Atomic Strait
How China's Nuclear Buildup Shapes Security Dynamics with Taiwan and the United States
Jacob Stokes
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01 Executive Summary
02 Introduction
02 China’s Rapid Nuclear Modernization
04 Weakening Constraints on China’s Nuclear Arsenal
05 Evolving Missions for China’s Nuclear Weapons
06 China’s Comprehensive Pressure Campaign against Taiwan
07 Roles for China’s Nuclear Weapons in Cross-Strait Contingencies
10 Recommendations for Policymakers
12 Conclusion
Executive Summary

This report examines the intersection of China's nuclear modernization and cross-Strait tensions, especially how they might play out during a crisis, contingency, or conflict involving China, Taiwan, and the United States. Beijing is rapidly modernizing its nuclear arsenal to make it larger and more sophisticated. Changes include an increase in warhead numbers from more than 400 today to potentially 700 by 2027 and more beyond, consolidating a nuclear triad, developing new delivery systems, and digging at least 300 new missile silos. Some factors still could constrain the growth of China's arsenal or the policies that shape the way Chinese leaders employ it. They range from fissile material stocks to competing military spending priorities, considerations about China's international reputation, and upholding Beijing's claimed No First Use policy. But nearly all those constraining factors either already have weakened or could do so in the near future.

China's expanding nuclear arsenal suggests that the force will be designed to fulfill new missions. Some part of Beijing's buildup surely is meant to bolster its second-strike retaliatory capability in the face of what China perceives as shifts in U.S. conventional and nuclear capabilities and policies. China's long-term goal for the expansion, however, could be more ambitious and potentially even include seeking to build an arsenal on par with Washington's and Moscow's. Meanwhile, China continues to ramp up pressure on Taiwan using political, economic, and military tools. Beijing's campaign could provoke more crises in the coming years. The three major roles that nuclear weapons could play for China when dealing with cross-Strait crises or conflicts are: to shield China from U.S. nuclear coercion, to threaten Chinese nuclear use to try to forestall U.S. intervention, and to conduct a limited Chinese nuclear detonation in an attempt to force U.S. and Taiwanese capitulation.

The report concludes with recommendations for U.S. policymakers. It calls for carrying out U.S. nuclear modernization plans to deter China but avoiding nuclear arms racing as a strategy in itself. It recommends incorporating nuclear elements into contingency planning and scenario exercises related to Taiwan, both unilaterally and with allies and partners. The report then calls for improving Taiwan's conventional military capabilities while maintaining a consistent U.S. policy on cross-Strait issues and ensuring Taiwan forgoes pursuing indigenous nuclear weapons. Finally, the report argues in favor of pushing forward tough-minded bilateral engagement with Beijing on strategic stability and security issues while crafting a multilateral arms control strategy that builds coalitions to incentivize China to join and impose costs on Beijing if it opts to stay outside of key agreements.
China's Rapid Nuclear Modernization

Beijing is modernizing its nuclear arsenal as well as the infrastructure that supports it and the policies surrounding it. That modernization is happening across several areas, including warhead numbers, delivery systems, nuclear infrastructure, operational posture and policies, and conventional capabilities that affect the strategic balance. (See Figure 1.) On warhead numbers, in 2022 the U.S. Department of Defense (DoD) estimated that China's current stockpile has surpassed 400 operational nuclear warheads and, if Beijing continues building at this pace, it could field a stockpile of about 1,500 warheads by 2035.

That expands on the DoD's assessment from a year earlier that China's buildup may enable the PRC to have 700 deliverable nuclear warheads by 2027, and Beijing likely intends to have at least 1,000 nuclear warheads by 2030. By comparison, the United States has an estimated 3,800 active nuclear warheads, 1,800 of which are deployed.

Next, on delivery systems, Beijing probably has fielded a nascent nuclear triad of delivery systems by adding nuclear-capable air-launched ballistic missiles in addition to its ground and sea legs consisting of nuclear-equipped intercontinental ballistic missiles (ICBMs) and submarines, respectively. According to the DoD, China's six Jin-class nuclear submarines likely have begun near-continuous at-sea deterrence patrols. And the most advanced submarine-launched ballistic missile they carry, the JL-3, potentially gives the PLA the ability to range the continental United States from China's littoral waters, such as the South China Sea or the Bohai Gulf, a much safer operating environment for PLA submarines than far out in the Pacific Ocean.

China appears to be developing new types of delivery systems as well, as demonstrated in July 2021 when Beijing tested a fractional orbital bombardment (FOB) system that deployed a hypersonic glide vehicle. In layman's terms, that is a rocket that blasts off into low-earth orbit and flies almost completely around the planet before firing a nuclear-capable missile system that travels five times the speed of sound and can maneuver to avoid defenses before hitting its target. (China claims the test was just a reusable space plane.) U.S. officials also have stated publicly that China appears to be interested in developing "exotic" nuclear delivery systems akin to Russia's Poseidon—a nuclear-powered, nuclear-tipped torpedo—and Burevestnik—a nuclear-powered, nuclear-tipped cruise missile.
FIGURE 1: SUMMARY OF IMPORTANT CHANGES TO CHINA’S NUCLEAR ARSENAL AND POLICIES DURING THE LAST FIVE YEARS

<table>
<thead>
<tr>
<th>Category</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warhead numbers</td>
<td>■ Current inventory of more than 400 warheads</td>
</tr>
<tr>
<td></td>
<td>■ Building at a pace that could yield an estimated 700 warheads</td>
</tr>
<tr>
<td></td>
<td>by 2027, 1,000 by 2030, and 1,500 by 2035</td>
</tr>
<tr>
<td>Delivery systems</td>
<td>■ Consolidating a nascent nuclear triad of missiles, submarines, and</td>
</tr>
<tr>
<td></td>
<td>bombers</td>
</tr>
<tr>
<td></td>
<td>■ Tested a fractional orbital bombardment (FOB) system that</td>
</tr>
<tr>
<td></td>
<td>deployed a hypersonic glide vehicle</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>■ Building at least 300 new missile silos</td>
</tr>
<tr>
<td></td>
<td>■ Constructing fast breeder reactors and reprocessing facilities to</td>
</tr>
<tr>
<td></td>
<td>produce and separate plutonium</td>
</tr>
<tr>
<td>Operational posture and</td>
<td>■ Moving toward a launch-on-warning posture</td>
</tr>
<tr>
<td>policies</td>
<td>■ Unofficial debate about potential changes or caveats to No First</td>
</tr>
<tr>
<td></td>
<td>Use policy</td>
</tr>
</tbody>
</table>

Regarding nuclear infrastructure, several independent researchers using open-source satellite imagery have alerted the world to China building hundreds of new missile silos across several fields near the Chinese cities of Yumen, in north-central Gansu province; Hami, in the eastern part of the Xinjiang Uyghur Autonomous Region; and Ordos in Inner Mongolia, along with a People’s Liberation Army Rocket Force training site near Jilantai, also in Inner Mongolia. The DoD later confirmed those reports and estimated the total to be at least 300 new silos. It is not immediately clear how many of those silos Beijing plans to fill with new missiles versus decoys or to keep empty as a shell game to complicate adversary targeting of China’s arsenal.

Researchers further used open-source imagery to unveil what appears to be construction of new roads and a tunnel that could be used for nuclear testing near China’s nuclear test site in Lop Nur, Xinjiang. The State Department has mentioned this activity in generic terms in public reports but has not provided details. China conducted its last nuclear test in July 1996 before signing the Comprehensive Nuclear Test Ban Treaty (CTBT) in September of that year, although China’s legislature has never ratified the treaty. But, according to the U.S. State Department, in recent years China might have conducted very low-yield tests that would violate the zero-yield standard that Washington and others interpret as part of the CTBT but Beijing has not accepted.

On operational posture, the DoD further assesses that China might move at least a portion of its nuclear forces to a launch-on-warning posture. That means China always would be prepared to launch a nuclear strike upon warning of an incoming adversary nuclear strike rather than after a bomb has reached its target. For comparison, the United States officially says its forces are on launch-under-attack posture, which is meant to draw a distinction from launching just on warning, although some analysts contend it is a distinction without a difference. To aid in the missile tracking necessary to make such a posture work, Russian President Vladimir Putin said in October 2019 that his country had agreed to help China build a missile-attack early-warning system. In addition, China is modernizing its nuclear command, control, and communications systems. And reforms to the PLA that Chinese Communist Party (CCP) General Secretary Xi Jinping, who also is chairman of China’s Central Military Commission, initiated in late 2015 and early 2016 promoted the military organization in charge of China’s nuclear forces from a subsidiary known as the Second Artillery to a full military service, the PLA Rocket Force.

Finally, some conventional (non-nuclear) dimensions of China’s military affect the PLA’s nuclear posture in important ways, a problem referred to as entanglement. Entanglement takes several forms. Some types of Chinese missiles are dual-capable, meaning they can have nuclear or conventional warheads attached to them. And a subset of those dual-capable missile systems are also hot-swappable, meaning conventional and nuclear warheads potentially could be switched out rapidly in the middle of a crisis or conflict. Another entanglement problem stems from China having conventional and nuclear missile forces located in the same bases.
Additionally, some early-warning and command-and-control systems—especially satellites and radars—are used for both nuclear and conventional purposes. Those could be blinded, disabled, or destroyed with various types of anti-satellite weapons or cyberattacks. This matters because it creates pathways whereby attacks using conventional forces or against conventional targets could be interpreted as using nuclear capabilities or targeting an actor’s nuclear capabilities, thereby inadvertently escalating a conflict to the nuclear level.

Weakening Constraints on China’s Nuclear Arsenal

Some factors still could constrain the growth of China’s arsenal. They range from lack of fissile material stocks to competing military spending priorities, considerations about China’s international reputation, and upholding Beijing’s claimed No First Use policy. But nearly all these constraining factors either already have weakened or could do so in the near future. On fissile material stocks, China likely possesses enough plutonium, highly enriched uranium, and tritium to double its warhead stockpile. Further expansion likely would require additional fissile material production. The DoD assesses, however, that China already is “increasing its capacity to produce and separate plutonium by constructing fast breeder reactors and reprocessing facilities,” which could result in additional fissile material necessary to grow its arsenal.

Historically, competing military spending priorities have been a constraint on Beijing’s nuclear arsenal. This constraint has weakened in recent years, although it could become a limiting factor again in the future. While China ranks second in military spending globally, PLA modernization is happening across various parts of the force simultaneously. At some point, the military value of expanding China’s nuclear arsenal will have diminishing marginal utility. In other words, each addition will add less and less deterrent or coercive value relative to the conventional systems the PLA could acquire that are more useable. The thousandth nuclear weapon will not be as valuable as the hundredth. China historically has applied this logic in its military acquisition strategy. That line of thinking could apply again once China’s nuclear arsenal reaches a certain threshold, especially if China’s economy suffers a major slowdown and the resources available for state priorities, both military and civilian, shrink.

Diplomatic and normative concerns might constrict the growth of China’s nuclear arsenal as well. To be sure, Beijing’s foreign policy during the Xi era has focused more on asserting China’s power in the world than on adhering to, or being seen to adhere to, practices of responsible major powers. Still, PRC leaders have traditionally placed a premium on China’s international reputation, especially since the reform and opening-up period from 1978 on. One example is Beijing’s decision in January 2022 to join the other four nuclear weapons states under the Nuclear Non-Proliferation Treaty (NPT) in affirming that “a nuclear war cannot be won and must never be fought.” In addition, PRC Ambassador for Disarmament Affairs Li Song said in October 2022 that China “does not engage in any nuclear arms race with any other country,” repeating a common claim made by PRC officials. Beijing also is limited by the nuclear taboo or global norm that sees nuclear weapons as too abhorrent to use, although that taboo could be fading.

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China further claims to have a No First Use (NFU) policy for its nuclear weapons and has called on other states to “abandon nuclear deterrence policies based on preemptive moves.” Debate and skepticism surrounding that policy have grown, however, in proportion to Beijing’s nuclear buildup. One factor driving the skepticism is that, for all states, NFU policies tend to be disbelieved by adversaries and believed by allies. NFU policies are inherently difficult to make credible. In addition, China’s decision to violate other international agreements and stated foreign policy principles when doing so is in its interests further drives suspicions that Beijing simply could cast off its stated NFU policy during a crisis. China could decide to consider an adversary’s launch of a nuclear or nuclear-capable system as effectively a first use, leading Beijing toward a doctrine of preemptive first strikes rather than true second-strike NFU. Finally, China could carve out exceptions to its NFU policies in the context of Taiwan contingencies, because Beijing claims Taiwan as part of China or because the United States does not have its own NFU policy. Chinese officials have taken pains to differentiate Russia’s war in Ukraine from a potential PRC invasion of Taiwan based on that distinction.
Evolving Missions for China’s Nuclear Weapons

The speed, scale, and sophistication of China’s nuclear buildup has sparked concern in the United States and elsewhere about Beijing’s ultimate objectives for its nuclear strategy. Since its first nuclear test in 1964, China’s nuclear arsenal had remained relatively small compared with those of the United States and Russia (formerly the Soviet Union). It was designed to provide Chinese leaders with what Western scholars have characterized as an assured retaliation second-strike capability achieved through a minimal nuclear arsenal.

In theory, recent and planned increases to China’s nuclear arsenal could be designed to reinforce that legacy strategy and provide a hedge in the face of military-technical and geopolitical developments that could imperil it. These include advances in U.S. conventional long-range strike capabilities, missile defenses, and changes in American nuclear capabilities and policy. Beijing was particularly alarmed by the Trump administration’s withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty, the Open Skies Treaty, and the Joint Comprehensive Plan of Action (Iran nuclear deal), as well as the stated intention not to renew the New Strategic Arms Reduction Treaty (New START). In the case of the INF and New START agreements, the Trump administration specifically cited China’s actions as a reason for U.S. withdrawal. Chinese leaders saw these steps as indicators of a comprehensive U.S. move away from existing arms control frameworks and the diplomatic and security rationales underpinning them.

The Trump administration’s pursuit of new nuclear capabilities, including a nuclear-armed sea-launched cruise missile (SCLM-N) and a new low-yield warhead known as the W76-2, further fueled Beijing’s suspicions that the United States sought to complicate China’s conventional and nuclear warfighting options or even undermine Beijing’s nuclear deterrent. Biden administration actions—including setting up the AUKUS trilateral security partnership and potentially rotating B-52 bombers through Royal Australian Air Force Base Tindal south of Darwin, Australia—have mostly added to China’s concerns, despite the Biden administration’s renewal of the New START agreement and attempts to rekindle the Iran nuclear deal.

China’s leaders no doubt also are factoring in the potential effects of emerging technologies. They want to hedge against the possibility that advances in the fields of artificial intelligence (AI), quantum computing, and cyber operations fundamentally disrupt key pillars of the nuclear balance. Policymakers’ understanding of how those technologies could affect the nuclear balance is as nascent as the technologies themselves. But early assessments point to several possible challenges: AI-enabled systems could reduce the time governments have to make decisions in a crisis. AI systems with quantum computing power could create destabilizing transparency by undermining stealth, making encrypted communication decipherable, and enabling faster and more accurate location of hidden and mobile systems on land and at sea by processing massive amounts of data.

In this environment, China’s primary objective is to entrench mutual vulnerability with the United States. It is notable that Chinese experts frequently mention their desire for Washington to acknowledge the fact of mutual vulnerability with Beijing as a step to foster strategic stability between the world’s two superpowers. China, like the United States, also perceives the need for its nuclear arsenal to deter multiple adversarial nuclear powers. For China that means mainly India and, hypothetically, France and the United Kingdom in addition to the United States. It also potentially means China’s current nuclear-armed partners including Russia, Pakistan, or North Korea, which could transform into adversaries in the future, as happened with the Soviet Union during the Cold War.

U.S. officials and some experts, however, see an even-more-threatening picture. They have voiced concerns that China’s nuclear modernization reflects a fundamental change in its strategy. Admiral Charles Richard, then-commander of U.S. Strategic Command, said in August 2021 that, “We are witnessing a strategic breakout by China” and called Beijing’s modernization “explosive”
and “breathtaking.” Under Secretary of State for Arms Control and International Security Bonnie Jenkins has said, “The destabilizing dynamic originating from the PRC’s rapid and opaque nuclear buildup cannot be ignored.” What, specifically, breakout means in this context is not totally clear. In its most ambitious interpretation, breakout could mean China moving beyond being a second-tier nuclear power and “sprinting to parity” with the United States and Russia in terms of number of weapons and/or their technological complexity. This would constitute a sea change in Beijing’s nuclear strategy. And it would be consistent with Xi’s stated aim to build a “world-class military” generally and “establish a strong system of strategic deterrence” that will enable Beijing to “shape our security posture, deter and manage crises and conflicts, and win local wars.”

Factors beyond a change in nuclear strategy also might be playing a role, including national pride and status around nuclear weapons as part of a strong military, which CCP leaders see as bolstering their domestic legitimacy as other sources, especially robust economic growth, wane. Finally, bureaucratic politics and processes could be contributing to the growth, as more decision-making power over China’s nuclear arsenal has moved from the civilian leadership to the military bureaucracies, and the nuclear components of the PLA have gained increased stature within the broader force.

### China’s Comprehensive Pressure Campaign against Taiwan

As China modernizes its nuclear arsenal, Beijing concurrently has stepped up pressure on Taiwan across the diplomatic, economic, and military domains. Diplomatically, Beijing has cut off official cross-Strait talks since the election of Taiwan’s President Tsai Ing-wen to her first term in January 2016. China also has sought to constrict Taiwan’s international participation by convincing countries that recognize Taipei to switch their recognition to Beijing, by working to block Taiwan from participating in multilateral organizations including the United Nations.
and by trying to police Taiwan’s unofficial relations with countries that do not recognize Taipei. Economically, China has sought to punish Taiwan by banning selected commodity imports from Taiwan—including pineapples, sand, and fish—as well as slowing the number of mainland tourists who travel to Taiwan from China and sanctioning lawmakers from the ruling Democratic Progressive Party (DPP). Those economic pressure measures were designed for, however, local political effects targeting key DPP constituencies rather than to cause a major downturn in overall bilateral trade.

China has also ramped up military operations around Taiwan, using the PLA as a pressure instrument while simultaneously honing the PLAs operational capabilities. In October 2021, PLA aircraft set what was then a record for intrusions into Taiwan’s Air Defense Identification Zone (ADIZ) in a single day at 56. Beijing’s military intimidation campaign then surpassed these heights in August 2022 during what has been called the Fourth Taiwan Strait Crisis following then–U.S. House Speaker Nancy Pelosi’s visit to Taipei. The PLA fired 11 missiles, some of which flew over Taiwan—albeit at altitudes above the atmosphere—and five of which landed in Japan’s exclusive economic zone. China’s military also set up seven military exercise zones encircling Taiwan and conducted air and maritime patrols into Taiwan’s ADIZ and the across median line that runs down the middle of the Taiwan Strait. Since then, PLA forces have dramatically increased flights across the median line, effectively erasing an operational norm that has helped keep the peace for almost 70 years. They once again set a new record for aircraft incursions into Taiwan’s ADIZ in December 2022 with 71 in a single day.

Going forward, Beijing is likely to continue to increase pressure on Taiwan. China during Xi’s third five-year term as the country’s paramount leader could become more aggressive as Beijing seeks to accelerate progress on his agenda of seeking the “great rejuvenation of the Chinese nation.” Political developments in Taiwan and the United States could feed into Beijing’s calculus, too. The U.S. executive branch will implement major security assistance programs passed in the fiscal year 2023 National Defense Authorization Act if Congress ultimately funds them, House Speaker Kevin McCarthy might travel to the island, and the U.S. Congress will consider further legislative steps related to Taiwan. Moreover, presidential elections in Taiwan in early 2024 will determine the successor of term-limited President Tsai. U.S. presidential elections in November 2024 also could mean a new leader in the White House.

Roles for China’s Nuclear Weapons in Cross-Strait Contingencies

Nuclear weapons are once again a prominent factor in U.S.-China-Taiwan diplomatic and security dynamics. This section explores the three major roles that nuclear weapons could play for China when dealing with cross-Strait crises or conflicts: to shield China from U.S. nuclear coercion, to threaten Chinese nuclear use to try to forestall U.S. intervention, and to conduct a limited Chinese nuclear detonation in an attempt to force U.S. and Taiwanese capitulation.
Role 1: To Shield China from U.S. Nuclear Coercion

The first and most critical purpose of China’s nuclear modernization is to solidify Beijing’s ability to prevent the United States from using its nuclear weapons to coerce China, or what Chinese leaders going back to Mao Zedong have denounced as “nuclear blackmail.” Those concerns are based on historical experiences. President Harry Truman publicly stated that the United States would reserve the option to use all its capabilities, including nuclear weapons, to fight the Korean War (1950-1953), in which Chinese forces squared off against American troops fighting under U.N. auspices. U.S. military planners presented President Dwight Eisenhower with nuclear options during the first two Taiwan Straits crises in 1954–55 and 1958, although Eisenhower ultimately decided against using them in both cases. For their part, close analysis of historical documents shows Chinese officials considered nuclear use a real possibility, especially in 1958.

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Critically, the Korean War and the first two Taiwan Straits crises happened before China conducted its first test of a nuclear weapon in 1964. The dynamic changed once China acquired nuclear weapons: Reported accounts of the 1995–96 Third Taiwan Strait crisis indicate that senior U.S. officials believed that senior Chinese officials had made implied nuclear threats and chosen military capabilities that also raised the specter of nuclear use. U.S. officials took the prospect seriously enough that National Security Advisor Anthony Lake reportedly discussed the issue in a meeting with this counterpart, senior Chinese national security official Liu Huaqiu. Some details of these interactions are not available in open-source accounts, so this case might be characterized as a “borderline nuclear crisis.” Still, the nuclear-armed status of both states clearly shaped the outcome.

Beijing still wants to preclude a situation where the United States uses nuclear threats to deter China from taking military action against Taiwan—especially at a critical moment, such as if Taiwan were to move decisively toward independence. Relatedly, if a conflict breaks out, China wants to deter the United States from threatening or using a nuclear weapon to turn the tide if China were winning the war at the conventional level. This is why China prioritizes ensuring mutual vulnerability. The nuclear element of cross-Strait dynamics receded somewhat as a topic of discussion in the early years of this century, because Chinese interlocutors tended to downplay the issue. But nuclear capabilities in relation to a potential Taiwan contingency have become salient once again in Track 1.5 and Track 2 U.S.-China dialogues on nuclear and strategic stability.

Role 2: To Threaten Chinese Nuclear Use to Try to Forestall U.S. Intervention

The second potential role for China’s nuclear arsenal in relation to a Taiwan contingency would be to enable PRC leaders to make credible nuclear threats with the aim of trying to deter U.S. intervention during a crisis or conflict. In other words, Beijing could attempt just the type of coercion or “nuclear blackmail” that China decries from the United States. This dynamic is what the U.S. Office of the Director National Intelligence referred to when it said China’s nuclear modernization is “designed to manage regional escalation.” Moreover, Russia’s war in Ukraine has brought extra attention to this scenario, although Chinese strategists long have considered the role of nuclear signaling in a cross-Strait contingency. Senior Russian officials, including President Vladimir Putin, have made implicit nuclear threats and reportedly increased the readiness of their nuclear forces. Russia’s position on possible nuclear use is believed to be among the reasons that President Biden has ruled out sending U.S. or NATO troops to fight in Ukraine. China may hope for the same.

It is too early to draw definitive conclusions about the lessons Xi and other Chinese leaders will learn from the war in Ukraine, if for no other reason than the conflict still rages. But one provisional lesson that Beijing could discern is that the prospect of a conflict that escalates to the nuclear level might be enough to deter direct U.S. intervention on behalf of Taiwan. Critically, China could draw this conclusion whether or not that assessment is accurate; after all, miscalculations pervade international politics. Authoritative articles by Chinese military researchers devote significant attention to managing escalation along the spectrum from peace to crisis to conflict through “effective control” of each stage and by employing a concept known as “integrated strategic deterrence” that combines a multidimensional set of capabilities that span the areas of nuclear, conventional, space, and cyber. (This concept is nominally distinct from the U.S. concept of “integrated deterrence,” although there are some parallels.) Some of those PLA writings indicate a propensity to escalate to try to seize an advantage during a contingency, especially on issues, such as a Taiwan contingency, related to
Decisions with such grand strategic importance are likely to be informed by the worldview of China’s leadership—especially Xi himself for the foreseeable future—in ways that supersede official doctrine or other strategic analysis written by military bureaucracies or analysts.

At the same time, PRC leaders historically have recognized that nuclear weapons have immense diplomatic and symbolic importance that go beyond their military effects. They consider decisions about whether, when, and how to use them as so consequential that such orders only can be made by top political and military leadership rather than operational-level military commanders, as is the case with the PLA’s conventional forces. Decisions with such grand strategic importance are likely to be informed by the worldview of China’s leadership—especially Xi himself for the foreseeable future—in ways that supersede official doctrine or other strategic analysis written by military bureaucracies or analysts. In other words, Xi’s views on a given situation will trump authoritative PRC texts such as *Science of Military Strategy*. Those decisions might be more, or less, aggressive than official doctrine and would be highly contingent on the situation.

But they also would have to be informed by calculations such as whether China’s actions would keep the United States or its allies and partners from intervening—or whether the action might have the opposite effect. PRC leaders also would have to consider whether nuclear threats might drive Japan, South Korea, Australia, or even Taiwan to pursue indigenous nuclear weapons due to higher threat perceptions of China and/or concerns about U.S. extended deterrence commitments. And finally, Beijing would have to accept that such threats would undermine China’s claims to have a No First Use policy and the implications for the global nuclear landscape that would flow from that.

**Role 3: To Conduct a Limited Chinese Nuclear Detonation in an Attempt to Force U.S. and Taiwan Capitulation**

China could decide to conduct a limited use of nuclear weapons in an attempt to force Taiwan and potentially also the United States to accede to Beijing’s war aims. This type of scenario would happen only in extreme circumstances. Uncontrolled escalation could result in the first missile exchange between major powers. And China’s leaders deciding to use nuclear weapons likely would happen only after large-scale combat with conventional forces had transpired. In this scenario, China would be unlikely to target Taiwan directly, because doing so would destroy large parts of Taiwan and leave them radioactive for decades. Among many other reasons, Beijing wants to compel unification with Taiwan to gain access to the island’s leading-edge technologies and industrial base. These would be severely damaged or destroyed if China used a nuclear weapon directly against Taiwan. Using nuclear weapons against Han Chinese people, who make up more than 95 percent of Taiwan’s population, could also backfire politically on the CCP. Perhaps most importantly, a nuclear strike on Taiwan would be tremendously escalatory.

Instead, China could use a nuclear weapon in one of three ways: One option would be to use the weapon in a remote location in the sea or air as a means of signaling Beijing’s resolve to employ all available means to successfully invade Taiwan but without causing physical damage to opposing forces—in essence, a massive warning shot. A second option would be to use nuclear weapons with the aim of debilitating important military targets. In theory, China could achieve such effects by detonating a nuclear weapon high in the atmosphere, thereby creating a high-altitude electromagnetic pulse that cripples electronics but does not directly kill or injure anyone, although some analysts dispute whether this type of action is technically possible.

A third option would be to strike targets outside of the U.S. mainland—such as Guam or even Hawai‘i—with the aim of causing Washington to relent for fear that subsequent strikes would target the hundreds of mainland U.S. cities that Chinese missiles can reach. The PLA also could hit military targets like an aircraft carrier...
strike group. In this scenario, China’s leaders would be looking for a way to take limited action that the United States would not be willing to match or exceed. Beijing also would be assuming that Washington would recognize a distinction between striking targets on the U.S. mainland and striking outlying territories or states. It is worth making clear that escalation to the nuclear level could be unintentional in the sense that the outcome is possible even if Beijing initially enters a crisis without the intention of using nuclear weapons. The potential for rapid conventional escalation, along with the entanglement dynamics discussed above, could result in China resorting to the use of nuclear weapons.

Recommendations for Policymakers

The role of China’s nuclear arsenal in diplomatic and security dynamics across the Taiwan Strait is growing. U.S. policymakers in both the executive and legislative branches should respond to this trend in the following ways:

Execute U.S. nuclear modernization plans to deter China—along with Russia and smaller nuclear powers—but avoid nuclear arms racing as a strategy in itself.

As the 2022 U.S. National Security Strategy notes, “By the 2030s, the United States for the first time will need to deter two major nuclear powers” with large and advanced arsenals.72 Washington’s response should account for this reality by maintaining a safe, secure, and effective nuclear deterrent. At the same time, the United States should keep threat assessments grounded in the material facts of China’s nuclear modernization rather than speculative out-year projections.

U.S. policy also should be designed to sustain deterrence while only engaging in arms racing to the extent it is necessary to support deterrence. Policymakers should avoid undue comparisons with the U.S.-Soviet Cold War, particularly assertions that Washington can “spend the adversary into oblivion.”73 China’s economy is much bigger and more resilient than the Soviet economy ever was. Moreover, all-out arms racing in the nuclear domain would divert much-needed resources from conventional capabilities, where the United States arguably faces relative disadvantages vis-à-vis China, for example, within the First Island Chain. In a world of finite resources, tradeoffs are real, both within the military budget, and between military and civilian investments relevant to strategic competition with Beijing.

Help improve Taiwan’s conventional capabilities to deter China while maintaining a consistent U.S. policy on cross-Strait issues.

Those enhancements should prioritize asymmetric weapons that can offset China’s larger and more capable military. The degree to which Taiwan’s conventional military capabilities can contribute to deterring aggression from China will be critical. Beijing will be more likely to rely on nuclear threats during cross-Strait contingencies if China believes the conventional military balance decisively favors the PLA over Taiwan’s military. At the same time, Washington should hold fast to its existing policy framework toward cross-Strait issues to keep the onus on Beijing for changing the status quo. That approach also would help build and sustain a broad international coalition in support of peace and stability across the Taiwan Strait.
Ensure Taiwan forgoes pursuing indigenous nuclear weapons.

Some observers have noted that China’s growing nuclear arsenal could prompt Taipei to acquire nuclear weapons as a form of insurance against a PRC invasion. Taiwan previously had a nuclear weapons program during the 1970s and 1980s, but Taipei eventually abandoned it and does not appear to be actively considering the idea right now. Taiwan possessing its own nuclear capability could provide the benefit of some additional protection. But the costs of such a program surely would outweigh the benefits. Those costs include siphoning off much-needed funds from conventional military capabilities, further weakening the nuclear nonproliferation regime, and fracturing global support for ensuring cross-Strait differences are resolved without coercion or force.

Incorporate nuclear elements into U.S. contingency planning and scenario exercises related to Taiwan.

Specifically, consider how the nuclear factor could play out in a conflict that arises or escalates rapidly as well as how it might unfold during a protracted conflict. In addition, those plans and exercises should map pathways for escalation stemming from entanglement. The plans should include non-nuclear response options along with nuclear ones. The non-nuclear options would be especially credible, and in certain instances they could be de-escalatory.

Build consultations on the nuclear aspects of potential Taiwan contingencies into security and deterrence dialogues with U.S. allies.

Washington should start to incorporate discussion of the nuclear factor in Taiwan contingencies into security and deterrence dialogues with U.S. allies. Specifically, U.S. policymakers should cover these topics with Tokyo in the U.S.-Japan Security Consultative Committee and the bilateral Extended Deterrence Dialogue; with Canberra in the Australia–U.S. Ministerial Consultations (AUSMIN); with Seoul in the U.S.-Republic of Korea Security Consultative Meeting and Extended Deterrence Strategy and Consultation Group; and with NATO members in the Nuclear Planning Group.

Push forward tough-minded bilateral engagement with Beijing on strategic stability and security issues.

President Biden and General Secretary Xi agreed in November 2021 that their designees would conduct informal conversations—rather than formal talks—on strategic stability issues, although at the time of writing those discussions have yet to begin. U.S. efforts should continue with the knowledge that U.S.-Soviet talks during the Cold War took years of contentious discussions to bear fruit. Early topics of discussion could include setting up a launch notification agreement, similar to ones both Washington and Beijing have with Moscow, and exploring the effects of emerging technologies such as AI, quantum computing, and private sector space activities on the strategic environment.

At the same time, the two sides should work to address and avoid perpetuating misperceptions that could lead to unintended escalation. They also should foster effective crisis management mechanisms—one type of the “guardrails” that President Biden has called for establishing in the bilateral relationship—starting by prioritizing making existing mechanisms function better rather than setting up new ones.

Craft a multilateral arms control strategy that builds coalitions both to incentivize China to join and impose costs on Beijing if it opts to stay outside of key agreements.

Washington should continue to pursue arms control talks among the NPT’s permanent five nuclear weapons states: China, France, Russia, the United Kingdom, and the United States. Beijing already participates in that forum and therefore needs no incentives or convincing to join. In that forum and others, Washington, in the short term, should build coalitions of like-minded states to call out China for its nuclear buildup and pressure Beijing to be more transparent about its nuclear intentions and capabilities. And in the medium-term, the United States should pursue a Fissile Material Cutoff Treaty that includes China and develop creative ways to incorporate Beijing into the next round of the New START treaty before it expires in 2026. One option could be to explore India’s participation along with China’s. Finally, and fundamentally, deterrence and arms control must be integrated and thought of as two sides of the same coin rather than separate, opposing objectives.
**Conclusion**

China’s rapid nuclear modernization program will play a major role in shaping security dynamics with Taiwan and the United States going forward. Crafting an effective response to this trend will require watching it closely—and soberly. It also will require understanding any enduring constraints on the growth of China’s arsenal and how those weapons might be employed, as well as assessing what all these developments mean for Beijing’s overall nuclear strategy. Simultaneously, China’s comprehensive campaign to pressure Taiwan likely will continue and intensify, with the nuclear aspect becoming more important over time and across a variety of scenarios. Policymakers in Washington, Taipei, and like-minded partners will need to pair moves to bolster deterrence with tough-minded diplomacy to meet the challenge of maintaining peace and stability. The shadow of nuclear weapons once again darkens the Taiwan Strait.


19. Dr. Jeffrey Lewis (@armscontrolwonk), “The US has a ‘launch-under-attack’ posture, not launch-on-warning. We all pretend there is a difference in meetings. There isn’t. It’s just gate-keeping. A short thread on what happens if you use ‘LOW’ in a meeting.” Twitter, July 12, 2022, https://twitter.com/armscontrolwonk/status/154684158481735681.


44. Jenkins, “Under Secretary Bonnie Jenkins’ Remarks: Nuclear Arms Control: A New Era?”


51. The “median line” also is referred to as the “center line,” “middle line,” or “Davis line.” Thomas Shattuck, “The PLA Air Force Erases the Taiwan Strait Centerline,” Global Taiwan Brief, September 7, 2022, https://globaltaiwan.org/2022/10/the-pla-air-force-erases-the-taiwan-strait-centerline/.


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65. Zhou Bo, “To Avert War Across the Taiwan Strait, the US Must Reinvigorate the One-China Policy,” (Center for International Security and Strategy, Tsinghua University, October 7, 2022), https://ciss.tsinghua.edu.cn/info/Opinions/5330.


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