rarity. Now, they are all too common and have shifted the norms of Chinese military activity in the region.<sup>100</sup>

Other activities, such as placement of pro-Chinese Communist Party (CCP) stories in Taiwanese newspapers<sup>101</sup> and attempts to influence elections on the island, can be considered part of China's gray-zone operations. Perhaps the most significant example of such activities are the military drills that China held off Taiwan's coast following then-US House Speaker Nancy Pelosi's (D-CA) visit to the island in August 2022.<sup>102</sup> Speaker Kevin McCarthy's (R-CA) meeting with Taiwanese President Tsai Ing-wen in early April 2023 elicited a similar response from China.<sup>103</sup>

Economically, China has thrown around its weight against a laundry list of countries such as Australia,<sup>104</sup> Canada,<sup>105</sup> Lithuania,<sup>106</sup> South Korea,<sup>107</sup> and Taiwan,<sup>108</sup> as well as American non-state entities such as the NBA,<sup>109</sup> all to prevent criticism and opposition to China's abuses of human rights and the international order. This continues today with efforts to manipulate public opinion and elections in the United States<sup>110</sup> and defensive actions designed to make sure Beijing can control its own citizens' beliefs.<sup>111</sup>

As Beijing uses every avenue and tool to manipulate and coerce, Washington is doing little to fight back. The US has enormous economic power, but policymakers appear paralyzed on whether to take defensive actions such as strategic decoupling, which would weaken China's influence over the American economy.<sup>112</sup> They seem even less willing to use sanctions to effectively deter Chinese aggression by increasing the costs of China's actions.<sup>113</sup>

The US military can do more to counter this gray-zone activity. While current freedom of navigation operations show Beijing that the United States does not accept China's illegal claim to the South China Sea,<sup>114</sup> more must be done. The US needs a proactive plan to help allies in the Indo-Pacific deal with this challenge. Potential solutions include building on the new “Quad”-created Indo-Pacific Partnership for Maritime Domain Awareness by providing US unmanned aircraft system and satellite data to enable detailed monitoring and thus better countering of Chinese gray-zone activity.<sup>115</sup> Furthermore, the United States could focus

Marine Corps security and assistance exercises in the region on helping allies patrol their waters and protect the free movement of shipping to and from their ports. More littoral combat ships in the South China Sea and allied waters could diminish gray-zone harassment.

Former Deputy National Security Adviser Matthew Pottinger and Chinese human rights and democracy advocate Tong Yi testified before the House Select Committee on the CCP on the value of undermining the “Great Firewall of China,” but until a real effort is made, US attempts to inform and influence the Chinese public with its own gray-zone operations will have little chance of success.<sup>116</sup> Exposing the Chinese public to the information available beyond the Great Firewall offers a chance at undermining the CCP’s legitimacy. It is often argued that authoritarian governments such as Beijing’s have an advantage in the gray zone,<sup>117</sup> but this just means the United States must work harder to bring about the whole-of-society approach necessary for winning in this crucial area of competition.<sup>118</sup>

## The Space Domain

The 2022 Space Industrial Base Report jointly published by the US Space Force, the Defense Innovation Unit, and the Air Force Research Laboratory argues that China is working to become the world’s dominant space power “economically, diplomatically and militarily by 2045,” with an upward trajectory far steeper than that of the United States.<sup>119</sup> Here again, China uses its strategy of military-civil fusion. The 2022 Defense Intelligence Agency’s *Challenges to Security in Space* report notes that the PLA controls China’s space program for military and civilian uses, such as modernizing the military, bolstering its technology sector, and increasing international relationships.<sup>120</sup>

In a sign of growing capability in this domain, China surpassed the US in orbital satellite launches in four of the past five years, as seen in Figure 4. Since 2018, China has doubled its intelligence, surveillance, and reconnaissance satellites, achieving a number second only to the United States.<sup>121</sup> For China, space superiority is not just another part of competition with the United States; it is a crucial part of “informationized” warfare.<sup>122</sup>

The space launch landscape today, however, is rapidly changing. American federal contracts with private enterprise have brought the success of SpaceX,

which now routinely operates reusable launch vehicles. Rockets such as the Falcon 9 and Falcon Heavy are enabling the US to launch payloads to orbit at a fraction of the cost of China’s expendable Long March family of rockets.<sup>123</sup>

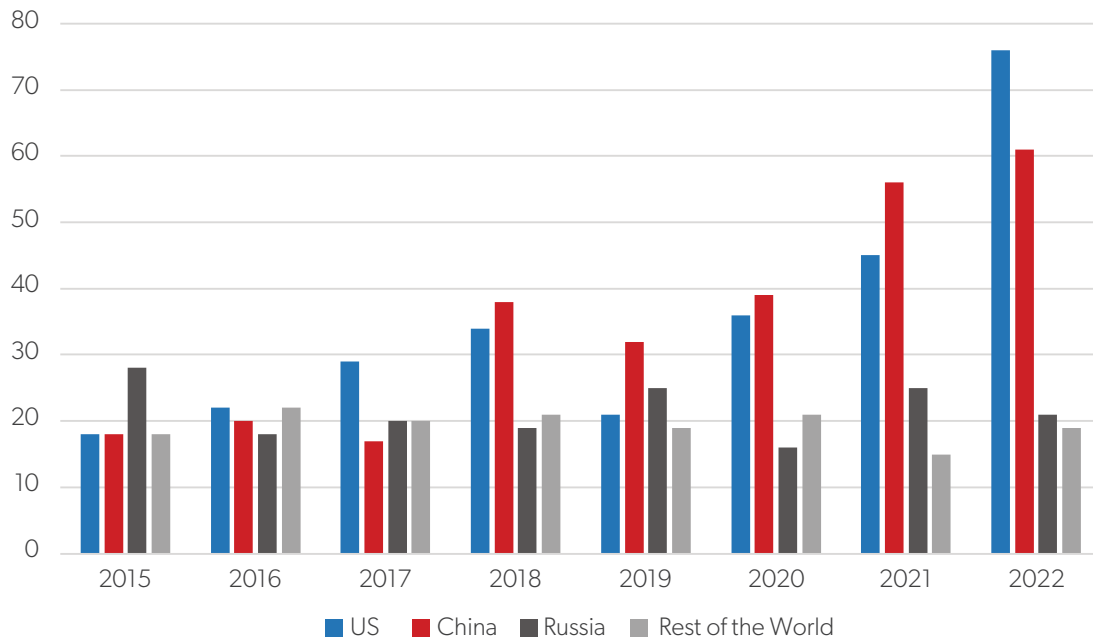
In only the past few years, this has allowed the United States to dramatically surge ahead in raw tonnage launched into space at a rate China cannot keep up with using its current rocket technology.<sup>124</sup> Beijing, of course, intends to change this. In 2020, China submitted a filing with the International Telecommunications Union to launch 12,992 satellites, and Chinese officials plan to introduce the reusable rocket technology required to achieve this by 2025.<sup>125</sup>

Beijing recognizes the United States’ head start and heavy reliance on space. Accordingly, PLA doctrine emphasizes counter-space capabilities, asserting that adversary satellites are valid targets in a regional military conflict whose destruction could serve to “blind and deafen the enemy.”<sup>126</sup> According to the 2022 China military power report, China is developing “direct-ascent anti-satellite missiles, co-orbital satellites, electronic warfare, and directed-energy systems” to deny “an adversary’s access to and operations in the space domain.”<sup>127</sup>

China also seeks to shape the legal norms concerning space. China enlisted Russia’s support to draft the Treaty on the Prevention of the Placement of Weapons in Outer Space, the Threat or Use of Force Against Outer Space Objects (PPWT). This treaty is designed to limit the proliferation of offensive weaponry in space<sup>128</sup> but notably does nothing to restrict the testing of anti-satellite weapons.<sup>129</sup> Treaties like the PPWT, if enacted, would make established American advantages in space, such as the GPS, vulnerable.<sup>130</sup>

The United States has voluntarily stopped all testing of direct-ascent anti-satellite missile systems<sup>131</sup> after previously testing and launching plane-launched<sup>132</sup> and ship-launched<sup>133</sup> versions, due to the threat of the debris that these tests create. China continues to develop and test anti-satellite weapons, creating “a robust arsenal of space and counterspace capabilities,” as assessed by the Center for Strategic and International Studies.<sup>134</sup> The space domain is crucial for the command and control of the American and Chinese militaries, but just as the United States’ society and economy heavily rely on the cyber domain, they depend on space-based systems

**Figure 4. Total Space Launches by Country, 2015–22**



Source: Center for Strategic International Studies, Space Environment: Total Launches by Country, February 16, 2023, <https://aerospace.csis.org/data/space-environment-total-launches-by-country>.

for everyday life and commerce. This means the US is one of the countries most vulnerable to not only deliberate attacks in space but also the reckless testing of such weapons.

To prevent Chinese dominance in space, the United States should continue expanding a multilateral, rules-based order in the space domain. The Artemis Accords, a recent endeavor by the US and 24 other countries to enhance cooperation in space, illustrate the capacity for American leadership in this domain.<sup>135</sup> Policymakers would be wise to fully fund the United States Space Force to ensure Chinese advances do not go unchallenged.<sup>136</sup>

## Cyber Operations

China has accrued advantages in alternative domains of warfare as well. China now “enjoys an asymmetric advantage over the United States in cyberspace due to the CCP’s unwillingness to play by the same rules,” according to the US-China Economic and Security Review Commission’s 2022 report.<sup>137</sup> Unlike the United States, China conducts state-sponsored cyberespionage for unlawful economic advantage. It steals American

companies’ intellectual property and harvests for its own military the designs of American weapons systems including the F-35, V-22 Osprey, and Terminal High Altitude Area Defense (THAAD) system.<sup>138</sup> These are just a few of the 224 instances of confirmed Chinese espionage directed at the United States since 2000<sup>139</sup>—and the FBI estimates that the annual cost to the US economy ranges from \$225 billion to \$600 billion.<sup>140</sup>

Additionally, China breaks the norm of a free and open internet by claiming “cyber sovereignty,” otherwise known as state control, allowing it to erect virtual borders around its networks and effectively insulate Beijing’s policies from internal and external dissent.<sup>141</sup> Beijing has been aggressively pushing this vision for proliferating a divided, state-controlled internet in international organizations to challenge the norms.<sup>142</sup>

An additional reason for China’s asymmetric advantage in cyberspace is its intentional blurring of the lines between state and private actors operating in this domain. China employs nominally private hackers for its own state-directed purposes.<sup>143</sup> For instance, in 2018, the Department of Justice unsealed charges against two Chinese nationals accused of stealing intellectual property and private business information from managed

service providers, which are companies that oversee the information technology infrastructure of governments and businesses. These two hackers were connected with the APT 10 Group, which, as the indictment against them shows, had connections to the Chinese Ministry of State Security.<sup>144</sup>

One central reason China has been able to substantially increase its cyber capabilities is the reorganization of its institutions dedicated to cyber policymaking. The CCP has centralized and expanded the organizations it operates for controlling, regulating, and using the cyber domain, including the Central Commission for Cybersecurity and Informatization, the Ministry of Industry and Information Technology, and multiple others.<sup>145</sup> This reorganization has culminated in the largest hacking force in the world—whose personnel outnumbers that of the FBI 50 to one.<sup>146</sup>

An organization that would be immensely useful to the PLA during wartime is the People’s Liberation Army Strategic Support Force (SSF). Established in 2015 amid a reorganization of the PLA to increase its power projection (overseas, in space, and in cyberspace), the SSF is responsible for conducting and overseeing space and information warfare operations, of which cyberwarfare is a key component.<sup>147</sup> The SSF’s reorganization also brought cyber intelligence and offensive operations under one department. This institutional blend theoretically provides operational advantages over the US, which has separate institutions for intelligence and cyber operations.

As part of its mission, the SSF is tasked with offensive cyber operations during war. Such operations could be hugely detrimental to the functioning of American society, with the director of national intelligence’s 2022 annual threat assessment finding that “China almost certainly is capable of launching cyber attacks that would disrupt critical infrastructure services within the United States, including against oil and gas pipelines and rail systems.”<sup>148</sup>

The 2023 version of that assessment noted, “If Beijing feared that a major conflict with the United States were imminent, it almost certainly would consider undertaking aggressive cyber operations against U.S. homeland critical infrastructure and military assets worldwide.”<sup>149</sup> Chinese cyber operations have become increasingly indiscriminate and reckless, as seen in the aftermath of the 2021 Microsoft Exchange cyberattack,

when Chinese-sponsored hackers expanded their targets once discovered. In a wartime scenario, China could use the threat of great collateral damage to deter or disrupt a US military response to hostile acts in the western Pacific.<sup>150</sup> That could be China’s goal if it decides to make a move on Taiwan, according to House Select Committee on the CCP Chairman Rep. Mike Gallagher (R-WI).<sup>151</sup>

Despite China’s formidable and growing position in cyberspace, it is important to underscore that the United States is still the world leader in cyber capabilities. As the International Institute for Strategic Studies (IISS) has found, the US is “the most powerful country in terms of ICT [information and communications technology] capability, whether gauged by the size of its digital economy, its leading role in global innovation or [its] unrivalled partnership between industry, government and academia.”<sup>152</sup> The IISS’s report also emphasizes that the United States’ cyber capabilities remain the best in the world.<sup>153</sup>

However, vulnerabilities inhere in a well-developed and robust digital environment. Because the United States is a well-connected and open society, it is a target-rich environment for cyberattacks.<sup>154</sup> The United States therefore cannot afford to be complacent about its cyber capabilities and network protection. America’s continued dominance in this domain requires persistent engagement in cyberspace and, as with dominance in any other domain of warfighting, shaking off complacency. Future efforts toward strengthening cross-capability collaboration between cyber and intelligence services and improving cyber interoperability with allied states will be crucial to maintaining capability.<sup>155</sup>

## Artificial Intelligence

Artificial intelligence (AI) is another area in which the United States may soon categorically lag behind China. China was ahead of the United States in crafting a national AI development strategy, releasing one in 2017,<sup>156</sup> whereas the US released its AI strategy in 2019.<sup>157</sup> Two years may not seem significant, but for such a game-changing technology as AI, with its vast civilian and military uses, any lag is significant. And that lag’s consequences seem to be taking shape, with the National Security Commission on AI finding that China is a peer of the United States in AI and, in some

applications, more technically advanced. Furthermore, the commission noted that China “possesses the might, talent, and ambition to surpass the United States as the world’s leader in AI in the next decade if current trends do not change.”<sup>158</sup>

In 2021, China produced the largest share of the world’s AI conference publications, at 27.6 percent, versus the United States’ 16.9 percent.<sup>159</sup> One example of the results is Baidu, which runs China’s most popular internet search engine and is positioned to be a leader in generative AI in China. Baidu’s own generative AI product, Ernie Bot, has completed beta testing, and the first batch of companies is testing the product behind closed doors.<sup>160</sup> In another example of China’s AI prowess, the top five companies in the world for accuracy in facial recognition software are Chinese, according to rankings published by the US National Institute of Standards and Technology.<sup>161</sup>

Despite these civilian applications, China is certainly not developing its AI capabilities for exclusively civilian purposes. Its use of AI may extend to advanced missiles, surface vessels, ground vehicles, and aerial systems. The military application of AI-enabled capability is already being tested; the PLA’s new GJ-2 aerial drone, otherwise known as the Wing Loong II, can autonomously identify enemies and discern threats.<sup>162</sup>

The PLA anticipates exploiting AI because it perceives that information will flow quickly on the future battlefield, and AI will be a crucial tool to ensure military commanders can make quick decisions.<sup>163</sup> AI has become a central feature of the PLA’s vision of the future battlefield, dubbed “intelligitized warfare,” in which advanced technologies and AI play a dominant role at every level.<sup>164</sup>

Given Beijing’s coordinated and rapid effort to advance AI applications in defense, Washington cannot rely on its existing private-sector-driven dominance for long. To ensure the United States military stays ahead

in the AI race, Washington must elevate AI considerations from technical to strategic, which will require forward-thinking investment and partnerships. The current acquisition processes dating from the Cold War cannot keep pace with the rapid development of AI technology, and leaders must ensure that the Pentagon can move faster and smarter on high-tech acquisitions.<sup>165</sup> Military allies such as Germany, Japan, and the United Kingdom would be capable partners in the AI space.<sup>166</sup>

## Conclusion

Despite the mounting challenges, the United States maintains several distinct military advantages against China.

The US military is tested and highly experienced in conducting joint operations globally, and it benefits from a head start as the world’s preeminent military force since the end of the Cold War. American democracy continues to foster an innovative culture that attracts talent from around the world and produces the greatest breakthrough technologies. The US also leads the most extensive network of established alliances and partnerships, enabled by attractive shared interests and values. This allows the US to extend its reach globally and assemble greater power and legitimacy.

To maintain its position in the world, the United States must preserve and leverage these advantages while avoiding complacency. This report has presented 10 examples of a creeping complacency in the US government toward the geopolitical threat from China. As a result, China is reaching parity with or exceeding the United States in certain areas. Each area requires its own steps to ensure an American advantage moving forward, but all start with taking the threat from China seriously, in not just rhetoric but actual policy and resourcing. Without meaningful change, these worrying trends will continue, and there may just be a few more examples added to this list in the near future.

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