US-CHINA NUCLEAR DYNAMICS

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The recent reports about the construction of three silo fields in China have renewed interest in the latest developments in the US-China nuclear dynamics as well as the future trajectory of developments in the nuclear field between these two countries. The impact of such dynamics may affect the trajectory of nuclear weapons in the world as well as future arms control agreements, both regional and multilateral. The effect of developments around the US-China nuclear dynamics will not remain confined to the US-China dyad but will permeate to other regional actors, as well as impact multilateral engagements on nuclear issues.

CHINA'S NUCLEAR CAPABILITY

Twin developments consisting of, firstly, the construction and start of a fast breeder nuclear reactor on China's east coast and supply of 25 tonnes of enriched uranium by Rosatom to start the reactor have sent alarm bells ringing over the potential expansion of China's nuclear arsenal. Even though China insists that the reactor is for civilian purposes, the production of such large quantities of fissile material, specifically plutonium, lends credence to the desire of the Chinese to expand their nuclear arsenal. This is especially so because China had suspended fissile material production in the 1980s when it pursued military-to-civilian conversion. It did so even without being required to do so by international agreements, during

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a period when the global nuclear warhead inventory was at its peak.[1] Secondly, open-source satellite imagery has 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.[2] Estimates vary on the capacity but most experts believe that these silos will have the capability to house between 300 to 360 Inter-Continental Ballistic Missiles (ICBMs).

The last time there was ferment on the expansion of China's nuclear capabilities was when a report written in 2011 by a Georgetown University team led by Phillip Karber conducted a three-year study mapping out China's complex tunnel system stretching 5,000 km (3,000 miles). The report determined that the size of the Chinese nuclear arsenal is understated and as many as 3,000 nuclear warheads may be stored in the tunnel network. Analysis by academics as well as estimates by the Stockholm International Peace Research Institute (SIPRI) subsequently concluded that rather than increasing the number of warheads, China had moved its land-based missiles to underground-basing to ensure a limited and reliable second strike nuclear force after absorbing a first nuclear strike.[3]

1. Hui Zhang, "Why China Stopped Making Fissile Material for Nukes", *Bulletin of the Atomic Scientists*, March 15, 2018.
2. Matt Korda and Hans Kristensen, "A Closer Look at China's Missile Silo Construction," *Strategic Security (Blog)* on Federation of American Scientists, November 2, 2021, https://fas.org/blogs/security/2021/11/a-closer- look-at-chinas-missile-silo-construction/
3. Hui Zhang, "China's Underground Great Wall: Subterranean Ballistic Missiles", *Power & Policy Blog*, January 31, 2012, https://www.belfercenter.org/publication/chinas-underground-great-wall-subterranean-ballistic-missiles

What then has caused consternation this time around? It is perhaps the intensification of competition between China and the changing nuclear posture of the US as well as China's assessment of the survivability of its second strike capability. This coupled with the dynamic of the three nuclear superpowers in a new strategic paradigm in the aftermath of the war in Ukraine is perhaps driving China's desire to increase its nuclear capabilities.

The introduction of non-kinetic and non-traditional weapons, new frontiers, and more players is likely to complicate deterrence paradigms and blur escalation red lines.

The first part of the dynamics relates to the intensification of the competition between China and the USA. Xi Jinping has publicly declared the Chinese Communist Party's (CCP's) strategy to develop the People's Liberation Army (PLA) into a "world class military" by 2049. The factors that are driving the competition are multiple. The foremost factor in this respect being the unclear rules and norms. Eroding arms control frameworks have clouded the clarity of the global nuclear order. To add to the confusion, many of the global intergovernmental organisations that have underpinned the Western-led international order for decades, including the UN, World Bank, and World Trade Organisation (WTO), are bogged down by a political deadlock, decreasing the capacity for implementation of norms. Another factor heightening competition is declining deterrence. The introduction of non-kinetic and non-traditional weapons, new frontiers, and more players are likely to complicate deterrence paradigms and blur escalation red lines. Deterrence strategies rely on the prospect of harm to persuade an opponent to not engage in a specified behaviour. These strategies have always been difficult to sustain outside of nuclear warfare, and new forms of attack like cyber and information operations, will add to the challenge. Increased geopolitical tension due to de-globalisation as well as increase in nationalism are also responsible for the increased competition. The emergence of strong leaders and their proclivity towards centralised decision-making as well as technological change and accelerated pace of warfare, especially the emergence

of long range weapons are leading to large asymmetries between nations, and thereby to insecurity. Finally, a murkier information environment with emphasis on cognitive warfare is adding to the stresses in the international security environment.[4]

US NUCLEAR STRATEGY

In the backdrop of this competitive environment, the US has clearly identified the People's Republic of China (PRC) as a strategic competitor. The US National Defence Strategy (NDS) 2022 clearly makes the following four points:

- "The 2022 NDS advances a strategy focused on the PRC and on collaboration with our growing network of Allies and partners on common objectives. It seeks to prevent the PRC's dominance of key regions while protecting the US homeland and reinforcing a stable and open international system."[5]
- "The most comprehensive and serious challenge to US national security is the PRC's coercive and increasingly aggressive endeavor to refashion the Indo-Pacific region and the international system to suit its interests and authoritarian preferences"[6]
- "The PRC has expanded and modernized nearly every aspect of the PLA with a focus on offsetting US military advantages".[7]
- "In parallel, the PRC is accelerating the modernization of its nuclear capabilities".[8]

Moreover, the Nuclear Posture Review (NPR) 2022, while stating that US nuclear weapons are primarily for deterrence, has also acknowledged that "*the PRC is the overall pacing challenge for US defence planning and a growing*

4. National Intelligence Council Report , Global Trends 2040, March 2021,NIC2021-02339, pp. 98-104, https://www.dni.gov/index.php/gt2040
5. 2022 National Defence Strategy of The United States of America, issued by the Department of Defence (DoD) October 27, 2022, p. 2.
6. Ibid., p. 4.
7. Ibid., p. 4.
8. Ibid., p. 4.

factor in evaluating our nuclear deterrent." The NPR also predicts the possession of at least 1,000 nuclear warheads by the PRC by the end of the decade.[9] The NPR has also categorically noted in its declaratory policy that a "no first use policy" would "result in an unacceptable level of risk in light of the range of non-nuclear capabilities being developed and fielded by competitors that could inflict strategic level damage."[10] In its posture, besides deterrence, the US also has taken a decision to "adopt an integrated defense approach that works to leverage nuclear and non-nuclear capabilities to tailor deterrence under specific circumstances."[11] This decision indicates that the US is ready to use any means during a crisis that may or may not have reached the nuclear threshold. The following two points made in the NPR 2022 are also illustrative:

- "Consistent with its concept for integrated deterrence, DoD will seek to identify and assess the ability of non-nuclear capabilities to contribute to deterrence, and will integrate these capabilities into operational plans as appropriate."[12]
- "…nuclear weapons are required to deter not only nuclear attack, but also a narrow range of other high consequence strategic level attacks".[13]

China, on the other hand, in its White Paper in 2019, has reiterated its "no first use policy" as well as its desire to retain a "minimum nuclear deterrent." However, the recent policy releases by the US have caused some doubts in the minds of Chinese scholars about the effect of the nuclear and conventional entanglement that the US seeks to pursue. For example "high consequence strategic level attacks" could mean the Taiwan contingency. Would the US threaten to use nuclear weapons on a flotilla poised to cross the Taiwan Strait? Also, "Chinese experts view US conventional capabilities, in addition to US nuclear counterforce capabilities, as posing a growing threat to China's nuclear deterrent. China's long-held concerns about US missile defense and

9. 2022 Nuclear Posture Review,issued by the DoD, October 27, 2022, p. 4.
10. Ibid., p. 9.
11. Ibid., p. 3.
12. Ibid., p. 2.
13. Ibid., p. 8.

more recent concerns about US conventional precision-strike capabilities have intensified in recent years. This apprehension is spurred by developments such as the 2016 Terminal High Altitude Area Defense (THAAD) and an associated X-band radar deployment in South Korea, the demise of the Intermediate-Range Nuclear Forces (INF) Treaty, the successful testing of an SM-3 interceptor against an ICBM, and the continued investments in the Conventional Prompt Global Strike (CPGS) program, as well as new capabilities to target nuclear forces."[14] This Chinese view is buttressed by the fact that in the US policy declaration in the NPR 2022 of "*Integrated Deterrence*", non-nuclear capabilities are sought to be used alongside the nuclear forces to achieve strategic deterrence. These capabilities may mean cyber to the US but they could mean CGPS to the Chinese. Nevertheless, Chinese analysts have started to think that technological developments in the US could erode the credibility of China's "minimum nuclear deterrent" and open it up to nuclear blackmail over the Taiwan issue.

Earlier this year, academics from the Norwegian Institute of Defence Studies published a study on this issue and concluded, "In the past few years, China's strategic community has viewed two shifts in the U.S. military posture with growing alarm. The first, which reflects concern about nuclear compensation, is a shift in the U.S. nuclear doctrine toward greater emphasis on the limited use of nuclear weapons, which many in Beijing believe is driven by the fear of China's growing conventional military capabilities. The second, which reflects conventionally created vulnerability, is the development of a suite of primarily conventional counterforce capabilities—including missile defenses and conventional precision-strike platforms—that together would degrade or even eliminate China's secure second strike. In sum, Chinese observers are increasingly pessimistic about both the risk of nuclear escalation and the robustness of China's deterrent."[15]

14. Henrik Stålhane, Hiim, M. Taylor Fravel, and Magnus Langset Trøan, "The Dynamics of an Entangled Security Dilemma-China's Changing Nuclear Posture", *International Security*, vol. 47, no. 4, Spring 2023, pp. 147–187, https://doi.org/10.1162/isec_a_00457 © 2023 by the president and fellows of Harvard College and the Massachusetts Institute of Technology, p. 150.
15. Ibid.

In 2017, the RAND Corporation also carried out a similar study and reached similar conclusions that "China is prone to view Ballistic Missile Defence (BMD) and CPGS as parts of a larger U.S. strategy designed to upset traditional notions of nuclear strategic balance and achieve 'absolute security,' a perspective that highlights broader concerns over the larger direction of American conventional and nuclear strategy." The study further holds the view that the Chinese infer that "new U.S. doctrines, technologies, and priorities could jeopardize the future effectiveness of (their) deterrent. They appear convinced that a portfolio of further improvements to Chinese nuclear forces will likely be required to ensure they remain capable of implementing their deterrent and retaliatory functions."[16]

Therefore, the US-China nuclear dynamics primarily revolve around the fact that China, which depended on a "minimum nuclear deterrent", is becoming increasingly insecure about the credibility of that deterrent due to the technical advances in the US as well as the shift in the US' nuclear posture.

CHINA-US: THE NUCLEAR TRIAD

In order to understand this insecurity, it is important to examine the nuclear triad and deployment of nuclear weapons by the two countries. The US' deployed nuclear warheads are on the following delivery platforms:

- 400 Minuteman III ICBMs (silo-based).
- 14 Ohio class ballistic missile submarines (SSBNs) with 20 Trident II D5 missiles each.
- 60 strategic bombers (40 B-52 + 20 B-2).

Clearly the US triad is well developed and can target any portion of the globe. All the three legs of the triad are capable of survivability in their own right and pack a powerful punch by themselves. The B-52's endurance with

16. Eric Heginbotham, Michael S. Chase, Jacob L. Heim, Bonny Lin, Mark R. Cozad, Lyle J. Morris, Christopher P. Twomey, Forrest E. Morgan, Michael Nixon, Cristina L. Garafola, Samuel K. Berkowitz, *China's Evolving Nuclear Deterrent: Major Drivers and Issues for The United States*, ISBN: 978-0-8330-9646-3 (RAND Corporation 2017), pp. 67, 68.

A fully armed Ohio class submarine can carry up to 280 warheads, making it the fifth largest nuclear power by itself, though it doesn't carry that number of warheads currently due to the limitations of the Strategic Arms Reduction Treaty (START).

air-to-air refuelling is limited only by the limitations of the crew, and a fully armed Ohio class submarine can carry up to 280 warheads, making it the fifth largest nuclear power by itself, though it doesn't carry that number of warheads currently due to the limitations of the Strategic Arms Reduction Treaty (START). China, by contrast, relies primarily on ICBMs and uses underground storage as well as rail/road mobile units to ensure survivability. China also has rail/road mobile Intermediate Range Ballistic Missiles (IRBMs) to take care of "regional" contingencies as well as closer US territories like Guam. The Chinese triad is based on the following platforms:

- DF-5 ICBMs (silo-based).
- DF-41 and DF-31A ICBMs (road/rail mobile).
- DF-31, DF-26 and DF-17 IRBMs/MRBMs (Medium Range Ballistic Missiles) (road/rail mobile).
- 06 Type 094 SSBN with 12 JL2/JL3 missiles.
- H-6 bomber with ALBMs (Air-Launched Ballistic Missiles).

The land based ICBM leg of the China triad is in fine fettle despite the DF-5s being powered by liquid propellant and taking some time for fuelling. This capability fits reasonably with the Chinese nuclear doctrine accepting a "delayed retaliation". The fact that the DF-5Bs are Multiple Independent Reentry Vehicle (MIRV) capable and the earlier D-5s are being replaced by the DF-41s adds to the capability of the ICBM forces of China. Already, the number of land-based fixed and mobile ICBM launchers in China exceeds the number of ICBM launchers in the United States, even though the numbers of ICBMs and warheads do not.[17] The aircraft-based leg of China's triad is the

17. Hans Kristensen, Eliana Johns and Matt Korda, "STRATCOM Says China Has More ICBM Launchers Than The United States—We Have Questions", https://fas.org/publication/stratcom-says-china-has-more-icbm-launchers-than-the-united-states

H-6K bomber that can carry the nuclear capable CJ-10A cruise missile. With the H-6s combat radius of 3,000 km and the CJ-10As range of 2,000 km, it cannot reach the US targets in North America. The newer H-6N with a modified fuselage that can carry an ALBM will also not do this job completely. It is, however, the best bet until the development of a new bomber designated the H-20. The underwater leg of the triad is certainly capable of striking the US homeland, especially if we take into account the JL-3 missile on the Type 094 submarines of which China has six. However, the submarine itself is considered "noisy" and vulnerable to anti-submarine warfare. Also the limited numbers may not allow for more than two (or perhaps, at a stretch, three) submarines to be available at any given time, leading to insecurity for China on the effectiveness of this leg of its triad. If any submarine on deterrence patrol finds itself interdicted in a crisis, it could leave a large hole in China's deterrent.

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Another dynamic that affects the US-China nuclear dyad is China's approach to arms control. China's accession to the Non-Proliferation Treaty (NPT) was as late as 1992 despite the treaty being open for signature since 1968. China's positions on the NPT range between siding with those of the Non-Aligned Movement (NAM), which primarily represents the interests of non-nuclear weapon states from the global South, and embracing its privileged role as a nuclear weapon state formally recognised under the NPT. In fact, when Beijing operates in multilateral fora outside of regional groupings, it refers to itself as the "group of one."[18] However, whenever asked to be part of any arms control agreement, it points to its low number

18. Oliver Meier and Michael Staack, "Engaging China on Multilateral Arms Control", https://www.armscontrol.org/act/2022-12/features/engaging-china-multilateral-arms-control

of weapons as compared to the US and Russia (among other factors) to not agree to any arrangement that could put a cap on its nuclear weapons.

CHALLENGES AND DILEMMAS

China wants to be treated as an equal with its main competitor, the United States. China is not ready for agreements that impose constraints on its arms policy without the United States being subject to similar provisions. By 2050, China aims to have military forces that are technologically on par with those of the United States. Also, China is developing a broad arsenal of state-of-the-art weapon systems, making technological leaps in development, becoming increasingly active as an arms exporter, and initiating sophisticated defence cooperation programmes.[19] Having obtained the lead in hypersonic missiles, it would not want to give up its advantage through any negotiations on arms control.

Additionally, "China's self-perception in arms control regimes also fluctuates between its claim to regional hegemony and its traditional role as a developing country. China does not support, or is reluctant to support, regional approaches to confidence- and security-building measures or arms control if these run counter to its aspirations for regional supremacy."[20] This is especially true when it comes to dealing with India. According to Dr Lora Saalman, a senior researcher within SIPRI's Armament and Disarmament and Conflict, Peace and Security vertical,

> For many years, China has considered South Asian nuclear issues to factor only India and Pakistan—but its reluctance to involve itself has strengthened over the past decade. In 2011, when this author hosted a China–India nuclear dialogue that generated an edited volume, one Chinese general expressed surprise at the extent of Indian strategic concerns over China. A 2019 global nuclear review by the China Institutes of Contemporary International Relations (CICIR) devoted a single short paragraph to South

19. Ibid.
20. Ibid.

> Asia without any discussion of spill-over effects. Indeed, when preparing for the current project in 2019, a Chinese expert cautioned that a proposed trilateral event with Chinese, Indian and Pakistani experts in Beijing would be poorly perceived in China.[21]

Despite its disdainful approach to regional arms control, China has, of late, taken note of developments in the nuclear field in India, specifically the Agni V and the SSBN INS *Arihant* and has included them in its nuclear calculus while publicly not acknowledging the same.

Within this environment of heightened risk, Chinese strategists see a number of specific nuclear challenges. Firstly, the development of new US offensive and defensive systems, as discussed above; secondly, the growth of regional nuclear inventories; and, finally, increased pressure for China to participate in nuclear arms control negotiations before its forces have sufficiently matured to guarantee its retaliatory capability.

There are many nested dilemmas for China, keeping in view its neighbourhood that consists of many nuclear armed states such as Russia, India, Pakistan and North Korea. There are also states in its neighbourhood that are under the US' nuclear umbrella such as South Korea and Japan. However, by far the factor that affects the US-China dynamic is the triad involving Russia, China and the USA, especially in the aftermath of the alignments that have taken place since the commencement of the war in Ukraine. During their meeting in March 2023, Xi and Putin described China-Russia ties as "mature, stable, independent and tenacious", and "not affected by external influences".[22] Most Chinese scholars maintain that Moscow and Beijing are united in viewing Washington as their "primary nuclear deterrence target" and that the "United States remains the greatest factor strengthening Sino-Russian strategic relations." Moscow's strategy is seen as "joining with China to constrain the United States." This spirit was visible during the meeting in March when the two countries signed agreements to bring their

21. https://sipri.org/commentary/blog/2020/chinas-detachment-south-asian-nuclear-triangle
22. https://www.scmp.com/news/china/diplomacy/article/3214416/xi-putin-pledge-more-cooperation-new-era-china-russia-ties

relations into a "new era". Also Xi reportedly told Putin, "Right now there are changes—the likes of which we haven't seen for 100 years—and we are the ones driving these changes together."[23] The cooperation between China and Rosatom and the supply of enriched uranium needs to be seen in the light of such blossoming of relations between the two countries.

The US is not unaware of such developments. Since the onset of the war in Ukraine, this increasing cooperation between China and Russia has occupied the minds of policy-makers in the United States. Despite these developments, the US is also determined to maintain a superiority in numbers and quality vis-à-vis China. The NPR 2022 posits that the United States "will face two major nuclear powers as strategic competitors and potential adversaries". This will create "new stresses on stability and new challenges for deterrence, assurance, arms control and risk reduction" Hence, the US nuclear arsenal should be able to deter "opportunistic aggression" from China or Russia if the US is engaged in a military conflict with the other country.[24] Meanwhile, as China builds up, argues Patty-Jane Geller, a nuclear arms expert at the Heritage Foundation, "the US will need a nuclear force that can credibly convince China that the costs of using nuclear weapons would exceed the benefits." This will result in increasing bipartisan pressure for "boosting procurement plans for nuclear modernization programs already under way, including for the Sentinel missile, Columbia-class submarine and B-21 bomber." In addition, there will be a push to accelerate development and deployment of a submarine-launched cruise missile.[25] This view is not shared by everyone. "It is insane to think that we will be fighting two nuclear wars at the same time" notes Dr Matthew Bunn of the Belfer Centre for Science and International Affairs at the Harvard Kennedy School. Nevertheless, as China's nuclear force grows, new dynamics will emerge. As already noted, China has surpassed the US in the number of nuclear capable ICBMs. The hypersonic vehicles being developed by China are capable of targeting US

23. https://www.aljazeera.com/news/2023/3/22/xi-tells-putin-of-changes-not-seen-for-100
24. n. 9, p. 4.
25. James Jay Carafano, "The Future of the U.S.-China Nuclear Arms Race", https://www.gisreportsonline.com/r/china-united-states-nuclear

Ballistic Missile Defence (BMD) radars even if they are not armed with nuclear warheads. If such a scenario emerges, China's missile force may exceed the capability of US BMD to intercept incoming ICBMs. This would also have a cascading effect on the extended deterrence or nuclear umbrella provided to US allies such South Korea and Japan. The situation here is exacerbated by the availability of a large number of Medium-Range Ballistic Missiles (MRBMs) available with the People's Liberation Army Rocket Force (PLARF) armed with conventional warheads that can overwhelm the THAAD positioned in that region.

WHAT LIES AHEAD?

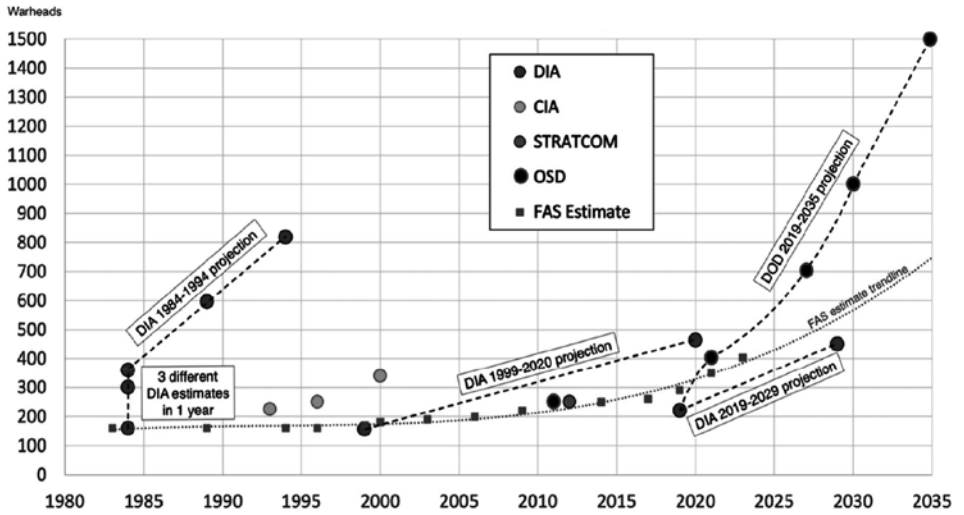
What then lies in the future? A RAND Corporation study of 2017 concluded that "many of the drivers we have discussed in this report will persist and that the two sides will likely find themselves in a deepening nuclear arms competition. In this context, the importance of avoiding conventional conflict takes on a greater priority."[26] A study published in the spring 2023 edition of *International Affairs* comes to a similar hypothesis, stating, "At least for the time being, an arms race between the United States and China—fueled by the entangled security dilemma and the shifting conventional balance of force in the region, and encompassing both advanced conventional weapons and nuclear weapons appears more likely."[27]

If the future is an arms race, then the question arises as to what form the race would take. Would it be purely a bean count of warheads accompanied by more delivery systems? Where will China stop at its warhead count? Most analysts point out that China's policy of minimum deterrence has meant that its nuclear forces have not received priority in PLA resource allocation. This now appears to be changing. Where it will stop in terms of numbers will depend upon the internal debate between the two viewpoints of its centenary goal: to become a "fully developed, rich, and powerful" nation by the 100th anniversary of the People's Republic in 2049, and that of minimum

26. Heginbotham, et. al., n. 16, pp. 67, 68.
27. Stålhane, et. al., n. 14, p. 187.

deterrence. Forecasts about numbers of warheads in China have been proved wrong before (see Fig 1 below). What is probable is SIPRI's estimate that the size of China's nuclear arsenal has increased from 350 warheads in January 2022 to 410 in January 2023, and is expected to keep growing. In addition, in a statement issued by SIPRI, Hans M. Kristensen, associate senior fellow with SIPRI's Weapons of Mass Destruction Programme said, "China has started a significant expansion of its nuclear arsenal. It is increasingly difficult to square this trend with China's declared aim of having only the minimum nuclear forces needed to maintain its national security."[28]

Fig 1: US Estimates for Chinese Nuclear Weapons Stockpile



If indeed China is increasing the number of its warheads, then what type of warheads would it desire to increase? All indications are that China does not want to adopt a counter-force doctrine as yet. This is evidenced by the reaction when the *Global Times* published an interview with a "military expert" calling for China to develop lower-yield warheads: several Chinese arms control experts rebuked the article, arguing that such arguments "do not

28. https://www.thehindu.com/news/national/china-could-potentially-have-as-many-icbms-as-us-or-russia-by-turn-of-decade-sipri/article66961196.ece

hold water" and that China should "have confidence in its nuclear strategy," refrain from being "led by the nose" by the United States, and reject the logic of nuclear war-fighting.[29] So if China sticks to its current doctrine of no first use, then these additional warheads are expected to be strategic warheads that are configured and deployed to be capable of surviving the first strike. Considering the nature of these warheads the US will certainly adjust its numbers once the New START (Measures for the Further Reduction and Limitation of Strategic Offensive Arms) expires in 2026. What kind of arms race will emerge from this competition, will depend upon the deterrence level China wishes to achieve and the determination of the US to maintain its numerical and qualitative nuclear advantage over China.

The second type of race that could emerge will be related to the alert level. Would China shift to a Launch on Warning (LOW) posture, leading to a reaction from the US side? Many Chinese analysts believe that LOW is consistent with China's "no first use" policy. Indeed, some weapons are in a higher state of readiness than the usual unmated warhead status that had defined China's readiness posture in the earlier decades of "delayed retaliation". If China were to shift to a LOW posture, then coupled with the PLARF controlling both conventional and nuclear rocket forces, the US would also have to shift to a higher readiness status. As witnessed during the Cold War, such postures have the potential to cause near catastrophes. During exercises or even otherwise, during that period, each side almost launched weapons on the other at least once due to misjudgment or false alarm. China shifting to a LOW posture, would also affect the regional neighbourhood. Other nations in the region may have to readjust their reaction times, causing further effects on deterrence stability in the area. Currently, China believes that it does not have sufficient "strategic early warning" to shift to a LOW posture, however, this could change in the future. Although few details have emerged, President Vladimir Putin announced in 2019 that Russia will help China develop a system that will likely be able to identify the launch of longer-range ballistic missiles. Early warning and tracking are also key for

29. Stålhane, et al., n. 14, p. 172.

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missile defence, which China could deploy in the future to protect strategic targets.[30]

The third type of race that is likely to develop is in the form of conventional counter-force strikes on each other's nuclear assets or even elements of their BMD. China, for example, may also develop conventional capabilities to enhance the survivability of its nuclear forces. It may develop platforms that can target an adversary's missile defences to ensure its ability to retaliate after a strike. Anti- Satellite (ASAT) weapons, electronic warfare, conventionally armed cruise missiles and cyber weapons could target many elements of the enemy's nuclear assets as well as elements of BMD. Ballistic missiles and Hypersonic Glide Vehicles (HGVs) are also well suited for these purposes. Even anti-radiation missiles are being considered for targeting BMD radars being deployed in the theatre (South Korea, Japan and any Aegis class destroyers in the vicinity). Another area for targeting being considered by China is the Space-Based Infrared System (SBIRS) constellation. This, according to Chinese strategists, can be targeted in a number of ways—ASAT weapons, electronic interference, cyber attacks, and even satellites equipped with robotic arms are being considered. Besides this, advanced lasers and other directed energy weapons are also in the mix despite their low power and capability at present.[31] The US could then regard these platforms and capabilities as a threat to its conventional forces—or even its nuclear forces. The US could also speed up development of its own similar weapon systems such as HGVs as well as upgrade its already other formidable conventional capabilities The US may then use such capacities to counter counter-force, since it already has the ability and doctrine to direct them against assets that are critical to the operation of nuclear forces. This race will not remain confined to the US and China. India may feel the same level of threat to its

30. Ibid., p. 178.
31. Ibid., pp. 182-183.

second strike capability as China does today as a result of newer conventional weapons being operationalised. If India is forced to take measures that affect its nuclear posture, it may lead to another small competition in the region. Another fallout of such developments would be the *de facto* militarisation of space as concerns about missile defences will lead to operationalisation of both kinetic and non-kinetic conventional capabilities to target early-warning satellites and other assets that enable missile defence. This conventional counter-force arms race is particularly dangerous as it can lead to many misperceptions during periods of crisis and most certainly affect crisis stability.

US-China nuclear dynamics has the potential to escalate into an arms race that could not only affect the nuclear domain but lead to conventional entanglement. In the process, the space and cyber domains will not remain unaffected either as both sides vie for advantage.

In conclusion, the US-China nuclear dynamics has the potential to escalate into an arms race that could not only affect the nuclear domain but lead to conventional entanglement. In the process, the space and cyber domains will not remain unaffected either as both sides vie for advantage. A shift in the nuclear posture by China to a LOW status and its corresponding response by the US has the potential to have ripple effects across the region, leading to suitable responses by the neighbouring states. The increase in the number of warheads will also lead to a mini arms race in the region. The lack of any prospects of arms control could also have effects on the regional nuclear environment, especially if Iran pursues its nuclear programme more vigorously. The fact that China has close ties with Iran makes the matter more complex. The development and operationalisation of newer and more accurate conventional weapons by China will also lead to competition regionally as other nations feel the impact of such capability on their nuclear postures. The weaponisation of space will have effects that will be felt globally. An arms race in space would not be limited to the US and China; instead, a whole galaxy of nations may jump on the bandwagon. With

increased private sector participation being witnessed in the space sector globally, this race could escalate quickly. With every affected nation trying to vie for an advantage, the time available to take decisions during crisis situations will shrink, leading to reduction in crisis stability. An arms race in space would most probably lead to a significant increase in tensions between countries, particularly those involved in the race. Heightened competition and suspicion could result in an overall deterioration of relations globally. The development and deployment of space-based weapons could fundamentally change the strategic landscape, raise the stakes in any potential conflict and lead to reduced options for the competing sides, causing an overall reduction in deterrence. The evolving US-China nuclear dynamics, therefore, needs to be observed carefully and its spill-over effects need to be managed. Finally, it should be a common endeavour to attempt a reduction in the intensity of the arms race between the two sides that would possibly lead to a better security outcome for all nations that are affected by such dynamics.