



RESEARCH ARTICLE

## Disruptive Technologies and Deterrence Stability in South Asia: The Pakistan-India Equation 2025

Noureen Akhtar<sup>1</sup>, Nazish Mahmood<sup>2</sup>

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Abstract

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The advent of disruptive military technologies, such as AI-supported surveillance, autonomous weapons systems, and hypersonic delivery platforms, in India as part of the new force posture poses a highly tangible threat to deterrence stability in South Asia. The instability of crises has been exacerbated by the creation of non-attributable technologies in India, which has reduced its chances of controlled escalation rather than intensifying it. In this paper, the dynamic equilibrium between technology and the doctrinal stance of India and Pakistan is discussed, taking particular interest in how the induction of futuristic systems in India is threatening the current deterrence equation. According to the May 2025 military conflict scenario, in which the Indian operation Sindoor has so far failed to achieve its objectives and the Pakistani air defences have so far been found satisfactory, the analysis suggests that Pakistan maintains credibility in its nuclear deterrence, operational preparedness, and political consummation in a crisis. The evolution of Pakistan's doctrine of full-spectrum deterrence, notwithstanding external pressures, has helped keep pace with emerging pressures and served as a stabilizing factor. Conversely, the world's pressure on India, driven by technology-based risks, breeds a false sense of confidence, a misperception, and an unwillingness to create a spiral of escalation. At the end of the paper, it is proposed that Pakistan take the lead in regional armaments control, AI openness, and mutual non-interference commitments in the cyber and space realms. South Asia is at greater risk of miscalculation without these confidence-building measures amid an intensifying technological arms race.

<sup>1</sup> Noureen Akhtar is a PhD Scholar at (SPIR-QAU), Islamabad, and has worked on various public policy issues as a Policy Consultant in the National Security Division (NSD), Prime Minister's Office (PMO). She specializes in hybrid warfare, including AI, cyber warfare, and cyber politics, as well as governance and public policy with a focus on South Asia and the Middle East. Currently, she is the editor of Stratheia. She can be reached at [akhtarnoureen26@gmail.com](mailto:akhtarnoureen26@gmail.com)

<sup>2</sup> Dr Nazish Mahmood, Assistant Professor, School of Politics and International Relations, Quaid-e-Azam University, with an interest in Global and regional developments, especially the Middle East and North Africa.

## **Introduction**

Deterrence stability in South Asia has always been on a thin thread between the nuclear-armed adversaries India and Pakistan. Ever since their overt nuclearization in 1998, the two states have gone through numerous military standoffs that could have pushed the boundaries of deterrence but never led to a full-scale war. Mutual nuclear devastation was once a red flag to policymakers who sought to do things that would place them in what is commonly referred to as the stability-instability paradox, in which the presence of nuclear weapons suggests that they cannot have all-out war but can have a lesser war. Such a precarious balance is, in turn, jeopardized by the emergence of disruptive military technologies in the past few years. High-tech capabilities such as AI and autonomous weaponry, hypersonic missiles, and missile defense are being rapidly incorporated into India's defense, destabilizing the idea of deterrence. To address this growing conventional-technological mismatch, Pakistan has been conducting its deterrent exercise (primarily for full-spectrum deterrence) and pursuing qualitative improvements to ensure the plausibility of its retaliatory capability. The net impact is an action-reaction cycle that jeopardizes the nuclear balance and compresses the leader's decision time in a crisis.

The paper synthesizes theoretical progress in strategic stability with the realities of current security developments in South Asia. This puts the hazards of technological boasting and forcible unilateralism in the limelight at the expense of strategic stability. Particular attention is paid to the Pakistani worldview and reaction, which is interested in the elimination of the arms race. These dynamics are discussed in terms of their practical application, with reference to the 2025 scenario (Operation

Sindoor). Policy recommendations will include Pakistan as the first nation to purchase-in. Still, they will also be agreeable to implementing some sanity, arms control talks on emerging technologies, transparency, and norms in military AI, and a consensus to avoid attacking one another's vital cyber and space infrastructure.

### **Deterrence Stability in South Asia: Traditional Dynamics**

India and Pakistan have claimed to have different nuclear doctrines since they started nuclearizing and threat perceptions, which have led to an uncomfortable deterrence. Pakistan has oriented its nuclear policy towards India due to the need to match India's conventional strength and the need to preserve its position based on the need to match its conventional power. Islamabad thus did not adopt the policy of 'no first use.'<sup>1</sup> It had the right to launch its nuclear weapons first in case its national security was threatened. In turn, India announced a policy of credible minimum deterrence and a declaratory No-First Use (NFU) (albeit, in recent years, this policy has also become increasingly vague). Despite these doctrinal differences, the two nations recognized that any nuclear exchange would be disastrous. This understanding has helped maintain deterrence at the strategic level despite ongoing conflicts.

The region has experienced several severe crises over the last 20 years, including the 1999 Kargil War, the 2001-02 standoff, the Mumbai crisis in 2008, and the Pulwama/Balakot episode in 2019<sup>2</sup>, which have highlighted how vulnerable this stability is. Both crises exhibited an

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<sup>1</sup> Yunas Khan and Fazli Rahman, "Pakistan's Nuclear Diplomacy: Balancing Deterrence and Global Non-Proliferation Norms," *ASSAJ*, Vol. 3, No. 1 (2025), pp. 1225-43.

<sup>2</sup> Adeel Kazmi, "Nuclear Politics in South Asia: Deterrence Nuances of India-Pakistan Crises (Mumbai to Pulwama)," *Pakistan Journal of International Affairs*, Vol. 7, No. 3 (2024).

escalation pattern of a controlled nature; military exchanges or airstrikes of conventional nature were made under the nuclear shadow, but both political leaders managed to back off at the verge of full-scale war. As the Operation Sindoor case in point, in February 2019, following a suicide attack in Indian-occupied Kashmir, India used airpower on a target in Balakot within Pakistan<sup>3</sup>, the first airstrike across the border since 1971. Pakistan retaliated with an aerial strike, shooting down an Indian fighter jet and capturing its pilot.<sup>4</sup> The situation was defused within approximately two days. Pakistan released the pilot as a gesture of peace. Both sides claimed victory and drew opposing lessons. India asserted that limited strikes could be undertaken without triggering nuclear war. In contrast, Pakistan declared it had proven its resolve and restored deterrence by forceful retaliation. The crisis illustrated the stability-instability paradox; nuclear weapons deterred an all-out war but did not prevent dangerous conventional exchanges.

A key feature of Pakistan's approach to maintaining deterrence has been its doctrine of "full-spectrum deterrence." Announced in the early 2010s<sup>5</sup> after Pakistan's first test of the NASR, a Low-Yield Nuclear Weapon (LYNW). Full-spectrum deterrence seeks to cover the entire range of potential conflicts, from tactical, limited wars to strategic nuclear exchanges, under the umbrella of nuclear deterrence. In practice, this meant that Pakistan developed the capability to deter India's contingency plans for limited conventional war (such as the Indian Army's erstwhile

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<sup>3</sup> Shabnam Gul, Bilal Aslam, and Rabia Nazir, "Evolving Deterrence of Post-Balakot in India and Pakistan: Implications on the Strategic Stability of South Asia," *Journal of Research & Reviews in Social Sciences Pakistan*, Vol. 4, no. 1 (2021).

<sup>4</sup> *BBC News*. "India Border Dispute: Army Chief Calls Cross-Border Fire 'Farcical'." Published February 27, 2019. Accessed August 19, 2025. <https://www.bbc.com/news/world-asia-india-47397409>.

<sup>5</sup> Amber Afreen Abid, "The Efficacy of Pakistan's Full Spectrum Deterrence," *CISS Insight Journal*, Vol. 11, No. 1 (2023), pp.1-21.

“Cold Start” doctrine). By having nuclear options at tactical, operational, and strategic levels, Pakistan aimed to deny India any space for conventional strikes while still adhering to a posture of “credible minimum deterrence” in aggregate. Lieutenant General Khalid Ahmed Kidwai (R), Advisor National Command Authority (NCA), the long-time architect of Pakistan’s nuclear policy, described full-spectrum deterrence as a capability, held on land, at sea, and in the air...with range coverage from zero meters to 2,750km, as well as nuclear yields at tactical, operational, and strategic tiers.<sup>6</sup> This was ascertained: India cannot hide anywhere, and plans such as ballistic missile defense or the procurement of systems such as the S-400 will not provide India with immunity or a free hand to retaliate. Pakistan had indicated that it will respond to any threat of India, at all levels in the escalation ladder, thus maintaining deterrence with India, as its attack, however limited, could face nuclear retaliation.

The doctrinal path of India, however, has been moving in the opposite direction, towards something that is not limited to the enunciation of restraint but also reflects a more flexible and even proactive employment of force. In the 2003 Draft Nuclear Doctrine (DND) of India, the emphasis was on NFU and retaliation against any large-scale nuclear-related attack. This stance has been ambiguous, however, because of the utterances of the Indian officials in recent years. As an example, the former National Security Advisor, Shivshankar Menon, indicated that NFU may not be applicable in the case of an imminent threat from a nuclear-armed foe (impliedly, Pakistan)<sup>7</sup>. More literally, in 2019, the Defense Minister of

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<sup>6</sup> M. Haider, “Pakistan’s Tactical Nuclear Weapons Are Weapons of Peace: Dr Kidwai,” *The Nation*, May 30, 2024, accessed August 20, 2025, <https://www.nation.com.pk/30-May-2024/pakistan-s-tactical-nuclear-weapons-are-weapons-of-peace-dr-kidwai>.

<sup>7</sup> *The Wire*. “Menon: India’s Nuclear Weapons, NFU, NSA.” Accessed August 26, 2025. <https://m.thewire.in/article/diplomacy/menon-india-nuclear-weapons-nfu-nsa>, and Hasan

India, Rajnath Singh, said that even though India has followed no-first-use to date, whatever occurs tomorrow would depend on the situation. These are signs that suggest that India is ready to think about preventive strikes under the pretext of terrorism despite the absence of an imminent threat. In fact, the possibility that India might not pursue NFU or even develop counterforce capabilities (such as accurate surveillance and missile defenses to counter Pakistan's arsenal) is a significant reason for Pakistan's pursuit of full-spectrum deterrence.

Mutual vulnerability, supported by doctrines and postures, has been the classic deterrence equation in South Asia until recently, when the aim was to reduce the likelihood of nuclear exchange. It is an unsatisfactory balance that has lasted for ten years. The coming disruptive technologies and new capabilities are threatening that balance in a manner never seen before. India's rising conventional capacity and technological investment are an ambition to embolden it to test the limits of toleration. The exclusiveness of Pakistan in closing perceived vulnerabilities in its deterrence strategy has led it to examine new nuclear capabilities and delivery means.

### **India's Technological Modernization and Military Doctrines**

India has been modernizing its military capabilities and consistently increasing its nuclear forces for many years since it first acquired its nuclear weapon capability. This ambition can be observed in high-tech missiles and air defenses, cyber and Artificial Intelligence (AI), and drones. AI is one of the areas that India has considered a pillar of defense

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Ehtisham, "The Diminishing Credibility of Indian 'No First Use' Policy," *Journal of Security & Strategic Analyses*, Vol. 8, No. 1 (2022), pp. 25-48.

innovation. The Defense AI Council, as an institutional body, and the Centre for AI and Robotics (CAIR), as an organization under the Defence Research and Development Organisation (DRDO), have been created to facilitate the integration of AI in defense.<sup>8</sup> New Delhi is exploring AI to support greater Intelligence, Surveillance, and Reconnaissance (ISR),<sup>9</sup> including autonomous processing of satellite data, and algorithmic support of military analysis. The AI projects of the country encompass multi-agent robot systems and swarming drones, which can coordinate themselves in a combat situation. By implementing AI-based surveillance technologies along sensitive borders (e.g., smart sensors and predictive analytics on the Pakistan border), India enhances its early warning and target acquisition capabilities, thereby strengthening its defensive and offensive deterrence posture.

India has been adding more autonomous platforms to its arsenal, alongside AI. This trend is highlighted by the fact that in 2016, more than 5,000 drones had already been acquired, and that drone swarming technology continues to be developed. The Indian army has deployed a range of Unmanned Aerial Vehicles (UAVs).<sup>10</sup> To support reconnaissance and strike attack operations, such as the Israeli-made Harop loitering munition (a suicide drone that autonomously flies into radar targets and destroys them). At the naval level, India is considering unmanned submarine vehicles for tasks such as anti-submarine warfare. The

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<sup>8</sup> R. S. Panwar. "Artificial Intelligence in Military Operations: Technology, Ethics and the Indian Perspective." In *Artificial Intelligence, Ethics and the Future of Warfare*, edited by Rajiv Gupta and Aditi Sharma, (New Delhi: Routledge India, 2024), pp. 216–26.

<sup>9</sup> Amjad Mahmood and Adil Sultan, "Impact of India's ISR Capabilities on South Asian Security Dynamics," *Strategic Studies*, Vol. 41, no. 4 (2021), pp. 17-39.

<sup>10</sup> Syed Agha Hassnain Mohsan, Nawaf Qasem Hamood Othman, Yanlong Li, Mohammed H. Alsharif, and Muhammad Asghar Khan, "Unmanned Aerial Vehicles (UAVs): Practical Aspects, Applications, Open Challenges, Security Issues, and Future Trends," *Intelligent Service Robotics*, Vol. 16, No. 1 (2023), pp. 109-37.

application of loitering munitions was also clearly illustrated in the 2025 war, with India using drones in the 2025 war to not only monitor the targets but also to attack Pakistani air defense positions before subsequent raids. These autonomous or semi-autonomous systems allow India to project power across the border with reduced risk to personnel and with deniability. Autonomous weapons (“killer robots”)<sup>11</sup> raise ethical and control issues; if they malfunction or select the wrong target without human oversight, they could spark an unintended firefight or hit a sensitive target, quickly exacerbating a crisis.

In recent years, India has made substantial progress on a hypersonic cruise missile program (reportedly under a classified “Project Vishnu”)<sup>12</sup>. In July 2025, Indian media reports indicated that the DRDO conducted a test of an indigenously powered hypersonic cruise missile that reached Mach 8 and struck its target with precision<sup>13</sup>. Although the Indian government did not officially confirm the test (and some later reports cast doubt on it), there is debate about whether India is actively developing hypersonic capabilities. These efforts build on earlier groundwork, the *Shaurya* hypersonic-capable missile tested in 2020.<sup>14</sup> The Hypersonic

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<sup>11</sup> Michael Damiani. “Rise of the Killer Robots: Ethical Quandaries in Autonomous Warfare.” In *Ethics in the Age of AI: Navigating Politics and Security*, edited by Jonathan Reed and Sofia Mehta, (New York: Routledge, 2025), pp. 227–45.

<sup>12</sup> DefenceStories. “Project Vishnu: Mach 8–10 Missile with Stealth Manoeuvrability Puts India Among Hypersonic Elite.” July 20, 2025. Accessed August 26, 2025. <https://defencestories.com/2025/07/20/project-vishnu-mach-8-10-missile-with-stealth-manoeuvrability-puts-india-among-hypersonic-elite-how-et-ldhcm-can-be-a-gamechanger/>.

<sup>13</sup> “India Today. “India Tests Scramjet Engine for Over 1,000 Seconds Hypersonic Technology Leap – DRDO,” April 25, 2025. Accessed August 23, 2025. <https://www.indiatoday.in/india/story/india-tests-scramjet-engine-for-over-1000-seconds-hypersonic-technology-leap-drdo-2715275-2025-04-25>

<sup>14</sup> The New Indian Express. “India Successfully Test Fires Nuclear-Capable Hypersonic Missile Shaurya.” October 3, 2020. Accessed August 29, 2025. <https://www.newindianexpress.com/nation/2020/oct/03/india-successfully-test-fires-nuclear-capable-hypersonic-missile-shaurya-2205284.html>

Technology Demonstrator Vehicle (HSTDV) was tested in 2019-2020,<sup>15</sup> and the upcoming BrahMos-II is under development.<sup>16</sup> Hypersonic missiles, which can carry either conventional or nuclear warheads, are a game-changing addition to India's arsenal due to their speed, manoeuvrability, and low flight altitude. In the May 2025 conflict, even though no actual hypersonic weapons were present, the actions by the Indian Air Force were a precursor to similar ideas, the Indian Air Force nearly simultaneously fired cruise missiles at multiple Pakistani air bases and employed drones to conduct as Suppression of Enemy Air Defenses (SEAD) strikes.<sup>17</sup> The inclusion of hypersonic delivery systems would further enhance this change in doctrine to lightning offenses. But the consequences to stability are catastrophic, in just several minutes or even seconds, strikes drastically widen the decision window of an opponent. A hypersonic attack state may perceive pressure to use or lose its strategic assets, such as nuclear forces, rather than risk being destroyed, thereby creating significant escalation pressure.

In parallel with offensive systems, India has been investing in defensive technologies. Chief among these is India's multi-tiered Ballistic Missile Defense (BMD)<sup>18</sup> program. India has, since the 2000s, tested various types of BMD interceptors (the Prithvi Air Defense/Pradyumna and

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<sup>15</sup> Defence News India (Defence.in). "DRDO's Updated Hypersonic Technology Demonstrator Vehicle Showcases Critical New Design Refinements Since Its 2020 Flight Test." August 11, 2025. Accessed August 29, 2025. <https://defence.in/threads/drdo-updated-hypersonic-technology-demonstrator-vehicle-showcases-critical-new-design-refinements-since-its-2020-flight-test.15206/>.

<sup>16</sup> Defense Feeds. "BrahMos Cruise Missile: The Ultimate Weapon in India's Arsenal." April 30, 2025. Accessed September 1, 2025. <https://defensefeeds.com/military-tech/air-force/cruise-missiles/brahmos-cruise-missile/>.

<sup>17</sup> War Wings Daily. "Understanding the SEAD/DEAD Missions of Modern Fighter Jets." Published June 2024. Accessed August 28, 2025. <https://warwingsdaily.com/understanding-the-sead-dead-missions-of-modern-fighter-jets>.

<sup>18</sup> Rahul B. Wankhede. "Evolution of India's Ballistic Missile Defence Program: Prospects and Challenges." *Journal of the United Service Institution of India*, Vol. 153, No. 634 (2023), pp. 75–98.

Advanced Air Defense/Ashwin systems) for high- and low-altitude interception.<sup>19</sup> It is rolling out a two-layer defense around large cities (Delhi and Mumbai first, and then others) and spreading to more cities. India's acquisition of the Russian S-400 air defense system in late 2021 has also significantly increased its air defense and anti-missile capabilities. By 2025, these systems were integrated into a layered air defense network. The Indian defense technological growth, up to the extent of shield construction, is only a threat that shield building will trigger a retaliatory war, lowering the nuclear threshold by diminishing the guarantee of a second strike.

India has an elaborate network of reconnaissance and communication satellites that has enhanced its situational awareness and ability to track troop movements, missile launches, and other military activities in real time. In 2019, India displayed a demonstration of an Anti-Satellite (ASAT)<sup>20</sup> one by launching a shot at one of its satellites in low orbit. This test signalled India's entry into the club of space warfare-capable nations. Although India described the ASAT test as a deterrence measure (codenamed "Mission Shakti"<sup>21</sup>) not directed against any specific country, its implications for Pakistan are evident. In a conflict, India could potentially target or jam Pakistan's limited satellite assets (or even those Pakistan might lease or borrow, perhaps from China) to blind Islamabad's

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<sup>19</sup> Rahul B Wankhede, "Evolution of India's Ballistic Missile Defence Program" *Journal of the United Service Institution of India*, Vol. CLIII, No. 634, (October-December 2023), pp. 538-548, <https://usiofindia.org/pdf/USI%20Journal%20-%20Oct-Dec%202023-70-80.pdf#:~:text=%40Wankhede%20Rahul%20Bhojraj%20is%20an,Engineering%20Ambassador%20at%20Isha%20Foundation.&text=Evolution%20of%20India's%20Ballistic%20Missile,Prospect%20and%20Challenges>.

<sup>20</sup> Dimitrios Stroikos, "Still Lost in Space? Understanding China and India's Anti-Satellite Tests through an Eclectic Approach," *Astropolitics*, Vol. 21, No. 2 (2023), pp. 179-205.

<sup>21</sup> Ranjan Kumar Srivastava and Yug Raman Srivastava. "Militarization of Space: Reconciling Anti-Satellite Testing with the Outer Space Treaty Framework." *Lex ad Coelum*, Vol. 5, No. 1 (2025), pp. 45-68.

early-warning or communications networks. The necessity of agreements to prevent a space arms race in South Asia has been frequently voiced by Pakistani analysts, especially since any interference with nuclear command-and-control satellites or surveillance assets could lead to dangerous misunderstandings. For instance, a sudden loss of communication satellites could be misinterpreted by a nuclear-armed state as the prelude to an attack on its nuclear forces, prompting rash moves.

India's cyber command (established in 2019).<sup>22</sup> And various signals intelligence units are reportedly able to conduct intrusion and disruption operations against adversary networks. This may involve hacking, jamming, or sabotage of command-and-control systems or vital infrastructure. In recent years, cyber espionage and two-way attacks have been alleged. Cyber warfare is a grey area in terms of deterrence stability because cyber operations may take place during what is considered peacetime, even when something is happening. The greatest fear is that, in the event of a cyber-attack, an attack on nuclear command networks could spoof early warning systems or block control of the national leadership, leading to an inadvertent escalation. To take one example, when radar systems are compromised to display false missile launches, one side may leap into retaliatory launch preparations in response to imaginary attacks. The opaque nature of cyberspace makes it hard to establish clear red lines or signalling, thereby impeding nuclear signalling capabilities and potentially increasing the risk of miscalculation in the region.

The net effect of India's embrace of these disruptive technologies is a shift in its military doctrine towards what might be termed a strategy of

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<sup>22</sup> B. Poornima, "Cyber Threats and Nuclear Security in India," *Journal of Asian Security and International Affairs*, Vol. 9, No. 2 (2022), pp. 183-206.

rapid, precise, and limited offensives. Indian defense planners appear increasingly confident that with superior technology, they can manage escalation, striking quickly to impose costs on Pakistan (for example, in response to a terrorist attack) while using defenses and diplomacy to contain the conflict. In the Indian narrative, this is to strengthen deterrence by punishing the provocateur and thus dissuading future aggression. Indeed, Indian commentators often cite the absence of full-scale war after 2019 as evidence that such “deterrent” strikes can be undertaken without courting nuclear disaster. However, from Pakistan’s perspective, these very capabilities and doctrinal shifts are deeply destabilizing. Pakistan sees India’s new technological prowess as undermining the logic of mutual deterrence and potentially giving India tools to attempt a disarming first strike or a retaliatory action.

### **Pakistan’s Response: Adaptive Deterrence and Niche Capabilities**

Pakistan’s National Command Authority has repeatedly emphasized that its nuclear deterrent must remain “credible” and cover “the full spectrum of threat”. In practical terms, this has led Islamabad to diversify its nuclear arsenal in terms of ranges and yields. Since 2011, Pakistan tested and deployed the Nasr/Hatf-9 LYNW (range 60-70 km) that can carry a low-yield nuclear warhead<sup>23</sup>, intended explicitly to deter Indian armoured thrusts on Pakistani territory by threatening battlefield use. On the other end of the spectrum, Pakistan in 2015 tested the Shaheen-III missile (range

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<sup>23</sup> Hans M. Kristensen, Matt Korda, Eliana Johns, and Mackenzie Knight-Boyle, “Pakistan Nuclear Weapons, 2025,” *Bulletin of the Atomic Scientists*, Vol. 81, No. 5 (2025), pp. 386-408.

2,750 km)<sup>24</sup> to ensure it could reach India's extremities (such as the distant Nicobar Islands or even putative targets beyond India, though Pakistan insists the range is capped only to cover all of India). Perhaps most significantly in light of India's tech trend, Pakistan has pursued Multiple Independently Targetable Reentry Vehicle (MIRV) technology with the Ababeel missile. First tested in 2017 and again in 2023, the Ababeel<sup>25</sup> is designed to carry multiple warheads that can independently manoeuvre and strike separate targets. The official rationale is unmistakable: MIRVs are one of Pakistan's effective measures against Indian BMD, intended to ensure that enough warheads can penetrate any missile shield and thus keep India's population and critical targets vulnerable to retaliation. Pakistani officials openly explained that Ababeel was developed to "ensure the survivability of Pakistan's ballistic missiles" and to "neutralize the threat" posed by India's missile defenses.<sup>26</sup> Pakistan is plugging gaps in its nuclear deterrent to counter India's technological moves, be it tactical nukes to counter conventional invasion, or MIRVs and perhaps decoys to counter missile defense. These developments, while presented as stabilizing from Pakistan's view (restoring effective deterrence), understandably raise concerns internationally about lowered nuclear use thresholds and arms racing.

Despite Pakistan's reliance on nuclear weapons as the ultimate guarantor, it also recognizes the need to maintain robust conventional

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<sup>24</sup> *The Nation* (Pakistan). "Pakistan Conducts Successful Test of 2,750 km-Range Ballistic Missile Shaheen-III." December 11, 2015. Accessed August 28, 2025. <https://www.nation.com.pk/11-Dec-2015/pakistan-conducts-successful-test-of-2-750-km-range-ballistic-missile-shaheen-iii>.

<sup>25</sup> Usman Ansari. "Pakistan Test-Fires Ababeel Nuclear Missile." *Defense News*, October 21, 2023. Accessed August 28, 2025. <https://www.defensenews.com/global/asia-pacific/2023/10/21/pakistan-test-fires-ababeel-nuclear-missile/>.

<sup>26</sup> Kamran Yousaf. "Ababeel to 'Neutralise India's Defence Shield'." *The Express Tribune*, January 25, 2017. Accessed September 1, 2025. <https://tribune.com.pk/story/1306241/ababeel-neutralise-indias-defence-shield>.

capabilities to deter or defeat limited Indian attacks at sub-nuclear levels. Pakistan has invested in improving its air and missile defense systems and its precision-strike options, albeit on a smaller scale than India. For example, Pakistan has acquired several batteries of the Chinese HQ-9 long-range surface-to-air missile system (the export variant is known as FD-2000)<sup>27</sup>, which is roughly analogous to the S-300 and provides area air defense. In the 2025 conflict, there were indications that Pakistani air defenses, potentially including the HQ-9, succeeded in downing multiple Indian aircraft on May 7 when India launched Operation Sindoor. Debris of Chinese-made PL-15 long-range air-to-air missiles was found in India<sup>28</sup>, confirming that Pakistan's JF-17 and J-10 fighter jets (equipped with these radar-guided missiles) were used to contest India's incursions. The apparent shooting down of at least seven Indian fighter jets by Pakistani defenders came as a surprise. It served as a potent reminder that Pakistan's military, though smaller in size vis-à-vis India, can still impose costs on a technologically superior India. Additionally, Pakistan has developed the Fatah-I and Fatah-II guided rockets (sometimes classified as short-range ballistic missiles) for conventional precision strikes at roughly 100-150km range.<sup>29</sup> Notably, during the May 2025 skirmishes, Pakistan for the first time employed conventionally armed ballistic missiles against Indian targets (using Fatah missiles), although these caused limited damage. By demonstrating the capability to deliver precision conventional strikes (akin to India's stand-off strikes), Pakistan

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<sup>27</sup> *Military Watch Magazine*. "Pakistan's HQ-9P Complicates Indian Operations." Published August 2025. Accessed September 1, 2025. <https://militarywatchmagazine.com/article/pakistans-hq9p-complicate-indian-operations>.

<sup>28</sup> Naveed Ahmed Malik, "Flames Across the Line: A Strategic and Tactical Analysis of the May 2025 India-Pakistan Conflict," *Annals of Human and Social Sciences*, Vol.6, No. 3 (2025), pp. 1-16.

<sup>29</sup> Dawn, "Pakistan Tests Launch of 120 km-Range Fatah Missile: ISPR." May 5, 2025. Accessed September 2, 2025. <https://www.dawn.com/news/1908595>.

aimed to bolster conventional deterrence, signalling that any Indian attack would be met with an in-kind response.

Pakistan has been working to secure a credible second-strike capability, i.e., the ability to retaliate with nuclear weapons even if its land-based arsenal were compromised. This has led to efforts to develop a sea-based deterrent. Pakistan's Naval Strategic Forces Command has been outfitting diesel-electric submarines (augmented by the forthcoming Chinese-built Hangor-class subs) to carry nuclear-capable cruise missiles. The Babur-III, an indigenously developed submarine-launched cruise missile (range 450 km), was test-fired in 2017 and again in subsequent years, intended for deployment on Pakistan's Agosta-90B submarines.<sup>30</sup> While this capability is still maturing, the very pursuit of an undersea deterrent reflects Pakistan's determination not to allow India to acquire a decapitating first-strike capability. If India's surveillance and precision targeting improve to the point of threatening Pakistan's land-based missiles, Pakistan wants a portion of its deterrent hiding underwater as an insurance policy. Of course, a nascent sea-leg also introduces new risks, such as command-and-control issues over submarine-based weapons and the dangers of maritime accidents. Nevertheless, Pakistan appears willing to manage those risks in exchange for a more secure retaliatory force.

Pakistan has leaned on strategic partnerships (primarily with China) to offset India's tech advantages. Many of Pakistan's advanced systems are sourced from or developed in collaboration with Beijing. Examples include air defense systems (HQ-9), fighter jets (JF-17 co-developed with China, and potential future acquisition of Chinese stealth fighters like the

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<sup>30</sup> Saira Bano, "Beneath the Waves: Regional Strategic Implications of India's Nuclear Submarines," *Georgetown Journal of International Affairs*, Vol. 26, No. 1 (2025), pp. 202-210.

J-35), and drones (Pakistan has acquired Chinese combat drones such as the CH-4). The aid contributes to Pakistan's ability to deploy capabilities it alone would not have been able to build. Additionally, Pakistan will rely on Chinese diplomatic support (or at least counterbalancing) and early intervention of actors such as the US to reduce crises. Examples include China and the US both putting pressure on India to restrain as early as 2025. On May 7, 2025, the foreign ministry of China issued a statement advising both sides to exercise restraint and specifically asked India not to take the campaign too far.<sup>31</sup> The ceasefire was finally negotiated through the US emissaries. It is a two-edged sword because, although such international involvement can prevent conflicts, it can also lead to risk-taking when leaders in New Delhi or Islamabad feel that a third party will intervene before the situation escalates into nuclear war. It is recorded that Indian decision-makers were betting on American intervention to restrict the response of the Pakistanis in 2019 and 2025, thus further emboldening their initial attacks. With this calculus in mind, Pakistan has been attempting to internationalize crises as soon as an opportunity arises, hoping to gain diplomatic support to counter the Indian narrative and deliver a word of caution to New Delhi.

With India shifting to disruptive technologies to propel its development, Pakistan has countered by doubling down on its deterrence strategy by integrating innovation with discipline. Its full-spectrum deterrence has also been tailored to new realities, with capabilities (MIRVs, tactical LYNWs, improved air defenses) that respond directly to India's

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<sup>31</sup> Ministry of Foreign Affairs of the People's Republic of China. "Foreign Ministry Spokesperson's Remarks on Regional Security Developments." May 11, 2025. Accessed September 3, 2025. [https://www.mfa.gov.cn/eng/wjzbzd/202505/t20250511\\_11618796.html](https://www.mfa.gov.cn/eng/wjzbzd/202505/t20250511_11618796.html). and Ministry of Foreign Affairs of the People's Republic of China. "Wang Yi Has a Phone Call with Indian National Security Advisor Ajit Doval." May 11, 2025. Accessed September 3, 2025. [https://www.fmprc.gov.cn/mfa\\_eng/wjzbzd/202505/t20250511\\_11618797.html](https://www.fmprc.gov.cn/mfa_eng/wjzbzd/202505/t20250511_11618797.html).

technological changes. In the meantime, it has also attempted to demonstrate how one may handle a crisis responsibly to avert an uncontrollable escalation. Whether such measures will suffice to achieve a stable situation in the long run remains to be seen. The risk is that with India progressing more and possibly thinking that the deterrent of Pakistan can be overcome, it will proceed to fill in more and more of the pressure points and more and more of the barriers, and the two parties will move into a vicious circle of escalatory action using shorter and shorter fuses. This future is viewed through the lens of the May 2025 crisis, which is discussed further below regarding how stable (or unstable) the situation would be in the new technological wave.

### **The May 2025 Standoff: A Case Study of Tech-Driven Escalation**

The May 2025 standoff, which was framed by India and dubbed as Operation Sindoor, is a strong example of how disruptive technologies are transforming the nature of crises in South Asia. The crisis gained rapid momentum when triggered by the Pahalgam attack on April 22.<sup>32</sup> India alleged that a Pakistan-based group carried it out. India launched coordinated stand-off attacks on May 7 using SCALP cruise missiles, BrahMos salvos, and loitering munitions.<sup>33</sup> The declared purpose of New Delhi was restraint; both military and civilian targets have been avoided, but the actual act violated some threshold. It was the first time India used cruise missiles to strike targets located in the very depths of Pakistan. The

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<sup>32</sup> Moeed W. Yusuf, "Brokered Bargaining in Nuclear South Asia: US Mediation in the India-Pakistan Pahalgam Crisis," *Arms Control Today*, Vol. 55, No. 6 (2025), pp. 14-18.

<sup>33</sup> Christopher Clary. "Four Days in May: The India-Pakistan Crisis of 2025." Stimson Center, May 28, 2025. Accessed September 4, 2025. <https://www.stimson.org/2025/four-days-in-may-the-india-pakistan-crisis-of-2025/>.

immediate military response to the attack by Pakistan, such as shooting down Indian planes and deploying its layered air defense system, showed that its integrated system, relying on airborne early warning, Chinese radars, long-range PL-15, and HQ-9 batteries, could be costly even to deal with well-developed systems such as the Rafale. This strengthened Islamabad's argument that deterrence through denial remained effective, even amid India's technological modernization.

The conflict was expanding fast. The measured retaliation by Pakistan on May 7-8, when armed drones and precision rockets were used to hit Indian brigade headquarters and logistics bases, and artillery was exchanged along the Line of Control. On May 9, India stepped up to strikes on Pakistani airbases, having changed the strategy to disarm Pakistan's SAMs with anti-radiation drones<sup>34</sup>. On May 10, Islamabad declared 'Operation Bunyan-ul-Marsus.'<sup>35</sup>, where it would strike Indian airbases. The crisis thereby transformed into a technologically dominated standoff military crisis that was characterized by drones, cruise missiles, and combined air defenses instead of in-depth penetration raids by manned planes. Both nations tested new systems during actual combat, Rafales using Meteor missiles against Pakistani J-10s using everes, Indian S-400s against Pakistani drones, and loitering munitions against mobile SAMs. The mixed results validated the promise and limits of disruptive capabilities.

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<sup>34</sup> Clary, "Four Days in May: The India-Pakistan Crisis of 2025."

<sup>35</sup> Abid Hussain. "Pakistan Launches Operation Bunyan Marsoos: What We Know So Far." *Al Jazeera*, May 10, 2025. Accessed September 9, 2025. <https://www.aljazeera.com/news/2025/5/10/pakistan-launches-operation-bunyan-marsoos-what-we-know-so-far>.

As far as Pakistan is concerned, the episode highlighted three realities. First, denial and survivability are much more important than prestige acquisitions. Air defense resilience, distributed basing, and credible strike-back options enabled Islamabad to neutralize India's technological advantage and maintain operational credibility. Second, control of the escalation is not hardware-integrated. High-tech warfare shortened the time anyone had to make decisions; leaders on either side of the front had minutes to evaluate attacks, not hours, and risked poor interpretation and inadvertent aggravation. Third, diplomacy and restraint rather than stability, which exists due to disruptive technologies. Neither party openly declared nuclear threats, and both accepted a ceasefire under heavy pressure by May 10 by the US, China, and multilaterally. In the eyes of the Pakistanis, its measured response and political sophistication helped avoid the outbreak of a larger war. In contrast, India's brinkmanship through targeted strikes came close to catastrophe in the region.

Afterwards, India asserted that it had shown it could wield limited war under the nuclear umbrella, disrupting militant infrastructure without resorting to nuclear build-up. Pakistan highlighted that deterrence was re-established, as the Indian strike was not unanswered and its high-technology systems were not untested. However, according to neutral observers, there was a risk of misperception: India overestimated Pakistan's air defenses and used disinformation, complicating real-time evaluation. The moral is evident: not the acquisition of disruptive technology by India, but the moderation of Pakistan has helped maintain deterrence stability in South Asia.

## **Restoring Stability: Confidence-Building and Arms Control in the Tech Era**

As the preceding analysis has shown, the rapid militarization of AI, autonomous systems, hypersonic missiles, and other disruptive technologies is straining the traditional deterrence stability in South Asia. The logical conclusion is that, without intervention in the form of confidence-building measures and arms control initiatives, the region risks “sleepwalking” into a conflict in which control over escalation is tenuous, and outcomes are unpredictable. Despite its smaller size, Pakistan has a vital interest in championing such stability measures. Historically, Pakistan has often been the proposer of regional risk-reduction accords, from its proposal of a South Asian Nuclear Weapon-Free Zone in the 1970s<sup>36</sup> to more recent offers of mutual nuclear test bans and non-aggression pacts. Building on that legacy, Islamabad can take the diplomatic lead in advocating new agreements tailored to the emerging technological threats. Of course, unilateral efforts will not suffice; India’s participation and a degree of mutual trust are necessary. Nonetheless, Pakistan’s credible commitment to strategic restraint and stability can set a tone that garners international support and puts moral pressure on New Delhi to reciprocate. Here are several measures and initiatives that could collectively help avert a destabilizing arms race and miscalculation risk:

First and foremost, India and Pakistan need to resume sustained bilateral dialogue on security issues, which has stalled in recent years. Within such a framework, Pakistan could propose specific arms control arrangements addressing emergent technologies. For example, a bilateral agreement may

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<sup>36</sup> Mohd Amin Mir and Thseen Nazir, “South Asian Perspectives on the Nuclear Weapons Ban: Challenges and Prospects for Disarmament,” *Peace Review*, Vol. 36, No. 2 (2024), pp. 256-66.

be requested to reduce the installation or preparedness of destabilizing systems. A mutual moratorium on the use of hypersonic weapons and gliding vehicles is one idea, until the ramifications of hypersonic weapons are better comprehended or a global government is established. Given India's progress in testing, Pakistan alone cannot enforce this. However, by raising the issue in international fora (such as the Conference on Disarmament) and offering not to pursue hypersonic if India refrains as well, Pakistan can draw attention to the risk. Similarly, Pakistan may propose a capped range or scope for missile defense systems in the region, recognizing that unconstrained BMD threatens deterrence. This may include openness between the two regarding the capabilities of BMD and possibly a pact to avoid developing missile defense beyond point-defense of capitals. These are admittedly high-flying plans, and the Indian willingness to consume them is dubious. But by stating them, they will record Pakistan's position that unregulated technological competition is perilous and beckon the world powers to reflect on how to enable such an understanding.

Building on earlier agreements (like the 2007 Agreement on Reducing the Risk from Accidents relating to Nuclear Weapons), the two sides should update and expand risk-reduction protocols. It would be essential to have a more solid crisis communications channel as one of the critical measures. There is now an existing Director-General of Military Operations (DGMO) hotline, but it is a single circuit and may not be sufficient in complex circumstances. Hotlines between the air force and naval headquarters may be introduced, as there is now an actual necessity not to make miscalculations in the air and maritime fields. Pakistan might also seek to revive the pre-notification system on missile tests to cover new systems (including cruise missiles or extended-range SAM tests,

which are not well captured to date). A particularly novel idea is an agreement on non-deployment of nuclear weapons on autonomous platforms: essentially, both sides would commit that any use of nuclear weapons will remain under human control and not be pre-delegated to an AI or automated system. This could be a confidence-building measure to allay fears that a robot or computer glitch might start a nuclear war. While neither country likely has fully automated nuclear launch systems (and both would deny any intent to develop them), formalizing a “human control principle” in military AI use would be a globally welcomed step in line with emerging international norms.

Recognizing the severe instability that cyber warfare could introduce into the nuclear equation, Pakistan should propose a bilateral cybersecurity non-aggression pact focused on strategic assets. This pact would commit both countries to refrain from cyber operations against each other’s critical infrastructure that could be escalatory, particularly nuclear command-and-control systems, early-warning networks, or civilian nuclear facilities. Verification in cyberspace is tricky, but even a political understanding, perhaps with third-party mediation or an expert group to discuss incidents, could be valuable. Likewise, in the space domain, Pakistan might call for a joint declaration of “no first use” of anti-satellite weapons against each other. Since India has demonstrated an ASAT capability and Pakistan has not, this might appear asymmetric. Pakistan can frame it as a reciprocal measure where it pledges not to acquire or deploy ASAT weapons if India pledges not to use or further test them. Ensuring both sides maintain access to space-based communications during a crisis can help stability (by preventing paranoia or blind spots). Moreover, a ban on targeting each other’s satellites (especially those used for civilian communication or

meteorology) could be an achievable confidence-building step, as those are easily distinguishable from military spy satellites.

Given that AI integration is happening essentially behind closed doors, mistrust and fear of the unknown loom large. To mitigate this, Pakistan could invite India to engage in mutual exchanges or expert talks on military AI. For instance, the two countries' defense tech experts could hold technical discussions (perhaps initially in a Track-2 or Track-1.5 format) about which AI applications each is pursuing, and which safeguards are being considered. They could jointly develop norms such as no autonomous engagement without human override or agree to use AI primarily in defensive roles (e.g., early warning, logistics) rather than in launch decision systems. Confidence-building measures might include observer visits to each other's AI centers or military exercises to demonstrate that humans remain in the loop. Although such transparency is hard to achieve under deep mistrust, even minor measures, such as posting doctrines or white papers on the use of AI, could diminish misperceptions. Notably, the regional efforts can coincide with international ones: both Pakistan and India engage in the national discourse at the United Nations about LAWS (Lethal Autonomous Weapon Systems). They might also gain a regional understanding by adopting a shared position (such as a willingness to agree to some level of international regulation of autonomous weapons). Pakistan has been urging, in general, the prohibition of fully autonomous weapons; should it be possible to convince India at least that it is worth considering the need to keep human beings in charge of nuclear and strategic decisions, then the principle can be established regionally.

There is still a need for good old-fashioned confidence measures beyond high-tech weapons. The two parties might reinvigorate strategies, including the 1991 treaty not to attack one another's nuclear installations (perhaps not to attack power grids or dams, which cyber warfare may target). They may also establish crisis management offices or liaisons, similar to Cold War hotline teams, with the authority to demystify ambiguous developments within the military in real time. For instance, if one side conducts an extensive military exercise, a direct line could be used to reassure it is just an exercise. In the context of hypersonic flight, where flight time is very short, even a five-minute earlier warning can matter. As a goodwill gesture, pre-notifying specific missile launches (even if not required formally) can be lifesaving. Pakistan might unilaterally start providing advance notice of any ballistic missile test (even short-range) with a longer lead time than needed, to set a positive precedent.

In advocating these measures, Pakistan can leverage international forums and partners. It can encourage China, the US, and Russia (all of whom have interests in South Asian stability) to support or even mediate certain agreements. For example, the US and Western powers may provide incentives (such as access to technology or recognition) to India and Pakistan to mutually enforce conventions, such as the non-use of AI in nuclear command, or to sign international mechanisms for hypersonic regulation.

## **Conclusion**

The South Asian strategic environment is changing due to disruptive technologies, including AI, autonomous weapons, hypersonic missiles, and advanced air defences, which are reducing the speed at which

decisions can be made and blurring the distinction between the conventional and nuclear worlds. The benefit that India aims to gain from such capabilities is asymmetrical, and its attainment would undermine deterrence stability, create false confidence, and propagate pre-emptive doctrines. Pakistan has maintained credibility in its adaptive full-spectrum deterrence until the May 2025 crisis demonstrated how easily the situation could spiral out of control. The stability obtained through restraint and the intervention of outsiders cannot last indefinitely; once the institutional barricades are not put in place, the next crisis is that much harder to contain.

Pakistan is to pursue strategic restraint and selective modernization. The terms restraint and arms control proposal mean moderate crisis action and opening of arms control proposal, which places Islamabad in a favourable position as a responsible actor. Selective modernization implies investments in survivable second-strike systems, electronic warfare, and precision defenses to deny the opponent overmatch, and in making such investments visible and intelligible through stabilizing actions. This dual plan will dispel the claims that Pakistan is destabilizing and reverse the balance of the arms race with India. The incidence is that peace in South Asia should mean that technology is subordinate to strategy and that we should reassert ourselves to deterrence as war prevention. As one of the countries that will take the lead in the responsible application of new technologies, Pakistan will be able to avoid the catastrophic error and steer the region towards a win-win stability.