



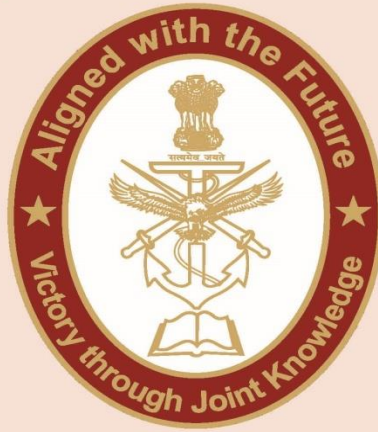
CENJOWS

ISSUE BRIEF

# CHINA'S NUCLEAR AMBITIONS COUPLED WITH HEGEMONIC ASPIRATIONS IS FAST CHANGING THE GLOBAL NUCLEAR DYNAMICS

LT GEN PR KUMAR, PVSM, AVSM, VSM (RETD)

# CENTRE FOR JOINT WARFARE STUDIES



## CENJOWS

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**Lt Gen PR Kumar, PVSM, AVSM, VSM (Retd)**, former Director General of Military Operations. He continues to write and talk on international and regional security and strategic issues.

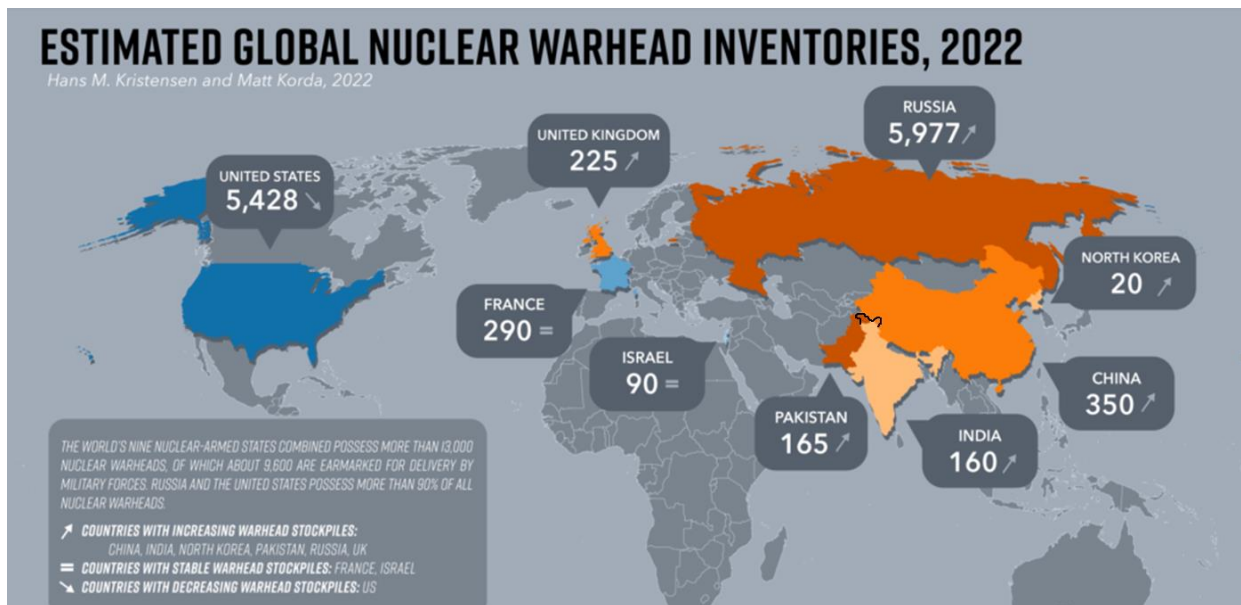
### **Overview of the Nuclear Environment prior to Dragon's Nuclear Surge**

**The Nuclear Club.** It is a fairly exclusive club comprising of two major players USA and Russia (erstwhile USSR), and seven others; China, UK, France, India, Pakistan, Israel and North Korea. As can be seen, the members are a fairly disparate group and not all from the power index escalatory ladder except China a peer global player. USA and Russia becoming nuclear weapon states (NWS) is a by-product of the geo-political equations of World War II. Most of the erstwhile allied members sought the nuclear umbrella of USA, and subsequently so did NATO nations along with her Indo-Pacific allies like Japan, South Korea and Philippines. Only three nations India, Pakistan and Israel did not sign the nuclear non-proliferation treaty (NPT), while North Korea signed and withdrew from NPT (effective March 1970).

Israel due to her unstable and violent neighbourhood surrounded by adversaries; India a potential regional power followed the path of non-alignment and while participating in full measure in discussions preceding the NPT, did not join it as it felt that the Treaty was unjust and discriminatory; Pakistan followed suit being arch rival of India. North Korea considered a rogue state was a client state of China and like Pakistan was

helped by China to become an NWS (China too got help from erstwhile USSR when they were closer ideologically). One has always wondered, that during those early years of our democracy, being a developing nation, our political leaders were strategically and geo-politically wise enough not to succumb to pressure and sign; was it our heritage of the richest nation on earth for centuries; our sense of destiny and potential for growth; a genuine sense of hypocrisy and injustice of the NPT; our faith and confidence in our place amongst the comity; or even Nagasaki, Hiroshima nuclear bombings; probably a combination of all factors.

### Statistical Data on Nuclear Weapon States (2022)<sup>1</sup>.



**Source:** Status of World's Nuclear Forces: Federation of American Scientists<sup>2</sup> (Map edited by Author)

Overall nuclear warheads declined significantly since the Cold War: down from a peak of approximately 70,300 (US and USSR had over 30,000 each) in 1986 to an estimated 12,700 in early-2022.

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<sup>1</sup> 'Status of World Nuclear Forces', Federation of American Scientists (FAS), available at <https://fas.org/issues/nuclear-weapons/status-world-nuclear-forces/>. Accessed on 25 Feb 2023.

<sup>2</sup> *ibid*

Country	Deployed Strategic	Deployed Nonstrategic	Reserve/ Nondeployed	Military Stockpile <sup>a</sup>	Total Inventory <sup>b</sup>
Russia	1,588 <sup>c</sup>	0 <sup>d</sup>	2,889 <sup>e</sup>	4,477	5,977 <sup>f</sup>
United States	1,644 <sup>g</sup>	100 <sup>h</sup>	1,964 <sup>i</sup>	3,708 <sup>j</sup>	5,428 <sup>k</sup>
France	280 <sup>l</sup>	n.a.	10 <sup>l</sup>	290	290
China	0 <sup>m</sup>	?	350	350	350 <sup>m</sup>
United Kingdom	120 <sup>n</sup>	n.a.	60	180	225 <sup>n</sup>
Israel	0	n.a.	90	90	90 <sup>o</sup>
Pakistan	0	n.a.	165	165	165 <sup>p</sup>
India	0	n.a.	160	160	160 <sup>q</sup>
North Korea	0	n.a.	20	20	20 <sup>r</sup>
Totals	~3,632	~100	~5,708	~9,440	~12,705

**Notes for the table above:** “Deployed strategic warheads” are those deployed on intercontinental missiles and at heavy bomber bases. “Deployed nonstrategic warheads” are those deployed on bases with operational short-range delivery systems. “Reserve/non-deployed” warheads are those not deployed on launchers but in storage (weapons at bomber bases are considered deployed). The “military stockpile” includes active and inactive warheads that are in the custody of the military and earmarked for use by commissioned deliver vehicles. The “total inventory” includes warheads in the military stockpile as well as retired, but still intact, warheads in the queue for dismantlement. Explanations for the annotations in tables from ‘a to q’ please read Reference (i).

**Nuclear Control Mechanisms in a Bipolar Arrangement.** Strategic Arms Control Instruments/treaties which have been negotiated (not all ratified/implemented) are SALT (strategic arms limitation) I&II, START (strategic arms reduction) I, II and III, SORT (Moscow treaty) and New START<sup>3</sup>. Non-Strategic arms control treaty are Intermediate Range Nuclear (INF) Force Treaty to verifiably eliminate all ground-launched ballistic and cruise missiles with ranges between 500 and 5,500 kilometres, supported by unprecedented, intrusive inspection regime, including on-site inspections (2692 missiles were destroyed). Terminated by President Trump on 20 Oct 2018, citing

<sup>3</sup> Arms Control Association, available at <https://www.armscontrol.org/factsheets/USRussiaNuclearAgreements>. Accessed on 10 Mar 2023.

non-compliance by Russia. Other presidential initiatives from time to time include President Bush's' unilateral announcement reciprocated by President Gorbachev whereby both sides pledged to remove almost all non-strategic nuclear forces from deployment to include nuclear artillery shells, short-range ballistic missiles and their deployment in surface ships, attack submarines, land-based naval aircraft and even nuclear mines. The important treaties are elaborated in succeeding paragraphs.

**START 1 (Strategic Arms Reduction Treaty)** was a bilateral treaty between the USA and USSR, on the reduction and the limitation of strategic offensive arms. The treaty was signed on 31 July 1991 and entered into force on 5 December 1994. The treaty barred its signatories from deploying more than 6,000 nuclear warheads and a total of 1,600 intercontinental ballistic missiles (ICBM) and bombers. START resulted in the removal of about 80% of all strategic nuclear weapons then in existence. **New START Treaty** replaced the Treaty of Moscow (SORT), and after ratification came into force on 05 Feb 2011, with further deep reductions of American and Russian strategic nuclear weapons through February 2026. The treaty calls for halving the number of strategic nuclear missile launchers. A new inspection and verification regime were established, replacing the SORT mechanism. It does not limit the number of operationally inactive nuclear warheads that can be stockpiled, a number in the high thousands. On 21 February 2023, President Putin suspended its participation in New START. However, it did not withdraw from the treaty, and clarified that it would continue to abide by the numerical limits in the treaty.

### Summary of New START Mechanisms

Type	Limit
Deployed missiles and bombers	700
Deployed warheads (RVs and bombers)	1,550
Deployed and non-deployed launchers (missile tubes and bombers)	800

The total number of deployed warheads could exceed the 1,550 limits by a few hundred, because only one warhead is counted per bomber regardless of how many it actually carries. The treaty places no limits on tactical nuclear weapon systems such as shorter-range fighter/bombers like Lockheed Martin F-35 Lightning II and MIRAGEs. Interestingly, the treaty does not cover rail-mobile ICBM launchers because neither

party possesses such systems. The Open Skies Treaty<sup>4</sup>, which entered into force in 2002, provides a mechanism for enhancing arms control transparency (42 overflights each and specifies monitoring equipment and sensors), activity monitoring, and confidence building by allowing unrestricted, short-notice, aerial reconnaissance overflights. Includes, data exchanges and transparency measures that are more comprehensive than those of its predecessor. The treaty provides for 18 on-site inspections per year for U.S. and Russian inspection teams<sup>5</sup>.

**Fear of Being a Poor Second<sup>6</sup> and its Consequences. Would a rational leader ever contemplate using nuclear weapons?** The game theorist and Nobel laureate Thomas Schelling feels that **under certain circumstances, initiating a nuclear war could be seen as a rational act!** When two nuclear adversaries' sense (more applicable to USA, Russia and China; the India-China-Pakistan nuclear triangle discussed separately) what Schelling called "the fear of being a poor second for not going first", they could contemplate using nuclear weapons. To elaborate with an example, since missile guidance systems allow both the Soviet Union and the United States to execute a "counterforce" nuclear attack on the other's nuclear arsenal, thereby potentially compromising the efficacy of any second-strike attack. Multiple independently targetable re-entry vehicles (MIRVs) further exacerbate the vulnerability, as each "vehicle/ missile," is capable of hitting numerous targets, providing a boost capability for destruction of silos, or of a naval base hosting several ballistic missile submarines, each armed with a dozen or more missiles carrying hundreds of weapons, or of dozens of nuclear-armed bombers at an air base. Management terminology, describes it as a highly favourable "cost-exchange ratio," in which the initiator nation could destroy majority of its rival's weapons using relatively smaller number of its own, thus majorly altering the parity equation. This leaves the passive side/defender with two options for retaliation. Use most of her surviving force to retaliate in kind against the aggressor's arsenal, however, with a low probability of success, as the bulk of the

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<sup>4</sup> 'Realizing the Full Potential of the Open Skies Treaty, by Sidney D. Drell and Christopher W. Stubbs, Arms Control Association, available at <https://www.armscontrol.org/act/2011-07/realizing-full-potential-open-skies-treaty>. Accessed on 13 Mar 2023.

<sup>5</sup> 'New START Treaty', US Department of State, available at <https://www.state.gov/new-start/>. Accessed on 13 Mar 23.

<sup>6</sup> Paraphrased from 'The New Nuclear Age: How China's Growing Nuclear Arsenal Threatens Deterrence' by Andrew F. Krepinevich, Jr, Foreign Affairs, Published on April 19, 2022, available at [https://www.foreignaffairs.com/articles/china/2022-04-19/new-nuclear-age?utm\\_medium=newsletters&utm\\_source=weekend\\_read&utm\\_content=20230225&utm\\_campaign=NEWS\\_FA%20Weekend%20Read\\_022523\\_The%20New%20Nuclear%20Age&utm\\_term=FA%20Weekend%20Read-012320](https://www.foreignaffairs.com/articles/china/2022-04-19/new-nuclear-age?utm_medium=newsletters&utm_source=weekend_read&utm_content=20230225&utm_campaign=NEWS_FA%20Weekend%20Read_022523_The%20New%20Nuclear%20Age&utm_term=FA%20Weekend%20Read-012320). Accessed on 02 Mar 23

initiators nuclear forces would be intact and, along with its air and missile defences, be ready to respond. Or conduct a devastating attack on the aggressor's economy and society, which would be suicidal, since it would trigger mutually assured destruction (MAD). The defender also has the option of doing nothing to prevent further attacks on its value targets; which would create the adverse condition of leaving the attacker with most of her nuclear arsenal for further coercion/blackmail. It is this "fear of being a poor second" which culminated in both USA and erstwhile USSR placing some of their warheads and delivery systems in a state of high alert, also referred to as "launch on warning (LOW)" posture; which allows both to launch before adversary's pro-active attack could actually devastate their homeland/neutralise/destroy their nuclear forces.

**Stability amongst moments of Madness. Two vital features of bipolar nuclear system are parity and MAD.** Parity in deployed warhead/systems, on-site inspections and overhead verification flights held the peace. Despite potentially destabilizing concepts propounded like 'use it or lose it'<sup>7</sup> and 'escalate to de-escalate'<sup>8</sup> (Russian) stability has prevailed, barring few 'nuclear close calls' or events/moments of madness due to communication, detection and interpretation failures<sup>9</sup>.

### **Rising Dragon now thinks like a Superpower wanting peer Nuclear Capabilities**

Historically, China believed that they needed to maintain a posture of minimum deterrence, which entails only enough nuclear weapons to deter nuclear coercion, with ability to target adversary cities (counter value targets) in a second-strike attack. If Beijing's goal was to prevent a nuclear strike on its soil, then this threat of counter-value targeting would suffice to deter a nuclear attack by its adversaries; namely, the US and the Soviet Union (Russia now) after the Sino-Soviet split. China is taking a

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<sup>7</sup> In the simple, implicit model of the use-it-or-lose-it dilemma, **two nuclear-armed states confront one another in a crisis or conflict**. For at least one of those states, the survivability of its nuclear arsenal is so fragile that the adversary could execute a disarming first strike. Also, 'Use it or lose it' in Nuclear Engineering International magazine, 08 April 2020, available at <https://www.neimagazine.com/opinion/opinionuse-it-or-lose-it-7865264/>. Accessed on 10 Mar 23.

<sup>8</sup> 'Idea put forth is the notion that if Russia were subjected to a major non-nuclear assault that exceeded its capacity for conventional defense, it would "de-escalate" the conflict by launching a limited or tactical nuclear strike. Also read **'Escalate To De-Escalate: Russia's Nuclear Deterrence Strategy'**, by Joshua Ball, Global Nuclear Security, 07 Mar 2022, available at <https://globalsecurityreview.com/nuclear-de-escalation-russias-deterrence-strategy/>. Accessed on 11 Mar 2023.

<sup>9</sup> Interesting Reading. **'The nuclear mistakes that nearly caused World War Three'**, 10 Aug 2020, by **Zaria Gorvet**, BBC Future, available at <https://www.bbc.com/future/article/20200807-the-nuclear-mistakes-that-could-have-ended-civilisation>, accessed on 22 Mar 23. Can also peruse both Wikipedia and Encyclopedia Britannica.

step-by-step approach in response to the strategic environment. For decades China maintained a small, “lean and effective” force of 300 warheads<sup>10</sup>, which surprised Western experts. It was only in 2020 that it overtook France and UK. PLA Rocket Force became the fourth service in 2016, possessing both nuclear and non-nuclear missiles and rockets. India and China maintain an unconditional “no first use” policy” regarding nuclear weapons; and despite their border differences have never brought the nuclear card on the table.

### **New Strategy: From Minimum Deterrence to Strategic Domination.**

While China continues to pledge NFU and lays emphasis on **“complete and total” nuclear disarmament as a priority and goal of its nuclear strategy<sup>11</sup>, her adversaries are extremely sceptical.** A deliberate ambiguity seems to have been inserted in China’s policy with newer iterations of China’s defence strategy papers omitting explicit reference to its NFU stance in some papers, and recommit in others, with a focus on their defensive capability goals.

**Why the New Strategy and nuclear capability surge?** An imperative of President Xi Jinping for ‘great power/ superpower status’ covers about everything, including the temptation to dominate Asia where currently USA is weak in terms of nuclear parity. With rise in comprehensive national power (CNP) and status of peer to USA, China seeks her place in the sun; for which nuclear parity and capabilities akin to USA and Russia, would meet her concept of ‘Weishe’, which combines both ‘deterrence and compellence’, unique to China. China’s build up indicates that they are thinking as a superpower. They are closely watching the Ukraine war and how Putin’s nuclear signalling, brinkmanship and intimidation (only possible with a large arsenal: 1,500 instead of 300 warheads), has shaped NATO response, as also global voices/noises. Meanwhile, even if nuclear war never comes, these weapons serve a political purpose for Xi Jinping’s government.

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<sup>10</sup> **China’s plan to be the next nuclear superpower:** Beijing’s nuclear strategy has long been surprisingly modest. So why did it just double its nuclear arsenal? December 13, 2022, By Joshua Keating, GRID News, available at <https://www.grid.news/story/global/2022/12/13/china-may-soon-become-the-worlds-third-nuclear-superpower-heres-what-that-means/>. Accessed on 28 Feb 2023.

<sup>11</sup> ‘China’s Nuclear Doctrine: Debates and Evolution’, by Liping Xia, available at <https://carnegieendowment.org/2016/06/30/china-s-nuclear-doctrine-debates-and-evolution-pub-63967>. Accessed on 01 Mar 23.



USA has confirmed that the Chinese triad capability is now complete<sup>12</sup> as it already possesses nuclear submarines and submarine launched missiles, and PLA Air Force released footage of the Xian H-6N bomber carrying a ballistic missile in October 2020<sup>13</sup>. To substantiate US fears on Chinese nuclear designs, in June/July 2021, satellite images revealed that China was building 120 ICBM silos on the edge of the Gobi Desert, with a further 110 silos in Hami, Xinjiang Province. Current US intelligence estimates, that arsenal is now on track to nearly quadruple, to 1,000 weapons, by 2030, a number that will put China far above any other nuclear power less Russia and the US. Developing and housing MIRVs, in land-based silos/bomber aircraft/surface and under surface submarines (including six nuclear submarines), against the current arrangement in New START of only one warhead per silo will substantially enhance deployed warheads, with serious adverse implication on first- and second-strike capability calculations globally but specially for USA, Russia and India. This along with modernisation of entire nuclear architecture (warheads, delivery systems, ISR, communications); mastery on AI, big data, and miniaturisation; capability of anti-satellite missiles and firing nuclear weapon from outer space using satellites; demonstrating hypersonic missile system which can circumnavigate the globe and be released anywhere avoiding detection; all put together has changed the nuclear landscape to a fast approaching tripolar one. Put together it amounts to a dramatic shift in the country's approach to nuclear weapons. Nor does it seem likely that Beijing will stop there, given President Xi Jinping's commitment to build a "world class" military by 2049. **China's refusal to enter into arms control talks is also upending the bipolar nuclear power system; which is understandable given China has 300-400 warheads while US and Russia hold thousands and deployed 1550.** A paradigm shift has arrived from a bipolar to tripolar system, bringing instability and a potential nuclear arms race; technological race already underway which adds to the uncertainties, for the laggards. With three competing great nuclear powers, many of the features that enhanced stability in the bipolar system will be rendered either moot or far less reliable. As per game theory, the probability of uncertainties is very difficult to crystallise as players increase to three and even 'n' later. Some experts have interestingly written on the temptation of China to match the current two leaders, and it has the capability and capacity to do so. The calculations based on the numbers and

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<sup>12</sup> 'Nuclear Threat Initiative paper', Country Spotlight – China, available at <https://www.nti.org/countries/china/>. accessed on 21 Mar 23.

<sup>13</sup> 'PLAAF's new H-6N bomber seen carrying large missile', by Andreas Rupprecht and Gabriel Domingurz, 19 Oct 2020, Janes Publications, available at <https://www.janes.com/defence-news/news-detail/plaafs-new-h-6n-bomber-seen-carrying-large-missile>. Accessed on 21 Mar 23.

control mechanisms arrived at in all the Treaties are challenged (which have in any case been scrapped); as all three will continuously review their nuclear weapon holdings to ensure capability to face multiple nuclear adversaries.

### **Details of China's Current Nuclear Arsenal.**

No country will officially state its actual numbers and details of its strategic weapon systems, specially China which has never responded/ reacted to speculation/inputs on her rocket forces and nuclear arsenal. Based on open sources, an overview of China's current nuclear arsenal is highlighted in succeeding paragraphs<sup>14, 15</sup>.

**Land-based missile force.** China possesses one of the world's largest missile forces, and has invested heavily in its land-based ballistic missiles and their systems. China's PLA Rocket Force has approximately 280 land-based missiles capable of nuclear warhead delivery, deployed in around 40 missile brigades (latest inputs indicate further expansion). Most of its ballistic missiles are of medium or intermediate range and have around 60 nuclear warheads assigned to them. In the case of ICBMs, China has moved to transition from older, transportable, liquid-fuel, slow-launching missiles to longer-range, road-mobile, solid-fuel, quicker- launching missiles. China's short-range ballistic missiles for land-based delivery are mostly conventional, with the exception of one as a result of a nuclear test it conducted which was potentially related to short-range ballistic missile development. China's land-based missiles fielding nuclear weapons include the DF-4 ICBM, DF-5A ICBM, DF-21A/E medium range, DF-26, DF-31 ICBM, DF-31A ICBM, DF-31AG ICBM, and DF-41 ICBM. Notably, the DF-41 is capable of carrying multiple independently targetable re-entry vehicles (MIRV). In 2021, China ramped up construction of several hundred ballistic missile silos across the country.

**Sea-based force.** The PLA Navy operates five of its six Type 094 nuclear-powered ballistic missile submarines (SSBN). There are two of the new variant (Type 094A) brought into the navy in April 2020. These submarines can potentially carry from 12 to

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<sup>14</sup> Sources are many. **Mainly paraphrased from Note xiii and 'China's Nuclear Ambitions, the Implications for India, and the Future of Global Disarmament'** by Pulkit Mohan, ORF Brief, July 07, 2022, available at [https://www.orfonline.org/research/chinas-nuclear-ambitions/#\\_edn26](https://www.orfonline.org/research/chinas-nuclear-ambitions/#_edn26). Accessed on 05 Jan 23.

<sup>15</sup> **'Chinese nuclear forces, 2020 and 2021'**, by Hans M. Kristensen and Matt Korda, 10 Dec 2020/15 Nov 2021, Bulletin of Atomic Scientists, Taylor & Francis Online, available at <https://www.tandfonline.com/doi/full/10.1080/00963402.2020.1846432> and <https://www.tandfonline.com/doi/full/10.1080/00963402.2021.1989208>. Accessed on 15 Feb 23.

16 submarine-launched ballistic missiles. A larger and heavier Type 096 has also been commissioned late 2021. China's fleet can potentially carry the 7,200-km-range JL-2 submarine-launched ballistic missile (SLBM) and the new variant of the SSBN which gives it a more robust second-strike ability. Military analysts speculate that the newer JL-3 SLBM has a potential range of 9,000 km, which the Type 096 SSBNs are capable of carrying.

**Bombers and cruise missiles.** The PLA Air Force strategic bomber fleet was largely inactive until the early 2000s, although aircrafts were used for nuclear tests to deliver nuclear bombs. Despite the overall inactivity, China has maintained its bomber delivery capabilities, and its air force is developing nuclear-capable air-launched ballistic missile (ALBM). According to the US Department of Defence, China's H-6 bomber and a potential future stealth bomber are both nuclear-capable<sup>16</sup>. The future H-20 bomber, which is set to replace the H-6 bomber, will begin production as well. China has also reassigned nuclear missions to its bombers. The US claims that China has both air-launched and sea-launched nuclear cruise missiles, but it remains unconfirmed.

**New Developments provides impetus for 'First Strike'.** Beijing has hundreds of theatre-range, dual-capable missiles like the Dong Feng-26 (DF-26) and the Dong Feng-21 (DF-21) that can strike out to the second island chain in the Indo-Pacific with precision<sup>17</sup>. Significantly, the United States has no nuclear weapons in this category. China is testing and deploying nuclear-capable hypersonic weapons to include one that can orbit the globe on a fractional orbital bombardment system (FOBS) before being released to glide to its target<sup>18</sup>. This weapon system would avoid US early warning radars and be useful for a first strike capability. These developments raise a big question mark on China's "No First Use" policy. Like US and Russia, China too is implementing a Launch on Warning (LOW) nuclear posture that would enable it to launch nuclear weapons upon early warning of a nuclear attack. US intelligence feels that China is conducting low-yield nuclear tests which both US and Russia have

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<sup>16</sup> 'China tests hypersonic aircraft that can carry nuclear warheads', The Hindustan Times, August 07, 2018, available at <https://www.hindustantimes.com/world-news/china-tests-hypersonic-aircraft-that-can-carry-nuclear-warheads/story-IWDsieWHI64Ppr1df98yIM.html>. Accessed on 05 Mar 2023.

<sup>17</sup> Office of the Secretary of Defense, Annual Report to Congress, 2021, 163.

<sup>18</sup> Demetri Sevastopulo, "China conducted two hypersonic weapons tests this summer," *Financial Times*, 20 October 2021,

abstained from, at her Lop Nur facility<sup>19</sup>. These tests will enable refinement of Chinese nuclear weapons.

**A highly probable Nuclear Arms Race: An Illustration<sup>20</sup>**. As previously stated ‘parity and MAD’ upheld the bipolar nuclear stability. This is monumentally challenged. In a tripolar system, it is simply not possible for each state to maintain nuclear parity with the combined arsenals of its two rivals (first strike and assured second strike capability against both adversaries). Assume, for example, that China deployed the same size nuclear force as Russia and the United States: 1,550 weapons. At that point, U.S. strategists might rationally conclude that they need to add an additional 1,550 weapons to achieve parity with the combined forces of China and Russia. Meanwhile, Russian strategists would likely want the same. China, having established an arsenal on par with the two great nuclear powers, would not be inclined to forfeit its newly won status; and so, a tripolar system risks collapsing into a Red Queen’s arms race<sup>21</sup>, in which parity is continuously sought but never achieved. The same holds for MAD. In a tripolar system, a predetermined residual force to survive a first by one adversary, would no longer be enough; and the race continues unendingly.

### **Implications on the Bipolar Strategy and Security<sup>22</sup>**

Russia-China relations have had their share of ups and downs. While their current relations are at an all-time high, there are enough ideological and geo-political differences which could tilt the relations abruptly. In any case, both nations are seasoned enough to cater for strategic uncertainties. Currently, China’s expanded

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<sup>19</sup> ‘China may have conducted low-level nuclear test, US claims’, 16 Apr 2020, by Julian Borger, The Guardian, available at <https://www.theguardian.com/world/2020/apr/16/china-may-have-conducted-low-level-nuclear-test-us-report-claims>. Accessed on 21 Mar 23.

<sup>20</sup> ‘The New Nuclear Age: How China’s Growing Nuclear Arsenal Threatens Deterrence’ by Andrew F. Krepinevich, Jr, Foreign Affairs, Published on April 19, 2022, available at [https://www.foreignaffairs.com/articles/china/2022-04-19/new-nuclear-age?utm\\_medium=newsletters&utm\\_source=weekend\\_read&utm\\_content=20230225&utm\\_campaign=NEWS\\_FA%20Weekend%20Read\\_022523\\_The%20New%20Nuclear%20Age&utm\\_term=FA%20Weekend%20Read-012320](https://www.foreignaffairs.com/articles/china/2022-04-19/new-nuclear-age?utm_medium=newsletters&utm_source=weekend_read&utm_content=20230225&utm_campaign=NEWS_FA%20Weekend%20Read_022523_The%20New%20Nuclear%20Age&utm_term=FA%20Weekend%20Read-012320). Accessed on 02 Mar 23.

<sup>21</sup> Wikipedia, “As suggested in the Red Queen hypothesis, coevolution can result in an apparent “evolutionary arms race” in which both participants are evolving “as fast as they can” only to maintain their relationship relative to each other”. Also Science Direct available at <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/red-queen-hypothesis>. Accessed on 11 Mar 23.

<sup>22</sup> Ideas from article ‘China’s Nuclear Capacity and its implications for US strategy and security’, by Patty Jane-Geller, September 14, 2022, The Heritage Foundation, available at <https://www.heritage.org/missile-defense/commentary/chinas-nuclear-expansion-and-its-implications-us-strategy-and-security>. accessed on 02 Mar 2023

nuclear forces creates the ability to provide a nuclear shield for its conventional aggression, with profound implications for US in the backdrop of US-China relations. US loses her unilateral coercion capability, and in fact could be subjected to nuclear coercion by China. Add the China-Russia bonhomie factor in which Russia is clearly the junior partner to the above (which Russia is sure to detest but will bide its time). US (and Russia and India) has to factor this in decision making process for any confrontation/conflict in which China could get involved in an adversarial role. The US military will then no longer have freedom of action without fear of nuclear escalation; instead, it will need to proceed with caution in any confrontation under the shadow of China's equivalent, if not superior, nuclear arsenal. This scenario is a distinct possibility, in case of a crisis in the Indo-Pacific, where China enjoys regional nuclear superiority. Here, China deploys hundreds of dual-capable medium-and intermediate-range missiles, while US deploys no nuclear weapons and has a very limited non-strategic nuclear capability<sup>23</sup>. In a Taiwan conflict scenario, China can use its nuclear forces to threaten the US to back down or further escalate the conflict<sup>24</sup>; for India there are lessons in the event of our LAC hotting up, and implications on assistance from allies specially USA; and position taken by Russia?. Xi could take a page from Russian President Vladimir Putin's playbook and more credibly threaten "consequences you have never seen" should the US come to Taiwan's defence, as Putin threatened when his forces invaded Ukraine.<sup>25</sup> Indeed, in the same way the North Atlantic Treaty Organization (NATO) has been reluctant to take escalatory action in Ukraine, China's regional nuclear superiority could deter the US and its allies from intervening in a fight for Taiwan over the fear of fighting a nuclear peer. The PLA's 2020 Science of Military Strategy also discusses launching nuclear weapons as "demonstration strikes" to signal resolve or issue threats during a crisis.<sup>26</sup> China's nuclear expansion of its strategic forces will also leave the US homeland increasingly vulnerable to attack, adding to China's abilities to coerce, threaten, and limit US options.

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<sup>23</sup> Patty-Jane Geller, "The Nuclear Sea-Launched Cruise Missile: Worth the Investment for Deterrence," found in ed. Reja Younis, *On the Horizon Vol. 4: A Collection of Papers from the Next Generation of Nuclear Professionals* (Washington, D.C.: Center for Strategic & International Studies), 58-59.

<sup>24</sup> *ibid*

<sup>25</sup> [29] Lexi Lonas, "Putin: Countries that interfere with Russia will face severe consequences," *The Hill*, 23 February 2022, <https://thehill.com/policy/international/russia/595608-putin-countries-that-interfere-with-russia-will-face-consequences>.

<sup>26</sup> [30] Xiao Tianliang, ed., *The Science of Military Strategy*, *Military Science Press*, 2020, 138. Translation.

Analysts foresee a scenario, when China may become more tempted to actually use nuclear weapons in a conflict should it perceive a favourable nuclear balance of power over the US. For example, China could see utility in the limited employment of nuclear weapons if it perceives itself to be losing a conventional conflict. China may even deliberately pursue such a strategy, which would align with proposals by some PLA leaders to abandon its alleged policy of “No First Use”<sup>27</sup>. So long as the US lacks similar capabilities to deter nuclear use at the lower rungs of the escalation ladder in the region, China may perceive a US response to limited nuclear use in the Indo-Pacific to be non-credible. The US is already seriously considering bolstering missile defence both in the Indo-Pacific and in the US homeland.<sup>28</sup>

**China’s Hypersonic Missile Capability could provide incentive for ‘First Strike’ Posture.** The fractional orbital bombardment system (FOBS)<sup>29</sup> that released a hypersonic weapon that China tested in August 2021 would also be suitable for a first-strike weapon because it can avoid ALL early warning systems (so far). Orbiting a nuclear weapon through space could enable China to release the weapon from anywhere around the globe, exploiting gaps in early warning systems. On release, the hypersonic nuclear vehicle flies at low altitudes at hypersonic speeds and manoeuvres through the atmosphere, avoiding space-and land-based radars, further reducing warning time. Systems able to avoid early-warning satellites and radars would preclude organizing a retaliatory strike before incoming warheads reach their targets, a concept fundamental to deterrence. This capability raises the prospect of a disarming surprise attack on the US or any adversary, crippling that nation’s ability to respond. While one test does not imply China is necessarily embracing a doctrine of nuclear pre-emption, once the capability is achieved intentions can always change, further adding to instability in any confrontation involving the big three<sup>30</sup>. This is one probability which

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<sup>27</sup> ‘China’s Nuclear Expansion and its Implications for US Strategy and Security’, September 14, 2022, by Patty-Jane Geller, The Heritage Foundation, available at <https://www.heritage.org/missile-defense/commentary/chinas-nuclear-expansion-and-its-implications-us-strategy-and-security>. accessed on 05 Jan 2023.

<sup>28</sup> “Deterring China: A Victory Denial Strategy,” by Keith B. Payne and Matthew R. Costlow, National Institute for Public Policy Information Series No. 519, 4 April 2022, [https://nipp.org/information\\_series/keith-b-payne-and-matthew-r-costlow-deterring-china-a-victory-denial-strategy-no-519-april-4-2022/](https://nipp.org/information_series/keith-b-payne-and-matthew-r-costlow-deterring-china-a-victory-denial-strategy-no-519-april-4-2022/). Accessed on 03 Mar 23.

<sup>29</sup> FOBS - A Fractional Orbital Bombardment System(FOBS) is a warhead delivery system that uses a low earth orbit towards its target destination.

<sup>30</sup> ‘China’s Nuclear Expansion and its Implications for US Strategy and Security’, September 14, 2022, by Patty-Jane Geller, The Heritage Foundation, available at <https://www.heritage.org/missile->

would worry Russia equally, as **development of hypersonic missile systems allows undetected travel providing an incentive for many nations to think 'nuclear'!** Credible intelligence inputs of China co-locating/ deploying dual capable (conventional and nuclear) missile systems further adds to the complexity, uncertainty and probability of an 'error' launch. India also possesses dual capable missile systems, but as far as co-locating conventional and nuclear warheads is concerned, it is felt that India must not follow the Chinese and Pakistan practice. Currently our main adversaries are known, and our nuclear signalling of NFU and massive retaliation is adequately served by keeping our strategic nuclear systems distinctly separate, and will prevent further instability.

**Importantly, Chinese ambiguous stance, her nuclear superiority in Indo-Pacific, and hypersonic capabilities, would leave many who are protected by the US nuclear umbrella, or nations who have adversarial relations with an NWS, feeling vulnerable and apprehensive, as US also risks strikes on her mainland; raising the probability of more joining the nuclear club like Japan, South Korea and Australia.**

**So, is it the End of an Exclusive Nuclear Club?** The change in Chinese nuclear strategy and corresponding surge in nuclear arsenal, would inspire other NWS to seek larger arsenals of their own (reasons already discussed). India, with the border impasse and geo-political competition with China, which would only increase, will have an incentive to increase its own nuclear forces significantly, perhaps causing Pakistan to do the same. Not only that, US allies like Japan, South Korea, Taiwan, Australia, Germany, some Middle East nations, maybe even new entrants from South America and Africa may seriously review their positions and could convert their aspirations to reality. With the Iran nuclear deal JCPOA in doldrums, Iran may be racing towards weapon grade uranium sparking fresh turbulence in Middle East, specially within the right aligned Netanyahu government. The historic Iran-Kingdom of Saudi Arabia deal brokered by China will infuse a fresh dynamism which needs to be examined. There is increasing chorus of experts who are questioning the very potency of Nuclear deterrence. Some say it is psychological, and its success is unverifiable. If every NWS have their own rationale and concept of use with no commonality of views, like in South

Asia, then how does one achieve parity and stability? How does one stop this rabid growth? Ironically, START and New START created limits and controls which China may like to follow once it achieves some parity; but it could minimize the entry barriers for other powers seeking great-nuclear-power status. For example; the threshold for achieving great-nuclear-power status might seem attainable to India or Pakistan, or having a larger arsenal may appear existential to them, and some nations may get tempted to turn nuclear with their version of ‘develop second strike capability’, though smaller in numbers; introducing substantially more instability into the system.

### **Technology [AI and Machine Learning (ML)] and Nuclear Dynamics.**

The Soviet Union conceptualised “Dead Hand,” an automated system for guaranteed retaliation, formally called ‘Perimeter’, back in 1979. Perimeter is a human in the loop system, in which human has powers to intervene, but the trigger and launch process is otherwise automated<sup>31</sup>. The rapid growth in artificial intelligence (AI) and machine learning (ML), has caught the attention of national security and military experts and policy makers. Led by China (acknowledged leader in both) and USA these technologies are being incorporated in the entire nuclear eco-system from decision support system, delivery, targeting, communications, satellite support, post damage assessment etc. There is some promise in AI-enabled nuclear systems, particularly when it comes to nuclear safety. With China leading, India has no choice but to adopt and adapt too. In July 2022, the Ministry of Defense launched 75 applications as part of the inaugural AI in Defence Symposium<sup>32</sup>. These included autonomous systems; command and control systems, ISR, logistics and supply chain management, simulators and natural language processing. The government has set up the Defence AI Council and the Defence AI Project Agency to facilitate AI adoption in the armed forces.

### **India must chart her Own Course based on National Interest**

Despite being NWS, India and China have always conveyed their abhorrence for nuclear weapons and are vocal and strong proponents of complete global nuclear

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<sup>31</sup> ‘South Asia’s Nuclear Dilemma in the Age of the Intelligent Bomb’ by Trisha Ray, January 13, 2023, The Diplomat, available at <https://thediplomat.com/2023/01/south-asias-nuclear-dilemma-in-the-age-of-the-intelligent-bomb/>. Accessed on 02 Mar 23

<sup>32</sup> ‘Rajnath Singh launches 75 AI-powered defence products in New Delhi’, India Today, Jul 12, 2022, available at <https://www.indiatoday.in/defence/story/rajnath-singh-75-ai-powered-defence-products-new-delhi-military-1974514-2022-07-11>. Accessed on 22 Mar 23.



disarmament. Both have officially announced an NFU policy, and are committed to abstain from use of nuclear weapons against non-NWS. Historically, due to a common nuclear perception, it is highly improbable that the overhang of nuclear weapons will play a role in a military conflict between them, and so far, neither side has ever insinuated a nuclear threat even during confrontationist periods against an adversary. The nuclear factor has remained relatively absent from their relationship. India's nuclear strategy at least initially primarily dealt with Pakistan, and China's is aimed at the US and Russia. The numerous CBMs (Confidence Building Measures) of 1993 and 1996 focussed on maintaining peace and tranquillity along the LAC. That has been left far behind in the last few years with increasing Chinese belligerence and salami slicing activities on the LAC by the Chinese. China has always been vehemently opposed to India joining the NSG (Nuclear Suppliers Group), though she did give a one-time waiver for peaceful employment.

Three geo-political realities face the Indian government and policy makers/security experts of India today. First is the highly unstable global geo-political and security situation, which is increasingly transactional with fluid alliances, exacerbated by the Ukraine war and sharp emerging contours between the West led by USA, and China, Russia and their allies on the other, with a global South forming a substantial third pole with no interest in joining either camp. Second is the confirmed adversarial collusiveness between China and Pakistan (both NWS) against India which is all pervasive and multi-dimensional; and lastly a distinct change in China's nuclear strategy leading to modernization and surge in her entire nuclear eco-system, specially larger holdings of conventional and nuclear dual capable delivery systems, and substantial increase in her nuclear warheads, with robust superpower ambitions to go one better than USA. There is also a deliberately postured ambiguity in her NFU status supported by her strategy, which while probably being addressed to USA and Russia, has a direct bearing on India.

**Examination of Ashley J. Tellis' Recommendations in his book.** It will be relevant to discuss the observations and recommendation made by Ashley Tellis<sup>33</sup> in his deeply researched, comprehensive book on the transitions in the nuclear weapons programmes in India, China and Pakistan over the last two decades, which have

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<sup>33</sup> Ashley J. Tellis, is an Indian American who holds the Tata Chair for Strategic Studies, and a senior fellow at the Carnegie Endowment for International Peace, specialising in international security and US foreign and defence policy, with a special focus on Asia and the Indian subcontinent.

impacted the nuclear dynamics in South Asia. It is titled 'Striking Asymmetries: Nuclear Transitions in Southern Asia'. Clubbing China in the nuclear framework of South Asia, while pertinent, given the historical perspective, geo-political and security situation, it must be galling to China. Tellis feels that the new developments (most examined earlier in the paper), will pose fresh threats to India's security but have not led to the kind of nuclear arms race many observers expected. He reiterates that India needs to bolster her sea-based nuclear deterrent capability, as her primary nuclear land-based weapon systems are increasingly vulnerable, due to enhanced and improved surveillance, intelligence and nuclear hardware capabilities of China including the hypersonic missiles which defeats all known ballistic missile defence (BMD) systems (applicable to others too). He recommends forming an alliance/pact with USA and France naming it 'INFRUS' similar to AUKUS (Australia, UK, and USA). While AUKUS is a tri-nation security pact, QUAD is essentially an informal strategic forum comprising four nations (USA, India, Australia and Japan) and its primary objective is to work for a free, open, prosperous and inclusive Indo-Pacific region. INFRUS he feels will provide the necessary tools to enhance India's nuclear capability specially her undersea triad capability. The Ministry of Defence (MoD) officially announced on 14 Oct 2022 that the indigenous ballistic missile nuclear submarine INS Arihant had successfully launched a nuclear capable Submarine Launched Ballistic Missile (SLBM), with very high accuracy. After careful deliberation India has so far not joined any multi-lateral security arrangement. The ongoing Ukraine war makes the global geo-political equations even more dynamic than ever before; it will be prudent for India to wait for the situation to stabilise (even if it takes time) before considering entering into any such alliances. History and time have shown that given India's size, potential and emergence as a regional power, she will be in a position to dictate terms based on her national interests. Regarding necessity of undertaking more nuclear tests, which Tellis says may be a necessity, I feel that the current confident India will do what it takes to secure her nuclear stakes, being a strategic imperative for a big power like India. This is further substantiated by India's actions in the ongoing Ukraine war, like buying oil from Russia, remaining neutral in UN, dealings with Russia, a long-time strategic partner and Ukraine.

Understandably, Pakistan, sensing a disparity with India in conventional military power, views its nuclear capability as the equalizer, and as per Tellis is building "the largest, most diversified, and most capable nuclear arsenal possible". In the interaction in

'Grand Tamasha'<sup>34</sup> for promoting his book he told the talk show host Vaishnav that one should not exaggerate the threat India faces. "The Indians essentially control the cycle of escalation vis-à-vis Pakistan. As long as India is able to tolerate this subnational conflict, the chances of escalating to nuclear exchange are minimal". However, no prudent strategist or nuclear policy maker can rule out the probability of a nuclear exchange, specially when India is compelled to initiate a large-scale conflict against Pakistan (low probability). Here, I will add, that given the increasing asymmetry between Pakistan and India in CNP, historical context of nuclear brinkmanship, it is difficult to visualise Pakistan going rogue even when her national integrity is at stake. The world is watching, and will become ever more alert and pro-active when it comes to the probability of nuclear confrontation between the smaller powers. Tellis wisely sums up thus "at the end of the day, India is a relatively satisfied state and a relatively secure state. That is, for all the challenges that it has vis-à-vis China and Pakistan, India still has mass on its side". "It is a huge country and it's not a pushover and it has political ambitions that are relatively conservative."

**What should India do?** India need not get pressurized or panic in view of the 'real and credible threat' posed by China's new strategy, coupled with China-Pakistan collusion even in the nuclear dimension. India must certainly not fall into the 'nuclear race' trap. **India however, needs to develop a demonstrated triad capability, and a nuclear eco-system which supports a credible and survivable second-strike strategic capability against China and Pakistan.** Concurrently, India further builds on her CNP, and conventional military potential to meet her security challenges and regional aspirations. **The policy of NFU with the threat of massive nuclear retaliation has stood the test of time;** since it does not stop us from going in for proportionate response, in case of operational and tactical nuclear strike by an adversary. Concurrently, as befitting a regional power, India seeks to upgrade her niche technologies, ISR, communications architecture and importantly her decision support systems. Traditionally, the race for kinetic and non-kinetic superiority is a cat and mouse game; and India must continuously try to stay abreast or ahead in the race. A separate word on BMD; both China and India while continuing their development of BMD systems realise that protecting their vast landmasses is next to impossible. So,

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<sup>34</sup> "Grand Tamasha", is a weekly audio podcast co-produced by the Hindustan Times and Carnegie, a Washington, DC-based think tank.

prioritization is the key with pin point and small area coverage of strategic counter-force and counter-value objectives getting BMD cover. However, India must continue to develop such technologies which have tremendous payoffs. We also need to prioritize our own hypervelocity missile programme.

Geo-politically, exploiting her soft power, India creates a stable and reliable network of partners, who will support her national interests and sovereignty, with hard assurances and assistance. Regarding the recommendations of deliberately inserting an element of uncertainty and ambiguity about India's nuclear policy by numerous experts, my response is, that it is an inevitable outcome, given the low level of trust between India and her adversaries; as it is elsewhere.

**Conclusion.** As the tripolar nuclear dynamics solidifies, led by the trio, nuclear-weapon states will expand their nuclear and conventional military capabilities. While China may realistically feel that her change in nuclear strategy leading to nuclear surge may be for existential reasons; it will lead to both horizontal and vertical proliferation. Global disarmament is becoming a distant dream. Nuclear weapons are obviously not the answer for providing global stability and security. There is thus a compelling rationale for the global powers to sit down and negotiate a new global nuclear mechanism/agreement which resonates and is accepted. The reality and the irony are, that given their nature as instruments of mass destruction, the possibility of using them for credible military objectives is severely constrained. Hence, overspending by India on a capability of limited utility would be wasteful. Irrespective of Chinese increase in nuclear numbers, for India, the focus should be on steadily building and improving its second-strike capability. Credible and survivable retaliatory action is the best, and relatively the least expensive option, to pursue.

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