# Analysing India–US Cooperation in the Context of Changing Nuclear Order

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*The article aims to analyse the developments and challenges in the India–US defence cooperation in the face of the ongoing decay of the nuclear order. While the defence cooperation has grown manifold, it is pertinent to understand the pathways in which India and the US can cooperate towards building a stable nuclear order. The effort should be to minimise the risk of any accidental nuclear war in the wake of heightened tensions and heated conventional warfare in the current geopolitical landscape, incorporating missile forces, weapons of mass destruction, tactical nuclear weapons, and others. The article begins with an outline of the India–US defence cooperation followed by an understanding of the Indian stance on disarmament and nuclear treaties; the evolution of the India–US nuclear cooperation; an overview of the changing global nuclear order and its impact on the conventional warfare; the perceptions of India and the US on nuclear stability; prospects and challenges in defence cooperation against threats to nuclear stability; and the way forward to cooperate on building deterrence and nuclear stability.*

**Keywords**: *Conventional Warfare, Defence, Deterrence, Decaying Nuclear Order, Nuclear Stability*

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## Introduction

The India–US relations, given their stature as the largest and the oldest democracies of the world, have been quite a story of missed opportunities owing to the historical hesitations and turn of events that impeded the way to reach their true potential. The Atlantic Charter of 1941 was seen in a positive light by the Indian experts and the diaspora, as it highlighted the shared beliefs and values of the US and its efforts in taking Britain on board in ensuring decolonisation, democracy, freedom, territorial integrity, and the right to self-determination of the colonies after participation in the World War II with the Allied forces. However, it can be said that the abrupt nuclear bombing by the US on Hiroshima and Nagasaki made the newly independent India ambivalent towards the new dominating nature of this new superpower. Therefore, the Cold War period began simultaneously with India's vision to carry out its sovereign foreign policy decisions beyond the constraints imposed by the new superpowers—the United States and the Soviet Union. Only for a short period, during the 1962 India–China War, there was a phase of cooperation between India and the US, where despite the Cuban Missile Crises, the US openly conveyed its resolve to assist India with its armed forces stationed in the Philippines at that time and supplied arms, ammunition and essential battlefront clothing to Indian soldiers through its C-130 Hercules aircraft. This support from the US deterred China, and it declared a unilateral ceasefire. The aerial photographs of the Indo-Tibet border taken by the Americans were also made available to India, which helped in understanding the geographical map of the conflicted area for the first time. However, this India–US cooperation soon dissipated as differences between the two states re-emerged due to Washington's persistent endeavour to expand its sphere of military alliance in ideological warfare, which did not go well with the path of non-alignment that India chose. On the other hand, Pakistan became a member of the Southeast Asia Treaty Organisation (SEATO)—an organisation created by the US for the containment of the communist expansion. This inevitably led the US to support Pakistan in both arms sales and in considering Kashmir as a 'disputed territory' between India and Pakistan. The final blow to the nascent relationship between India and the US occurred in the India–Pakistan War of 1971, when the US sent its *USS Enterprise*, a nuclear-powered aircraft carrier to the Bay of Bengal to deter India in the war. This nuclear blackmailing tilted India towards the Soviet Union, leaving the Cold War era—a period of cold relationship between India and the US.

The post-Cold War period, and the balance of payment crisis faced by India in the early 1990s, made India pursue a new path of reforms based on economic competitiveness and improved foreign investments. It adopted the policy of liberalisation, privatisation and globalisation, which led to India's economic growth, consistently over 6 per cent. It was in this new environment of changing global geo-strategic positions of a US-led unipolar world order and the Indian economic reorganisation that the first seeds of India–US cooperation were sown. In this period, India took steps to form business-centric policies and incorporate best practices from the already liberalised economies. The Look East Policy of 1993 enabled economic engagement with the Association of Southeast Asian Nations (ASEAN), which was already an ally of the United States. The three pillars on which the India–US relationship developed from then onwards are trade, defence and nuclear dialogues. We can say that the factors that acted as the bridges in the India–US relationship were India's open economy, its huge market, business opportunities for US companies, the Indian diaspora, the demand for the skilled Indian professionals, and the shared values of democracy.

## The Evolution of the India–US Defence Cooperation

The defence relations between India and the US kickstarted in their true essence in the post-Cold War period only with the 'Kicklighter Proposals' in 1991. Herein, a Defence Policy Group was formulated to discuss, decide and conduct bilateral defence visits, and incorporated a training component by the US forces to the Indian forces. The US offered India to come together and attend regional conferences on defence and military. In 1995, with the signing of the Agreed Minute on Defence Cooperation, bilateral visits between the military chiefs began, and the India–US joint military exercises at the tri-services level, that is, between the two armies, navies and air forces, started. This was significant for the US to showcase its defence technology to us and identify the areas of future cooperation, research, and development of defence technology as per Indian demands in the defence sector. Following the 9/11 attacks in 2001, India expressed its complete support to the US in its efforts to fight terrorism in South Asia by providing access to aircraft bases, refuelling stations, maintenance support, overflying rights, port facilities for US warships and cooperation in intelligence sharing. The National Security Strategy approved by President Bush after 11 September 2001 mentioned India as 'a growing world power with which we have common strategic interests'. This strengthened cooperation led to the beginning of the strategic

convergence in the relationship between the two nations, which had been historically strained by mistrust.

In 2002, the General Security of Military Information Agreement (GSOMIA) was signed to deepen the joint military exercises further to ensure interoperability by sharing military doctrines and their standard operating procedures. This proved to be helpful in rescue and relief operations during the 2004 Tsunami in the Indian Ocean. The Bilateral Security Cooperation Agreement (BSCA) was also signed to modify the GSOMIA, document on-the-spot decisions and responses taken by both sides in the rescue operations, and to facilitate interoperability in the future. India and the US launched the 'Next Steps in Strategic Partnership' (NSSP) agreement in January 2004, where impetus was given to bilateral cooperation between the two countries in areas of civilian nuclear activities, civilian space programmes and high-technology trade.[1] Defence relations got further enhanced in 2005, when the two sides concluded the India–US Defence Agreement, where both sides accepted common interests and shared beliefs in the values of freedom, democracy and the rule of law. It was a point of foresight as the US realised that engagement with India is important for regional stability, freedom of navigation in the crucial sea lines of communication (SLOCs), and maintaining a rules-based, predictable world order. The two sides decided to give a public character to the emerging bilateral relationship and added missile defence cooperation to the 2005 agreement. Both the countries engaged in a meaningful discussion on the nuclear issue, which was the first discussion on this issue, and stood for mutual equality and trust. It was from this meeting that much of the current optimism stems, from the finalisation of the Civil Nuclear Cooperation Agreement in 2008 to the removal of nuclear-power-related and other high-technology restrictions on India.[2]

In 2010, the initiation of the India–US strategic dialogue improved their security cooperation in many areas, such as defence cooperation, nuclear issues, space research and development, maritime security, counter-terrorism, homeland and border security, and cyber security. The launch of the Defence Trade and Technology Initiative (DTTI) in 2013 furthered this. In the arena of technology, while the US followed a trade-only business approach, India ensured that trade in technology is also complemented by cooperation in technology transfer, co-production, research and development, to better fulfil its role as a security provider and aid in regional stability. Therefore, the 'Joint Principles for Defence Cooperation' was agreed upon to guarantee technology transfers and carry out defence trade. India and the US renewed the 10-year framework agreement for defence cooperation in 2015 to include

more areas envisaging cooperative development and manufacture of defence equipment and technology, such as jet engines, aircraft carrier design and construction, mobile electric hybrid power sources, and next-generation protective ensembles. This supported the 'Make in India' policy.[3]

In 2016, efforts were made to achieve the Functional Military Relationship (FMR) to achieve integration of doctrines and tap into the comparative advantages of the two armed forces for seamless cooperation. The Logistics Exchange Memorandum of Agreement (LEMOA) was signed in 2016 to allow berthing and refuelling of the US naval ships anytime with an exemption from taking multiple clearances from multiple ministries. This will overcome the hurdles in the doctrinal integration of the armed forces. This doctrinal integration, by the FMR, needs high-end technology for communication and discussion of doctrines. To safeguard this communication system from interception, the Communications Compatibility and Security Agreement (COMCASA) was signed in 2018. This also provided high-end interceptive software, which proved helpful during the Ladakh standoff against the Chinese Western Theatre Command by taking pre-emptive measures before China could act in the Gogra Valley, Depsang Valley and hot springs. This neutralised China's aggression. In 2018, India and the US started a 2+2 ministerial-level dialogue involving foreign and defence ministers, enhancing the strategic convergence in areas from defence innovation to defence industrial corridors to expand intelligence sharing.

The US Department of Commerce granted India the Strategic Trade Authorization-1 (STA-1) status in 2018, paving the way for greater high-technology trade between the United States and India and the setting up of manufacturing bases in India, particularly in the defence sector, joining a group of 36 other countries. India is the third Asian country (following South Korea and Japan) to achieve this status, which has generally only been granted to the United States' NATO Allies.[4] The designation of India in the STA-1 category is a reaffirmation of India's impeccable record of being a non-proliferator. The two countries signed the Basic Exchange and Cooperation Agreement (BECA) in 2020, allowing the sharing of geospatial intelligence, which will help India in accurate topographical mapping of its borders. The Indian military will be provided by high-quality GPS technology to aid in guided missiles, armed drones, and mitigating natural disasters. The two countries upgraded their bilateral relationship to a Comprehensive Global Strategic Partnership in 2020.

There has been significant progress in the India–US Defence Industrial Cooperation Roadmap, particularly in co-production projects for jet engines,

munitions and ground mobility systems. There is an expansion of defence industrial partnerships, such as the collaboration between Liquid Robotics and Sagar Defence Engineering, to develop unmanned surface vehicle systems, enhancing maritime domain awareness. The recent Security of Supply Arrangement (SOSA) is improving mutual defence supplies, and both countries are committed to aligning their defence procurement systems further.

US industry pledged to enhance India's maintenance, repair and overhaul (MRO) capabilities, including aircraft and UAV repairs, as India implements a uniform 5 per cent GST on MRO services. The success of the India–US Defence Acceleration Ecosystem (INDUS-X) initiative, launched in 2023, is fostering defence innovation, highlighted by the third INDUS-X summit in Silicon Valley. It provided for the launch of joint challenges focusing on undersea communications and maritime intelligence, surveillance and reconnaissance (ISR), and on space situational awareness in low earth orbit (LEO).[5]

India hosted the largest bilateral tri-service exercise, 'TIGER TRIUMPH', in 2024, and is incorporating new technologies in the ongoing 'YUDH ABHYAS' exercise, including the first demonstration of the Javelin and Stryker systems in India. The deepening of military partnership and interoperability is important to maintain a free and open Indo-Pacific and work together for regional stability.

## India's Tryst with Disarmament and Nuclear Treaties

Since independence, India has been a proponent of nuclear disarmament, driven by an idealistic quest stemming from moral and ethical beliefs, which has evolved into a practical stance centred on national security concerns. The early leaders of modern India expressed the Indian vision of a 'Nuclear Weapon Free World', reflecting their perception of nuclear weapons, contrary to the essence of humanity. India has been a fervent advocate for a time-bound structure to accomplish disarmament but has only received lukewarm support from nations possessing nuclear weapons.

In 1948, following the creation of the UN Atomic Energy Commission, India called for the total eradication of nuclear weapons and suggested that atomic energy be utilised by nations solely for peaceful applications. In 1950, India proposed the establishment of a UN Peace Fund to guarantee that countries refrain from engaging in an arms race and instead allocate the fund for developmental purposes. In 1954, India recommended a Standstill

Agreement on all explosions after the US detonated its first hydrogen bomb in the Marshall Islands. In 1964, India planted the seeds for a future Non-Proliferation Treaty (NPT) by introducing 'Non-Proliferation of Nuclear Weapons' on the UN Agenda for deliberation towards an international treaty. India persistently raised the disarmament issue at the Special Sessions on Disarmament, peace initiatives, and through the Rajiv Gandhi Action Plan, but due to the lack of political determination among nuclear-armed states, the achievement of disarmament within a time-bound structure remained an elusive objective.

India signed the Partial Test Ban Treaty (PTBT) in 1963 as it was perceived as a step towards disarmament. However, China not being a signatory to the PTBT, and its achievement of sub-criticality in nuclear weapon test in 1964, increased the Indian insecurity of potential blackmailing by China. Therefore, at the Eighteen Nation Disarmament Commission (ENDC), formed to negotiate the NPT, India argued that all the 18 nations should freeze the production of nuclear weapons and stop the production of delivery systems to guarantee that states without nuclear weapons would not acquire them. However, failing this, India said that it is its sovereign right to ensure its security by acquiring the nuclear weapons. India declined to sign the NPT because of the arbitrary discrimination between countries with and without nuclear weapons, the lack of obligation for nuclear-armed states to remove their nuclear arsenals, and the absence of a defined timeframe for gradual and complete disarmament. Additionally, at this time, India was confronting an unstable and worsening security situation in its neighbourhood due to China building its nuclear arsenal after the 1960s, following a conflict at the border between the two nations and the ongoing strife with Pakistan.[6]

During the discussions about the Comprehensive Test Ban Treaty (CTBT), India initially backed it because it wanted nuclear disarmament and to reduce pressure from the US on non-proliferation. However, India's disagreement with the CTBT grew due to the NPT being extended indefinitely in 1995 without any changes and the lack of serious disarmament efforts by countries with nuclear weapons. India's security situation was getting worse, especially because of the nuclear situation with China and Pakistan, and the negative effects of regional proliferation activities made India decide to keep its nuclear options available. At the end, India rejected the CTBT because it did not meet India's requests for a clear timeline for complete nuclear disarmament. Although it banned all forms of testing, it allowed computer simulations to improve the weapons, further arming the nuclear weapon

states. The worries about the treaty's verification system was also a reason for India rejecting the treaty.[7]

The non-proliferation framework in the post-Cold War era centers on the NPT. However, the NPT's indefinite extension at the 1995 Review Conference has only intensified India's apprehensions. Since the Cold War ended, nuclear-armed states have leaned towards strengthening the non-proliferation regime to preserve their dominance. Even the CTBT and the Fissile Material Cutoff Treaty (FMCT) have functioned more as instruments that 'propose and promote' non-proliferation rather than truly advancing disarmament. By 1998, as the nuclear non-proliferation net tightened around the NPT, India recognised that if it did not seize the chance to break free, it would be left with no alternatives amidst the worsening security landscape in its vicinity. Consequently, India, following its nuclear test in 1998, broke out of this predicament and emerged as a nuclear power—a safeguard against any nuclear threats from any nation.

Despite being a nuclear-armed nation, India continues to advocate for disarmament, rooted in the belief that only global nuclear disarmament can truly benefit India's national security. By underscoring the restricted role of nuclear weapons solely for deterring aggression, India's nuclear doctrine incorporates robust safeguards against premature use and mechanisms to prevent accidental or unauthorised detonation, fostering trust among neighbouring countries and the international community that India's nuclear arsenal poses no threat to global peace and security.[8] Furthermore, since its nuclear test on 11 May 1998, India has concentrated on peaceful use of nuclear technology and its trade, rather than on nuclear weapons, as commemorated by the annual celebration of 'National Technology Day' on 11 May in India. Consequently, despite the obstacles presented by the global non-proliferation framework and regional security concerns, India is steadfast in its vision of a nuclear weapons-free world.

## The Evolution of India–US Nuclear Cooperation

The state of nuclear dialogue between India and the US went hand-in-hand with the evolution of defence cooperation between them. The nuclear diplomacy in the Cold War period remained stuck due to the ideological warfare, the game of alliances and India's non-aligned posture.

As a tool to counter the Soviet Union, the US presented its Mutual Defence Assistance (MDA) Act under the Atoms for Peace initiative of President Eisenhower in 1953, for the non-communist and non-aligned

states, for the development of peaceful nuclear technology. India purchased the nuclear material under the MDA Act and sold some part of it to China under the Panchsheel Agreement of 1954. The US objected because the act was not supposed to deal with the communist states, however, India asserted that the MDA Act was only applicable to the bilateral relationship of India with the US, and there was no clause in the act that could govern India's third-party relations. This ambiguity and miscalculation strained the relationship between India and the US for the whole of the Cold War.

The other point of contestation was the 'Plutonium Issue'. Plutonium is a by-product of the enriched Uranium, which can be used to make a Plutonium Bomb. In 1957, the International Atomic Energy Agency (IAEA) held that this residue Plutonium would be submitted and kept in the Plutonium Bank to ensure the non-usage of civilian technology at military levels. This was actively objected by India at diplomatic levels and led to the rejection of the idea of a Plutonium Bank, and, instead, a consensus was reached to have regular inspection of the plutonium levels within the countries by the IAEA inspectors. This was perceived by the US with suspicion and distrust. In 1975, the US led to the formation of the Nuclear Suppliers Group (NSG), which allowed the civilian nuclear trade only with the countries that are signatories to the NPT. Therefore, since India was not a signatory to the NPT, for the whole of the Cold War, India was isolated from America's nuclear trade or nuclear partnership.

It was only after the Cold War and the liberalisation of the Indian economy for trade and commerce that a significant shift was marked in the bilateral relationship between the two countries, with the signing of the India–US Civil Nuclear Cooperation Agreement of 2005. It also posed a challenge to the US' long-standing commitment to the NPT, as India had not signed it. The agreement, which allowed India, a non-NPT state, access to nuclear technology, challenged the US' self-identity as a global nuclear non-proliferation regime upholder. The Bush administration crafted a strategic account to create a 'moment of possibility' for a shift in the policy by portraying India as a 'similar enough other' deserving of an exception under the global and US non-proliferation regimes. The administration created a discursive space for the deal, illustrating how strategic narratives can reshape the boundaries of acceptable action in foreign policy. This narrative aligned with a perceived shift in global order towards Asia and presented the deal as a strategic opportunity for closer US–India relations.[9]

The nuclear deal ensured that India did a civil–military separation plan, dividing its 22 nuclear reactors into 14 civilian reactors and 8 military

reactors, and an India–International Atomic Energy Agency (IAEA) safeguard agreement was signed, thereby placing India's civilian facilities under IAEA safeguards. In return, US diplomacy helped India to get an NSG waiver.[10]

The fact that eight nuclear reactors for military use were not required to go through the IAEA inspections was a major breakthrough in the relationship between India and the US. This implied that the US recognised India's nuclear ambition and the importance of the necessary security guarantees achievable through a military nuclear programme for India.

India was admitted as a full partner in the International Thermonuclear Experimental Reactor (ITER) project, showcasing its recognition as an important stakeholder in global science projects. The India–US Atomic Energy Cooperation deal, signed in 2006, marked a significant shift in US policy towards India's nuclear programme, enabling technological and civilian nuclear cooperation, and ending decades of US sanctions against India. The deal aimed to include India into the global nuclear non-proliferation regime, despite India's position as a non-signatory to the NPT.[11]

Owing to its impeccable record as a non-proliferator, India, with the support of the US, became a part of the Missile Technology Control Regime (MTCR) in 2016, the Wassenaar Arrangement (WA) in 2017, and the Australia Group (AG) in 2018. The MTCR provides for an informal agreement to stop the proliferation of unmanned delivery vehicles for nuclear weapons and missile transfers that can carry more than 500 kg or have a range beyond 300 km. The WA covers an area of strategic materials and technologies where no international treaty exists. It is very important in the globalised world, where information and communication technologies are developed by private players for commercial use, which makes it tough for governments to regulate its dual use. The WA aims to foster transparent policies concerning sales and transfer of arms, materials and technology, which aid the build-up of nuclear capabilities. It has mechanisms to prevent the falling of such technologies into the purview of non-state actors by exchanging information related to the transfer of or denial of a technology, conventional or nuclear, to states that are not part of the WA. Joining the AG proves that India has safeguards and export controls for chemical and biological weapons, which met the benchmark standards of the international community. As India's chemical industry has emerged as a global exporter of chemicals as per international standards, its trade in dual-use chemicals has increased.

Therefore, there was a gradual but steady improvement in the India–US nuclear cooperation, which was driven by the improvement in their trade and defence relationship.

## Nuclear Order in Flux and Its Impact on Conventional Warfare

The legal and normative framework established by treaties and arms control agreements, which support non-proliferation and disarmament, is being jeopardized by the current geopolitical developments. These developments have led to an increased build-up of military, nuclear-capable missiles and weapons of mass destruction. Countries with significant nuclear arsenals are reconsidering their nuclear and conventional military strategies, potentially increasing the risk of nuclear weapon use due to deteriorating security conditions. The mistrust and security dilemma between the possessors of the two largest nuclear arsenals in the world led to the US withdrawal from the Intermediate-Range Nuclear Forces (INF) Treaty signed between the US and the erstwhile Soviet Union in 1987. This has allowed the construction and deployment of ground-launched ballistic and cruise missiles of ranges between 500 km to 5,500 km, which were formerly banned by the treaty.[12]

The US, in its effort to more effectively deter any limited nuclear use by Chinese and Russian counterparts, has pledged to develop new nuclear-enabled submarine-launched cruise missiles and ballistic missiles, as outlined in its Nuclear Posture Review (NPR) of 2018.[13] The NPR favours an expansive role of nuclear weapons in the security of the US, as it believes the development of nuclear torpedoes and nuclear-powered cruise missiles by Russia poses a significant threat to NATO and security structures in the Middle East. For this reason, the US, in its joint force doctrine, recommends military training in theatre campaign planning to operate in a nuclear battlefield and a radiological environment by developing a force of geographic combatant commanders with expertise in detecting and striking potential nuclear targets.[14] The NPR, 2018, recognised China as a regional hegemonic competitor in the Indo-Pacific for the first time. To deter this, the US can now install intermediate-range missiles in Guam, Micronesia and Okinawa islands of Japan in the East China Sea, enabling the US to safeguard the Miyako Strait in Japan and block the Chinese naval ships.

As per the remarks by multiple Russian officers, the Russian military and naval doctrines allow for a limited use of nuclear weapons to gain an upper hand in a non-nuclear war. Since at least 2009, military drills have included

the use of nuclear weapons to overcome an enemy using conventional tactics.[15] The 'Poseidon' underwater vehicle, which is powered by a nuclear reactor and armed with nuclear warheads, is built to move at speeds up to 107 knots and detonate near an enemy coastal town, causing a tsunami. Russia, too, is working on a similar cruise missile that runs on nuclear power and carries nuclear weapons.[16]

Chinese strategic activities and military build-up in the Indian Ocean and the Pacific Ocean generate anxiety and security concerns for the region, even though China affirms its nuclear doctrine of no first use. Experts are of the view that China has continued its production of missile material which it reiterates to have ended in the 1980s.[17] In addition to this security dilemma is China's refusal to recognise India as a nuclear weapon state, preventing any nuclear strategic dialogue between the two Asian powers. Furthermore, experts believe that China keeps a lot of its nuclear warheads hidden in the Qinling mountain range, and some at smaller storage sites around the country. They estimate that there are more than 100 nuclear or nuclear-capable missiles ready at bases controlled by the People's Liberation Army Rocket Force (PLARF), specifically at Base 53 and Base 56, which are geographically closest to India. These could be used if Chinese leaders anticipate that India might launch a nuclear attack.[18] Furthermore, after the US withdrew from the INF Treaty, China is working to make its nuclear defences stronger and is developing hypersonic missiles to assert its aggressive posture.

China's growing military capabilities, particularly in the maritime domain, in the context of the Indo-Pacific, pose security challenges for India, the US and its allies. The Belt and Road Initiative (BRI) supports China's global trade ambitions and energy requirements, facilitating the establishment of overseas military bases in Djibouti, Cambodia, Cuba and Tajikistan. The Maritime Silk Route involves the development of ports in Hambantota, Sri Lanka and Kuantan, Malaysia, which has security implications in the Indian Ocean Region.

China's naval modernisation and missile technology advancements significantly enhance its maritime defence, counterattack and deterrence capabilities in the crucial Sea Lines of Communication (SLOCs), as they transit via the Indian Ocean for energy and trade. Its advanced missile technologies, such as the DF-41 intercontinental ballistic missile (ICBM) with multiple independent re-entry vehicles (MIRVs), the DF-26 intermediate-range ballistic missile, and the DF-ZF hypersonic glide vehicle (HGV), can reach targets deep within India's territory and maritime areas. China's development of advanced surface combatants, like the Type-055 destroyer,

and the commissioning of aircraft carriers significantly enhances its blue-water naval capabilities.[19] These capabilities significantly enhance China's ability to project power and deter India's naval presence.

China's military deployments in the South China Sea and the militarisation of artificial islands, including the establishment of air force bases and naval dockyards, pose regional security threats in the wider Indo-Pacific. China's infrastructure development projects in Sri Lanka, such as the Hambantota Port, also pose a strategic threat to India's security interests in India's backyard due to the heightened security dilemma and strategic vulnerabilities. These actions are part of China's strategy to assert its maritime dominance in the region. China's investment in quantum technology, including the development of quantum radar, challenges traditional stealth technologies and enhances its surveillance and missile defence capabilities. This assertive posture complicates territorial disputes and increases the risk of military confrontation. To counter these threats, India must enhance its maritime security and missile defence capabilities, and strategic cooperation between India and its allies has become imperative to maintain regional stability and ensure a free and open Indo-Pacific.

Pakistan has always asserted its nuclear policy stance of the first-use and its development of the Nasr nuclear artillery in its official statements. China continues to assist Pakistan in its nuclear weapons programme, including selling 8 Type-041 submarines to Pakistan. These can be integrated as part of Pakistan's new sea-based nuclear force.[20] India's concerns over the China–Pakistan Economic Corridor (CPEC), which passes through Pakistan-occupied Kashmir, are heightened by China's support for Pakistan's military and missile development programmes. This nexus between China and Pakistan creates additional security challenges for India.

Pakistan has used its nuclear capabilities to embolden its proxy war strategy in Kashmir against India. The knowledge that it possesses nuclear weapons has allowed Pakistan to support insurgent activities in Indian-administered Kashmir without fear of direct Indian retaliation, which has kept tensions high and has led to periodic military confrontations between India and Pakistan, increasing the risk of accidental nuclear escalation.[21] The risk of nuclear weapons or technology falling into the hands of extremist groups or rogue states is a significant concern, especially given Pakistan's internal security challenges and the presence of radical terrorist groups. Furthermore, fears regarding potential proliferation persist in the case of Pakistan owing to the AQ Khan network's sale of nuclear technology and materials to several countries.

There is growing concern about the possibility of a limited nuclear war in the South Asian region.[22] Tactical nuclear weapons (TNWs) could be used by Pakistan in a conflict scenario to halt an Indian advance or as a last resort to prevent a conventional defeat. While India has a stronger and more advanced army, Pakistan's nuclear arsenal serves as a 'strategic stalemate', where both countries are locked in a perpetual arms race, spending significant resources on defence rather than development. While nuclear weapons serve as a deterrent against large-scale conventional conflict, they also increase the chances of miscalculation, accidental escalation, and further nuclear proliferation. The risk of such a limited nuclear war is significant, as it could quickly escalate to a full-scale nuclear exchange, with devastating consequences for the region and the world.

To ensure greater resilience against the increasing Chinese build-up of conventional missiles and missile barrages, Indian strategists are considering the option of a large cruise missile force to maintain a necessary conventional deterrence. As such, the Indian Air Force is adding more air bases and runways facing China and building its capacity for quick runway repairs.[23] Indian leaders are still interested in using conventional weapons to stop enemy forces, but, due to changing strategies, Indian Defence Minister, Shri Rajnath Singh, said in 2019 that what happens in the future will depend on the situation, hinting that India's policy of not using nuclear weapons first could change with changing circumstances.

Therefore, as long as nuclear weapons remain an essential part of the security policies of leading states, the world will not be ready to give up its nuclear weapons option. Aiding to this menace is the fact that not only non-state actors have taken an active interest in acquiring nuclear capabilities, but they are actually backed by various state actors, and as such, we can see the expansion of nuclear weapons in building security to gain advantage in a conventional conflict, which is creating a security dilemma.

## India and the US: Perceptions on Nuclear Stability

On a conceptual note, 'stability' between countries with nuclear weapons can be a function of three connected worries: strategic stability, crisis stability and arms-race stability.[24] Strategic stability is when neither side wants to start a nuclear war because they both know they can hit back with significant assured destruction even if they are attacked first. Crisis stability is when neither side has fear of any surprise first attack from the adversary if there is a crisis. Arms-race stability is when both sides are sure that the

other side will not build weapons that could mess up the strategic or crisis stability.

We can say that both India and the US are concerned with all the three functions of stability. India cannot rely on Pakistan for strategic stability and crisis stability due to its first-use doctrine and India's nuclear doctrine does not state its possible response to a perceived but not a manifested threat of first strike by Pakistan. Also, we cannot rely on arms-race stability from the two hostile neighbours, that is, Pakistan and China, as there is consistent procurement and development of arms.

There is a shared worry among India and the US about the issue of loose nukes with Pakistan due to it being a rogue state and a proven safe haven for terrorist groups, its use of terrorism as a state strategy, its role in sharing nuclear technology with other countries, and its reliance on TNWs. India and the US can work together on this. However, for the US, despite ongoing military tensions, the rising fear of a nuclear arms race in the South Asian subcontinent has lessened. This is because both India and Pakistan have continued to grow their nuclear arsenals, but at a controlled pace. This can also be attributed to the fact that other matters related to the rise of an aggressive China in the Indo-Pacific and growing geopolitical hotspots have taken precedence and urgency for the US and, for this, the US considers its partnership with India as one with strategic importance.[25]

The Bush administration took the 'balance of power' perspective towards concerns emanating from the rise of communist China in the early 2000s, which could be counterbalanced through a meaningful partnership with its democratic counterpart in Asia, that is, India. [26] This new development of understanding of shared threats made the US less averse towards the declaration of development of a nuclear triad by India. Even the speculation of a possible drift in India's nuclear policy of No First Use, after the remarks made by the defence minister, did not come up as an issue that the US needs to negotiate or discuss with India, signifying greater strategic alignment.

India and the US share concerns over the significant strategic developments in the Indo-Pacific, including China's growing military and political influence, North Korea's nuclear aspirations, and the erosion of democratic values.[27] Therefore, cooperation for the building of a free, fair, and open Indo-Pacific is imperative for regional peace and stability, prevention of the spread of weapons of mass destruction, and upholding the values of human rights, freedom, democracy and environmental health.

Therefore, we can say that new areas of converging strategic interests between India and the US have taken precedence in the relationship that is

enabling a deeper level of cooperation to ensure an environment of nuclear stability. This gradual development of trust between the two democratic nations was not a spontaneous or natural event accruing to their shared values but a result of protracted negotiations in the face of adversity that has brought the two nations to an understanding of each other's concerns.

## Prospects and Challenges in Defence Cooperation Against Threats to Nuclear Stability

India has always been a leader in global nuclear disarmament efforts and has been a responsible actor in its dealings with larger global issues. The two nations have come together several times in crisis management and in reiterating the need for a free and democratic world order. Therefore, an area of possible cooperation can be in averting any risk associated with nuclear weapons and technology to ensure a stable world order.

India enthusiastically embraced the initiative taken by the Obama administration to avert any control of nuclear weapons by terrorist organisations, as this will target rogue states like Pakistan, which are supporting non-state actors as proxy warriors to support their state actors.[28]

India has keenly participated in all four nuclear security summits and made several pledges towards promoting global nuclear security alongside domestic measures to improve nuclear security. However, the nuclear security summits have not happened regularly since the last one being in 2016, and there is no particular institutional structure to continue this collaboration.

Another area where India and the US need to work together is the cybersecurity of India's nuclear systems. The cyberattack by North Korea on India's nuclear power plant and the Indian Space Research Organisation (ISRO) in 2019 demonstrated that cybersecurity measures in India's nuclear sector are not sufficient. Working together to improve cyber defence capabilities would benefit both the countries, as the US wants to stop rogue states, such as North Korea, and non-state actors, such as terrorist groups, from getting data and skills through these attacks, and India definitely has stakes in protecting its systems.

India and the US cooperated in intelligence sharing when the US National Security Advisor John Bolton and Secretary of State Mike Pompeo played a crucial role in support of India to retaliate against the terrorist attack on Indian paramilitary forces in Uri by attacking the terrorist base camp at Balakot in Pakistan.[29] However, there is still potential of even wider areas of

cooperation, which is lacking in the present times. India is of the view that the US has not been able to pressurise Pakistan against its support towards terrorist organisations. Another challenge for the US is its diminishing influence over Islamabad, due to the viable foreign support it is receiving from China.

The new areas of priority and cooperation have emerged in the form of cyber security initiatives, a free and open Indo-Pacific, and containing an aggressive China, all of which are critical in promoting and safeguarding nuclear stability measures. Consistent efforts at nuclear stability and crisis management are essential areas where their views and interests coincide.

## Way Forward

In an era of decaying nuclear order, having deterrence is having the capability to control a war or the escalation of a war. The policy areas where the two countries can significantly improve cooperation are ensuring the high-end technology for the safety and security of the nuclear systems from any possible interception software by irresponsible actors; reducing the dangers associated with China's rise in the Indo-Pacific; and securing Pakistan's nuclear materials and weapons.[30]

The threat of any possible cyber espionage of nuclear data, due to the close links between Pakistan, China and North Korea, necessitates India–US cooperation in finding the best practices for safeguarding nuclear establishments. For this, India and the US must work towards restarting the nuclear security summit stalled since 2016, as there is no institutional framework to continue this collaboration. This will enable discussion on emerging security challenges and sharing the practices relevant to nuclear security.

India and the US need to work in cohesion to make nuclear deterrence stable by signing a multilateral missile flight-test pre-notification agreement, requiring all the countries with nuclear weapons to inform each other about their missile tests.

The development and deployment of tactical nuclear weapons by Pakistan is a big worry for both India and the US because, once nukes are used, it is hard to keep the war small and maintain regional stability. India and the US must team up to make sure Pakistan's nuclear stuff does not get into the hands of terrorists. As India's External Affairs Minister S. Jaishankar said, 'Terrorism is an international threat that should not serve national strategy. Nuclear terrorism even more so'. They need to work together to spot threats,

deal with the aftermath through nuclear forensics, and get emergency workers ready for any nuclear event.

India and the US can cooperate in a joint theatre examination of Chinese missile threat to regional Indian Air Force bases, runway capabilities and airfields, as well as in the Indo-Pacific, leading to potential technical cooperation to ensure resilience against Chinese conventional missile barrages, which will be of paramount importance.

India has shown adherence to the safeguards of the International Atomic Energy Agency (IAEA) and has taken voluntary measures to abide by the NPT and the Nuclear Suppliers Group (NSG) guidelines. Therefore, India and the US must cooperate to bring forth India as a member of the NSG, as being out of the NSG has kept India still out of the latest and the most efficient technology.

Therefore, it is imperative that India and the US further deepen their relationship towards building nuclear stability and decreasing the risk of an accidental nuclear war in the wake of heightened tensions and heated conventional warfare in the current geopolitical landscape, by increasing trust and transparency by sharing intelligence regarding adversary's nuclear and missile intentions as well as building improved conventional defence forces, thereby enabling a higher nuclear threshold.

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