

POLICY BRIEF



# From Minimum to Limited Deterrence: China's nuclear build-up and future implications

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Cover Photo: The Dongfeng-31 nuclear missile launcher on display at the Chinese People's Revolutionary Military Museum, an exhibit commemorating the 90th anniversary of the founding of the Chinese People's Liberation Army (Wikimedia).

## FROM MINIMUM TO LIMITED DETERRENCE: CHINA'S NUCLEAR BUILD-UP AND FUTURE IMPLICATIONS

### EXECUTIVE SUMMARY

China's nuclear capabilities have traditionally been focused on maintaining a "minimum" deterrent. However, in the past decade, China has embarked on a modernisation and expansion of its nuclear arsenal, while still adhering to certain elements of its original nuclear policy, such as the no first use (NFU) of nuclear weapons. Presently, China seems to be shifting its nuclear deterrent from a minimum to a limited deterrent. This change in force size and structure can be attributed to two factors: a revised understanding of credible deterrence in an evolving security landscape and a pursuit of enhanced status. Although the possibility of China adopting an offensive nuclear strategy in the future is unlikely, it cannot be completely dismissed. The security implications for countries that have rivalries with China, notably the United States, India, and Japan, are significant. Consequently, it is imperative for China to increase transparency regarding its intentions, resolve territorial disputes, and engage in nuclear arms control discussions with the United States.

## CHINA'S NUCLEAR BUILD-UP

The Non-Proliferation Treaty (NPT) identifies China (officially People's Republic of China, PRC) as an official Nuclear Weapon State (NWS) along with the United States, Russia, the UK, and France. China's nuclear doctrine, like other nuclear weapon states, has five elements: declaration, nuclear development, nuclear deployment, nuclear employment, and nuclear disarmament.<sup>1</sup> However, since 1964, when China became the fifth country in the world to test nuclear weapons, it has maintained a distinctly different, and "defensive" nuclear policy. A main difference of China's nuclear policy, when compared to the other NWS, is its continuous adherence to the principle of no first use (NFU).<sup>2</sup> NFU means that China is committed to "no first use of nuclear weapons at any time and under any circumstances, and not using or threatening to use nuclear weapons against non-nuclear-weapon states or nuclear-weapon-free zones unconditionally."<sup>3</sup> China's nuclear strategy has thus relied on minimum deterrence under a strategy of "assured retaliation" and China has been focused on maintaining a second-strike capability, deploying and maintaining the capability of nuclear retaliation in keeping with its 'defensive' nuclear posture.

There are, however, concerns that China's nuclear posture is undergoing significant changes. In its recent Annual Report to Congress (2022) on the *Military and Security Developments Involving the People's Republic of China*, the US Department of Defense (DoD) highlighted three key aspects of China's nuclear capabilities: First, China's operational nuclear warhead stockpile has surpassed 400.<sup>4</sup> Second, by 2030, China will have about 1,000 operational nuclear warheads, most of which will be fielded on systems capable of ranging the continental United States. And third, if China continues with the pace of its nuclear expansion, it is likely to have a stockpile of about 1,500 warheads by 2035, the timeline by which the Chinese military plans to "basically complete modernisation."<sup>5</sup>

Based on available data, independent experts at the Federation of American Scientist (FAS) agree with the DOD estimates that China's stockpile now includes roughly 410 nuclear warheads for delivery by land-based ballistic missiles, sea-based ballistic missiles, and bombers, with more in production to eventually arm additional road-

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<sup>1</sup> Liping Xia, "China's Nuclear Doctrine: Debates and Evolution", Carnegie Endowment for International Peace, 30 June 2016, <https://carnegieendowment.org/2016/06/30/china-s-nuclear-doctrine-debates-and-evolution-pub-63967>.

<sup>2</sup> India also claims to adhere to the NFU principle, but it is not a recognised Nuclear Weapons State according to the NPT. The Soviet Union once claimed to adhere to NFU, but later abandoned it.

<sup>3</sup> The State Council of the People's Republic of China, "Full Text: China's National Defense in the New Era", 24 July 2019, [https://english.www.gov.cn/archive/whitepaper/201907/24/content\\_WS5d3941ddc6d08408f502283d.html](https://english.www.gov.cn/archive/whitepaper/201907/24/content_WS5d3941ddc6d08408f502283d.html).

<sup>4</sup> A nuclear inventory comprises of both stockpiled and retired warheads but still intact, warheads in the queue for dismantlement. A nuclear stockpile comprises of both deployed and reserve warheads.

<sup>5</sup> US Department of Defense, *Military and Security Developments involving the People's Republic of China 2022*, 97-98, <https://media.defense.gov/2022/Nov/29/2003122279/-1/-1/1/2022-Military-And-Security-Developments-Involving-The-Peoples-Republic-Of-China.pdf>.



mobile and silo-based missiles and bombers. However, FAS experts Matt Korda and Hans Kristensen have expressed less confidence in the DOD projection for 2035.<sup>6</sup> They do agree, however that China's stockpile is expected to increase significantly in the next decade, although it will remain significantly smaller than that of Russia or the United States. At present, United States and Russia possess approximately 89 percent of the world's 12,500 nuclear weapons, and 86 percent of the stockpiled warheads available for use by the military.<sup>7</sup>

As per Pentagon reports, in the last three years, China's ICBM launchers increased from 100 in 2020, to 300 launchers in 2021 and now to more than 450 in 2022 – an increase of 350 launchers. *The Wall Street Journal* reported that the US military has notified Congress that “[t]he number of land-based fixed and mobile ICBM launchers in China exceeds the number of ICBM launchers in the United States.”<sup>8</sup> In view of this, FAS experts argue that even if China ends up with more ICBMs than the United States and increases its nuclear stockpile to 1,500 warheads by 2035 as per Pentagon's projections, but that “does not give China parity” – as the United States has 800 launchers for strategic nuclear weapons and a stockpile of 3,700 warheads.<sup>9</sup> Thus, it would currently be premature to claim that China is aiming for or approaching nuclear parity with the United States.

However, in 2021, open-source satellite imagery showed that at least three new ICBM silo fields are under construction: 120 silos under construction at Yumen, another 110 silos at Hami, a dozen silos at Jilantai – with approximately 250 silos under construction.<sup>10</sup> These developments indicate a significant expansion of the Chinese nuclear arsenal – as the silos under construction exceed the number of silo-based ICBMs operated by Russia, and constitutes more than half of the size of the entire US ICBM force.<sup>11</sup> As noted in IISS' *Military Balance 2022*, when complete, these fields could (if used to their maximum capacity) accommodate hundreds of ICBMs, eventually bringing the number of China's operationally deployed land-based strategic nuclear launchers much closer to parity with those of Russia and the United States.<sup>12</sup>

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<sup>6</sup> Hans. M. Kristensen, Matt Korda and Eliana Reynolds, “Chinese nuclear weapons, 2023”, *Bulletin of the Atomic Scientists*, 2023, 79(2), 108.

<sup>7</sup> Hans Kristensen et al., “Status of World Nuclear Forces”, *Federation of American Scientists*, 31 March 2023, <https://fas.org/initiative/status-world-nuclear-forces/>.

<sup>8</sup> Quoted in Michael R. Gordon, “China Has More ICBM Launchers Than U.S., American Military Reports”, *The Wall Street Journal*, 7 February 2023, <https://www.wsj.com/articles/china-has-more-icbm-launchers-than-u-s-american-military-reports-11675779463>.

<sup>9</sup> Hans Kristensen, Eliana Johns, and Matt Korda, “STRATCOM Says China Has More ICBM Launchers Than The United States- We Have Questions”, *Federation of American Scientists*, 10 February 2023, <https://fas.org/publication/stratcom-says-china-has-more-icbm-launchers-than-the-united-states/>.

<sup>10</sup> For details see, Matt Korda and Hans Kristensen, “A Closer Look at China's Missile Silo Construction”, *Federation of American Scientists*, 2 November 2021, <https://fas.org/blogs/security/2021/11/a-closer-look-at-chinas-missile-silo-construction/>.

<sup>11</sup> Matt Korda and Hans Kristensen, “A Closer Look at China's Missile Silo Construction”.

<sup>12</sup> IISS, *The Military Balance 2022*, London: Routledge.

These developments have made it imperative to focus attention on the drivers of Beijing's nuclear force expansion and modernisation, and its implications.

## **NUCLEAR CAPABILITIES AND FORCE STRUCTURE: THE DRIVERS OF CHANGE**

The change in China's force size and structure appears to be the result of two factors: Changing understanding of what constitutes credible deterrence in a changing security environment and a quest for status.

### **Changing views of deterrence**

The increasing external threats that China perceives within its security environment is changing its understanding of what constitutes a credible minimum deterrence against other nuclear-armed states, specifically those in an adversarial relation with China, like the United States and India. In President Xi Jinping's strategic thought, China's security environment has "Three Trends" and "Three Major Dangers":

The "Three Trends" exemplify the external environment, the international situation that is constantly changing, and new opportunities and challenges that are continually emerging, while the "Three Major Dangers" are those of China being "invaded, toppled and separated."<sup>13</sup>

China appears to be making a shift from a minimum deterrence – the once preferred strategy – to a more advanced nuclear posture of limited deterrence. Alastair Iain Johnston notes that in the view of Chinese strategists limited deterrence "requires sufficient counterforce and countervalue tactical, theatre, and strategic nuclear forces to deter escalation of conventional or nuclear war. If deterrence fails, this capability should be sufficient to control escalation and to compel the enemy to back down."<sup>14</sup>

The changing understanding of credible deterrence also explains China's elevation of its Second Artillery Force to the PLA Rocket Force (PLARF) in 2015, which put PLARF on an equal status with the PLA Army, PLA Navy, PLA Airforce, and streamlined command and control of the Chinese nuclear triad. The 2019 White Paper makes two significant mentions: First, the PLARF "plays a critical role in maintaining China's national sovereignty and security". Second, owing to strategic requirements, the PLARF "is enhancing its credible and reliable capabilities of nuclear deterrence and counterattack, strengthening intermediate and long-range precision strike forces, and

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<sup>13</sup> Sun Jianguo, "Upholding the Chinese Approach to National Security", China Institute of International Studies, 11 June 2015,

<https://heinonline.org/HOL/LandingPage?handle=hein.journals/chintersd51&div=4&id=&page=>

<sup>14</sup> Alastair Iain Johnston, "China's New "Old Thinking": The Concept of Limited Deterrence", *International Security*, 1995-1996, 20 (3), 5-6.

enhancing strategic counter-balance capability, so as to build a strong and modernised rocket force.”<sup>15</sup>

Furthermore, in expounding the role of PLARF, *Science of Military Strategy 2020* described it as the “core strength of the PRC’s nuclear deterrence, it is a strategic support for China’s status as a major power, and it is an important cornerstone for safeguarding national security.”<sup>16</sup>

The functional objectives of the PLARF still adhere to the directions of the SAF, as the 2015 White Paper categorically notes:

strive to transform itself in the direction of ‘informationisation’, press forward with independent innovations in weaponry and equipment by reliance on science and technology, enhance the safety, reliability, and effectiveness of missile systems, and improve the force structure featuring a combination of both nuclear and conventional capabilities.<sup>17</sup>

The upgrade to PLARF also highlights the increasing importance of conventional and nuclear missiles to the PLA’s warfighting and deterrence capabilities. That is, on a conventional level, developing missile capabilities provides the PLA more options in planning for regional scenarios such as a Taiwan invasion, or a conflict in the South China Sea, East China Sea, or the Korean Peninsula; while on the strategic level, the PLARF provides greater credibility to China’s nuclear deterrence.<sup>18</sup>

### **Nuclear deterrence as a status symbol**

The PLARF is not just a “provider” of key military capabilities, but it acts as a “visible symbol” of China’s great-power status; China’s increasing nuclear stockpile suggests that the long-standing Chinese policy of maintaining a small and survivable nuclear deterrent is no longer satisfactory for a rising China.<sup>19</sup> Its nuclear weapons build-up is not just linked to deterrence but also to enhancing China’s great-power status. *Science of Military Strategy 2013* described it as a “firm shield” and states:

The influence of nuclear weapons on the moulding of a nation’s great-power status and international prestige, as well as on state-to-state relations, is something difficult to achieve with other types of weapons. Nuclear weapons have always played the role of a pillar for China’s great-power status, and

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<sup>15</sup> The State Council of the People’s Republic of China, “Full Text: China’s National Defense in the New Era”, 24 July 2019,

[http://english.www.gov.cn/archive/whitepaper/201907/24/content\\_WS5d3941ddc6d08408f502283d.html](http://english.www.gov.cn/archive/whitepaper/201907/24/content_WS5d3941ddc6d08408f502283d.html).

<sup>16</sup> Quoted in Andrew S. Erickson (2023), “China’s Approach to Conventional Deterrence”, in Roy D. Kamphausen (ed.) *Modernizing Deterrence: How China Coerces, Compels, and Deters*, Seattle, WA and Washington DC: The National Bureau of Asian Research, 15.

<sup>17</sup> The State Council of the People’s Republic of China, “China’s Military Strategy”, 27 May 2015, [http://english.gov.cn/archive/white\\_paper/2015/05/27/content\\_281475115610833.htm](http://english.gov.cn/archive/white_paper/2015/05/27/content_281475115610833.htm).

<sup>18</sup> Amrita Jash, “PLARF: China’s 21st Century Rocket Army”, *Scholar Warrior*, Spring 2019, 75.

<sup>19</sup> Michael S. Chase, “PLA Rocket Force Modernization and China’s Military Reforms”, The RAND Corporation, 15 February 2018, 1.

hereafter will remain important marks and symbols clearly displaying China's international position.<sup>20</sup>

As the former Chinese leader Deng Xiaoping had stated, additional nuclear force enhancements were necessary “to earn more say and a higher international status in a coming world order.”<sup>21</sup> This thinking has provided the impetus to China's nuclear modernisation since the 1980s.

There is an important implication of the fact that China wants to be recognised as a major power and views its credible nuclear deterrence as a symbol of prestige. Although there is no conclusive evidence to suggest that China aims to achieve nuclear parity with the United States and Russia in the short to medium term, the intention to seek parity cannot be entirely ruled out because the achievement of nuclear parity with the United States and Russia would bring China to commensurate status with them.

## **CONTINUITY, POTENTIAL CHANGE, AND POLICY IMPLICATIONS**

To put it simply, for China, nuclear weapons are vital to manage its security environment and to obtain its rightful position in the global order. Thereby, security and status go hand-in-hand. In 1947, Chinese leader Mao Zedong characterised nuclear weapons as “paper tigers”, but when China was testing its own first nuclear bomb in 1964, he explained:

It is possible for our country to produce a few atom bombs, but we are not going to use them. Why would we want to produce them if we are not going to use them? We will use them as defensive weapons. Currently, some big nuclear powers, the United States in particular, scare people with nuclear bombs ...The people of the world all oppose to the use of nuclear bombs to kill.<sup>22</sup>

That same year, Premier Zhou Enlai stated: “Only when we possess strategic missiles and nuclear weapons can we not have to use missiles and nuclear weapons. If we don't have missiles, imperialism surely will use missiles.”<sup>23</sup> More recently, in 2022, President Xi Jinping responded to the raised prospect over the deployment of nuclear arms in the Russia-Ukraine War, by stating that:

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<sup>20</sup> Project Everest, *The Science of Military Strategy 2013* Translated by China Aerospace Studies Institute, US Air University, 2 February 2021, 290,

[https://www.airuniversity.af.edu/Portals/10/CASI/documents/Translations/2021-02-08\\_Chinese\\_Military\\_Thoughts- In\\_their\\_own\\_words\\_Science\\_of\\_Military\\_Strategy\\_2013.pdf](https://www.airuniversity.af.edu/Portals/10/CASI/documents/Translations/2021-02-08_Chinese_Military_Thoughts- In_their_own_words_Science_of_Military_Strategy_2013.pdf).

<sup>21</sup> Quoted in Susan Turner Haynes, “The Power of Prestige: China's Nuclear Developments”, Conference-Draft Paper for Presentation at the ISA Annual Convention Atlanta, March 2016, 1-2,

[https://www.academia.edu/23440377/The\\_Power\\_of\\_Prestige\\_Chinas\\_Nuclear\\_Developments\\_The\\_Pow\\_er\\_of\\_Prestige\\_Chinas\\_Nuclear\\_Developments](https://www.academia.edu/23440377/The_Power_of_Prestige_Chinas_Nuclear_Developments_The_Pow_er_of_Prestige_Chinas_Nuclear_Developments).

<sup>22</sup> Quoted in Zhenqiang Pan, “A Study of China's No-First-Use Policy of Nuclear Weapons”, *Journal for Peace and Nuclear Disarmament*, 2018, 1(1), 121.

<sup>23</sup> Quoted in Litai Xue, “Evolution of China's Military Strategy”, in John C. Hopkins and Weixing Hu (eds.) *Strategic Views From The Second Tier: The Nuclear Weapons Policies of France, Britain and China* (New Brunswick, NJ: Transaction Publishers, 1995), 183.



The international community should [...] jointly oppose the use or threats to use nuclear weapons, advocate that nuclear weapons must not be used, and nuclear wars must not be fought, in order to prevent a nuclear crisis in Eurasia.<sup>24</sup>

What can be deduced from the statements expressed by China's leaders is that from Mao Zedong to Xi Jinping, China's nuclear weapons strategy remains consistent on one point: nuclear weapons are not a means for fighting or winning wars. This is also well-established in China's 12-point position paper on the "Political Settlement of the Ukraine Crisis", which categorically states:

Nuclear weapons must not be used, and nuclear wars must not be fought. The threat or use of nuclear weapons should be opposed. Nuclear proliferation must be prevented, and nuclear crisis avoided.<sup>25</sup>

But what about the future? Although Chinese leaders continue to maintain that nuclear wars must not be fought, China's nuclear modernisation might suggest otherwise. Given the change in Beijing's policy from maintaining a minimum nuclear deterrence to that of limited deterrence, the likelihood of a further change to an offensive nuclear strategy is low but cannot be entirely ruled out in the future. As China's nuclear stockpile increases over time – both in terms of size and sophistication, it will come closer to achieving the capabilities required for a first strike capability. Thus, even if China has no such intention at present, the modernisation will still have direct security implications, especially for countries with which China has rivalries, such as the United States, Japan, and India. These countries might become concerned that China will use its increasing nuclear capability for coercion, to achieve its objectives, such as unifying Taiwan with Mainland China, or secure territorial claims against Japan in the East China Sea, or against India along the Himalayan border.

Overall, China's increasing nuclear capabilities indicate Beijing's intention towards taking a departure from its long-held modest nuclear profile. Certainly, the great power competition with the United States is an underlying factor that is driving China's need for deterrence and its quest for status, and in turn, its nuclear modernisation. For China, the nuclear weapons are no longer 'paper tigers', but indeed a crucial necessity for deterrence and prestige. The risk of a nuclear arms race is real and mounting.

## RECOMMENDATIONS

Beijing will likely continue to expand its nuclear stockpile; hence, the challenge lies in reducing the risks of its nuclear build-up. **Most urgently, China must provide more transparency regarding the intent of its current build-up** – especially of the missile

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<sup>24</sup> Xi made the statement after meeting German Chancellor Olaf Scholz in Beijing on 4 November 2022. See, "Xi urges Ukraine peace talks, warns against nuclear crisis in Eurasia in meeting with Scholz", Global Times, 5 November 2022, <https://www.globaltimes.cn/page/202211/1278765.shtml>.

<sup>25</sup> Ministry of Foreign Affairs of the People's Republic of China, "China's Position on the Political Settlement of the Ukraine Crisis", 24 February 2023, [https://www.fmprc.gov.cn/eng/zxxx\\_662805/202302/t20230224\\_11030713.html](https://www.fmprc.gov.cn/eng/zxxx_662805/202302/t20230224_11030713.html).

silos in Yumen and Hami – which it is yet to acknowledge officially. Doing so would reduce the perception among its nuclear rivals that China might eventually seek parity or assume an aggressive nuclear posture in the future.

Furthermore, **Beijing should engage New Delhi and Tokyo** through dialogue, diplomacy, and confidence-building measures for peaceful resolution of their territorial and maritime disputes. **The United States and China should engage with each other on nuclear arms control**, and China should avoid seeking a near parity with the nuclear stockpiles of the United States, as that would result into a nuclear arms race between the two countries. It is imperative that both Beijing and Washington act as responsible nuclear powers.

## ABOUT THE AUTHOR

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