

CISS POLICY BRIEF

Growing Militarization of Outer Space: Implications for Strategic Stability of South Asia

Misbah Zainab*

Executive Summary

Outer space has transformed into a militarized zone and an emerging arena of geopolitics. Today, space militarization threatens space security and challenges deterrence stability by enhancing ISR capabilities, blurring the distinction between civilian and military targets through dual-use systems, and enabling the development and deployment of anti-satellite (ASAT) technology. As the major powers move towards space militarization, the geopolitical deadlock in international forums hinders the establishment of global space norms and legally binding agreements against space weaponization and an arms race. In South Asia, India's active pursuit of space militarization and utilization of outer space as a force multiplier in military operations undermines strategic stability in South Asia. It raises concerns about pre-emptive strikes, miscalculations, inadvertent escalation, and an arms race in outer space. Pakistan staunchly supports the peaceful uses of outer space and opposes space weaponization. Amidst the growing space militarization, Pakistan should continue to call for greater global collaboration for the establishment of space norms. Simultaneously, Pakistan should focus on improving defensive space-based systems to respond to any threats from outer space or space-based infrastructure, initiated by any country.

What is Space Militarization?

Militarization of space refers to the utilization of outer space technologies for military purposes. Satellite-based intelligence, surveillance, and reconnaissance (ISR) act as force multipliers that enhance land-, air-, or naval-based military operations. On the other hand, space weaponization signifies the development, deployment, testing, and use of offensive capabilities in orbit, including weapons capable of launching attacks from space or against space-based assets.¹

¹ UNIDIR, *Outer Space and Global Security* (Geneva: United Nations Institute for Disarmament Research, 2003), <https://unidir.org/files/publication/pdfs/outer-space-and-global-security-307.pdf>.

Space militarization incorporates a broad range of capabilities, including counterspace weapons, ballistic missile defense systems, satellite-based command and control systems, and dual-use capabilities.² Counterspace technologies aim to deny the enemy's access to space through kinetic and non-kinetic means.³ Kinetic weapons include anti-satellite (ASATs) that can physically destroy the satellite, while non-kinetic capabilities include cyberattacks, jamming, spoofing, use of lasers, and electronic warfare to impair satellite operations. Space weaponization comprises three categories: Earth-to-space, space-to-space, and space-to-Earth.⁴

Satellites are widely used for both civilian and military purposes. Civilian uses include Earth observation, scientific research, navigation, and communication. The military applications include ISR, precision targeting, missile detection, and early warning and defense systems.⁵ Counterspace operations can destroy, disrupt, or disable any satellite's normal functioning, regardless of whether it serves military or non-military purposes. ASAT testing disrupts satellite operations by creating space debris and blocking paths.

Global Trends in Space Militarization

The growing trend of space militarization is a result of the intertwining of geopolitics and technology. States are readily moving towards space weaponization through the deployment of destructive capabilities, while protecting their own space-based assets.⁶

The Soviet Union's launch of its satellite Sputnik into space in 1957 raised concerns for the United States (US), including the possibility of the deployment of nuclear capabilities in space. ASAT weapons were first tested by the US in 1959 through the air-launched ballistic missile Bold Orion, specifically designed to target satellites in Low Earth Orbit (LEO). Later in 1962, the US

² Pravesh R, "Space Militarization and Anti-Satellite (ASAT) Weapons," *International Journal of Research* 12, no. 12 (2025): 381–90, <https://doi.org/10.5281/zenodo.18036342>.

³ Francesco Milner, "The Security Implications of Space Militarisation," JASON Institute for Peace and Security Studies, April 21, 2025, <https://jasoninstitute.com/sunday-read-the-security-implications-of-space-militarisation/>.

⁴ Anna Schumann, "Fact Sheet: Space Weapons," Center for Arms Control and Non-Proliferation, November 15, 2023, <https://armscontrolcenter.org/fact-sheet-space-weapons/>.

⁵ Danilo delle Fave, "The Challenges of Dual-Use Space Technologies: The Non-Peaceful Use of Satellites," Space Generation Advisory Council, April 14, 2023, <https://spacegeneration.org/the-challenges-of-dual-use-space-technologies-the-non-peaceful-use-of-satellites>.

⁶ Sardar Jahanzaib Ghalib, *The Weaponization of Space: Global Trends, National Perspectives, and Legal Implications*, Issue Brief (Islamabad: Institute of Strategic Studies Islamabad [ISSI], August 13, 2024), 1, https://issi.org.pk/wp-content/uploads/2024/08/IB_Jahanzaib_Aug_13_2024.pdf

conducted a high-altitude nuclear test, approximately 400 km above ground, which led to the 1963 Partial Test Ban Treaty (PTBT) that outlawed nuclear testing in space. In 1967, the Outer Space Treaty entered into force, banning the placement of nuclear weapons and WMDs in orbit and on celestial bodies, but was unable to address the placement of ASAT and counter-space weapons.⁷

From the 1960s to 80s, the Soviet Union established co-orbital ASATs, while the US developed kinetic energy anti-satellite (KE-ASAT), which it tested in 1985 and 2008. China tested its KE-ASAT capabilities in 2007 and 2013. In 2019, India conducted Mission Shakti, demonstrating its ASAT capability and becoming one of the four nations with destructive space capabilities. Russia also conducted DA-ASAT tests in 2021.⁸

Modern warfare relies heavily on space capabilities, and the use of space-based technologies during active conflicts has intensified. For instance, Russia conducted a cyberattack against the US satellite company Viasat to disrupt Ukraine's communications. Recent developments like the establishment of the US Space Force and space-based defense systems, such as the Golden Dome, with advanced and multi-layered sensors and interceptors, can fuel a global arms race in space, increasing the risk of war that extends beyond Earth's surface.⁹

Contemporarily, the four states with ASATs are actively investing in space infrastructure and advanced capabilities, especially dual-use systems. Such systems blur the line between peaceful and military intent. This creates a technological security dilemma and a heightened threat perception, fueling strategic instability.

Deadlock in Global Space Governance

The existing frameworks on outer space governance, including the 1959 Committee on the Peaceful Uses of Outer Space (COPUOS), 1967 Outer Space Treaty, and the 1979 Moon Agreement, prohibit the deployment of WMDs in space. These are inadequate to address the growing space militarization because they don't address the deployment of conventional

⁷ Todd Harrison et al., "The Evolution of Space as a Contested Domain," *SpaceNews*, October 9, 2017, https://aerospace.csis.org/wp-content/uploads/2018/01/Harrison_SpaceNews.pdf.

⁸ Fazal Abbas Awan and Umbreen Javaid, "Space Militarization Race among China-Russia and USA: Implications for South Asia," *South Asian Studies* 35, no. 1 (January–June 2020): 87–100, https://pu.edu.pk/images/journal/csas/PDF/6_35_1_20.pdf.

⁹ William J. Astore, "The Militarization of Space Threatens Us All," *New Internationalist*, accessed August 20, 2026, <https://newint.org/science-and-technology/2026/militarization-space-threatens-us-all>.

capabilities, dual-use systems, and ASAT weapons in space. These frameworks also lack an enforcement and verification mechanism, limiting their effectiveness. Unfortunately, so far there is no global consensus on the definition of space weaponization and the capabilities that fall under the category, which creates loopholes that states exploit in order to achieve their military and commercial objectives in space.¹⁰

Moreover, geopolitical competition has caused a prolonged deadlock in global space governance. Negotiations on Preventing an Arms Race in Outer Space (PAROS) in the Conference of Disarmament (CD) have been ineffective at producing any substantial results. The Treaty on Prevention of the Placement of Weapons in Outer Space (PPWT) was suggested by China and Russia but opposed by the US. Similarly, in 2022, the UN General Assembly passed a US-backed resolution, supported by 155 states, against ASAT testing, which was not supported by China, Russia, and India. In 2024, the US proposed a UNSC resolution to reaffirm commitment under OST, rejected by China and Russia, and India abstained. The limited progress on global forums reflects that states with counterspace capabilities are unwilling to accept mechanisms that limit their tech advancement and military objectives.¹¹

The increasing commercialization of space without any global regulations presents new challenges to strategic stability. Furthermore, the involvement of private actors like Blue Origin and SpaceX creates transparency and accountability issues that none of the existing frameworks address. For instance, Starlink's active involvement in providing communication services during the Russia-Ukraine war shows how civilian infrastructure can become military assets in conflicts.¹²

¹⁰ Victoria Samson and Brian Weeden, "Enhancing Space Security: Time for Legally Binding Measures," *Arms Control Today* 50, no. 10 (December 2020), <https://www.armscontrol.org/act/2020-12/features/enhancing-space-security-time-legally-binding-measures>.

¹¹ David C. DeFrieze, "Defining and Regulating the Weaponization of Space," *Joint Force Quarterly* 74 (3rd Quarter 2014): 110–15, https://ndupress.ndu.edu/Portals/68/Documents/jfq/jfq-74/jfq-74_110-115_DeFrieze.pdf.

¹² "Starlink and Modern Conflict: When Does Civil Infrastructure Become a Military Asset?," *New Space Economy*, April 5, 2026, <https://newspaceeconomy.ca/2026/04/05/starlink-and-modern-conflict-when-does-civil-infrastructure-become-a-military-asset/>.

Space Militarization in the South Asian Context

India's Space Militarization Endeavors

In 2016, the Defense Research and Development Organization (DRDO) approved project XSV-1 to develop an advanced ASAT. India tested its KE-ASAT capability on 27 March 2019 by destroying a satellite in Low Earth Orbit using a ballistic missile. India's space weaponization has accentuated the Indian military's warfighting capability through the development of ASATs, the deployment of dual-use satellites, and BMD systems. These capabilities enhance precision strike capabilities and satellite-based C4ISR.¹³

India has 26 military satellites, out of which 15 are dedicated to ISR.¹⁴ Through counter-space technologies, India aims to establish a strategic edge over adversaries and demonstrate its so-called great power aspiration. It has developed dedicated military surveillance satellites specifically to cover its borders with Pakistan and China.¹⁵

India's MIRV capabilities can also be utilized in counter-space operations. It can place co-orbital ASATs or launch kinetic-kill vehicles (KKVs) using MIRV technologies.¹⁶ India has also invested in non-kinetic counterspace capabilities, including jamming systems, Directed Energy Weapons (DEWs), and electronic warfare that can disrupt communication and navigation systems. In the 2025 India-Pakistan standoff, Indian sources claim to have used military and commercial satellite imagery in operations against Pakistan.¹⁷

India has also diversified its collaboration with international partners in space technologies. In 2018, the US granted Strategic Trade Authorization (STA-1) to India, facilitating the trade of dual-

¹³ Beenish Sultan, "India's Outer Space Weaponization and Deterrence in South Asia: A Prism of Stability-Instability Paradox," *BTTN Journal* 4, no. 2 (2025): 64–93, <https://doi.org/10.61732/bj.v4i2.235>.

¹⁴ Fazal Abbas Awan, "Space Security and South Asia: A Critical Evaluation of Prevention of Arms Race in Outer Space (PAROS) and Emerging Threats," *Social Sciences Spectrum* 5, no. 2 (2026): 48–69, <https://doi.org/10.71085/sss.05.02.513>.

¹⁵ "Eyes in the Sky: ISRO's RISAT-1B to Boost Border Surveillance against Infiltration Even during Bad Weather," *ETV Bharat*, May 12, 2025, <https://www.etvbharat.com/en/!technology/eyes-in-the-sky-isros-risat-1b-to-boost-border-surveillance-against-infiltration-enn25051203248>.

¹⁶ Maryyum Masood, "India's MIRV Development – A Latent Counter-space Capability," Center for International Strategic Studies, September 19, 2024, <https://ciiss.org.pk/indias-mirv-development-a-latent-counter-space-capability/>.

¹⁷ DH Web Desk, "Operation Sindoor | India Used Domestic Space Assets, Foreign Satellites: Report," *Deccan Herald*, May 13, 2025, <https://www.deccanherald.com/india/jammu-and-kashmir/operation-sindoor-india-used-domestic-space-assets-foreign-satellites-report-3538549>.

use space technologies. Furthermore, in 2020, the two states signed the Basic Exchange and Cooperation Agreement (BECA) covering satellite-based intelligence sharing and geospatial information.¹⁸ Both states collaborate specifically for Space Situational Awareness (SSA).

India has collaborated with the QUAD Space Working Group since 2021, aiming to exchange satellite data and collaborate on shared domains including SSA and surveillance. India also utilizes Israel-made X-SAR technologies in its ISR satellites for imagery and remote sensing.¹⁹ Israel's dual-use surveillance TecSAR satellite, used for high-resolution military imagery, was launched by an Indian rocket in 2008.²⁰

Historically, India has shown a propensity to acquire dual-use technologies from allies and utilize them for military applications. A similar dynamic exists in the outer space domain. In the 1960s, the US provided space-related assistance to India through US Scout launch information, training, solid-fuel technology, and solid propellant production equipment. This contributed to the development of SLV-3, India's early space launch vehicle. India later adapted it into the Agni ballistic missile, demonstrating how dual-use launch systems can be transformed into military capabilities. Later, India developed the Polar Satellite Launch Vehicle (PSLV) using solid-fuel technology from the US, with reports that connect PSLV to India's proposed Surya Intercontinental Ballistic Missile (ICBM).²¹

India has adopted a contradictory and normative ambivalence approach to global space governance. Its decision to support US-led Artemis Accords deviated from its initial preference for multilateral frameworks. Despite this, India abstained from voting on US-backed resolutions on responsible behavior in space in 2022 and 2024. Furthermore, India supported PAROS and expressed reservations on voluntary norms. But in 2024, it supported TCBMs and voluntary norms without binding frameworks. This demonstrates that India only rhetorically supports global space

¹⁸ Zafar Nawaz Jaspal, "Investment in Space Warfare," *Pakistan Observer*, April 22, 2025, <https://pakobserver.net/investment-in-space-warfare/>.

¹⁹ Awan, "Space Security and South Asia".

²⁰ Abhijit Mishra, "India's Mission Shakti and the ASAT Balance in the Indo-Pacific," *StrikeOrbit*, June 9, 2026, <https://strikeorbit.com/india-mission-shakti-asat-indo-pacific/>.

²¹ Richard Speier, "U.S. Space Aid to India: On a 'Glide Path' to ICBM Trouble?," *Arms Control Today* 36, no. 2 (March 2006), <https://www.armscontrol.org/act/2006-03/features/us-space-aid-india-glide-path-icbm-trouble>.

governance, and contributes to and gains from the global deadlock by actively investing in space weaponization.²²

Pakistan's Stance on Space Militarization

Pakistan advocates for peaceful and responsible use of outer space, including weather monitoring, scientific research, communication, and commercial navigation. Pakistan is against space militarization and has expressed concern over its impacts on global strategic stability in international forums.

Pakistan demonstrates a peaceful posture in space. Its space agency SUPARCO has been working on the utilization of outer space for better agricultural planning, telecommunications, disaster and risk management, scientific research, and Earth observation. Pakistan's National Space Policy and satellites, including PRSS-1 and PAKSAT-1R, demonstrate the intention to utilize the outer space domain only for peaceful purposes.²³

Pakistan consistently advocates for developing space norms through consensus, which ensures non-militarization as well as equitable access to space. It supports PAROS and is a signatory to five key UN Treaties, i.e., Outer Space Treaty, Liability Convention, Rescue Agreement, Moon Agreement, and Registration Convention.²⁴ Pakistan stresses that the current voluntary regimes are not enough to fill the gap of a legally binding framework and supports the creation of a rules-based space governance model.

Pakistan participates in international forums like the Committee on the Peaceful Uses of Outer Space (COPUOS) and UN Group of Governmental Experts (GGEs) on PAROS to promote collective space security, arms control, and “No First Placement of Weapons in Outer Space”. It also recognizes the value of Transparency and Confidence-Building Measures (TCBMs) in space

²² Dimitrios Strokos, "India's Space Policy: Between Strategic Autonomy and Alignment With the United States," Council on Foreign Relations, June 5, 2025, <https://www.cfr.org/articles/indias-space-policy-between-strategic-autonomy-and-alignment-united-states>.

²³ Space and Upper Atmosphere Research Commission (SUPARCO), *National Space Policy* (Islamabad: Government of Pakistan, 2023), <https://suparco.gov.pk/wp-content/uploads/2024/01/National-Space-Policy.pdf>.

²⁴ Amna Saqib and Syed Ali Abbas, "Pakistan's Approach towards the Prevention of Arms Race of Outer Space (PAROS): Gaps in Global Space Governance," *Journal of Contemporary Studies* 14, no. 2 (2025): 22–43, <https://doi.org/10.54690/f943t267>.

to enhance predictability, info and knowledge sharing. However, it views TCBMs not as an alternative but rather as supplementary to legally binding agreements.²⁵

Pakistan neither possesses any ASAT weapons nor expresses any intention to develop them. Pakistan possesses MIRV capability but has never shown intent in its policies or technological capabilities to develop counter-space technologies. Unlike India, Pakistan's consistent advocacy of PAROS and other multilateral frameworks, along with practical restraint in developing destructive counter-space capabilities, reflects an effort to maintain regional strategic stability.

Implications for Strategic Stability of South Asia

In the South Asian context, the highly militarized environment, mutual mistrust, existing power asymmetries, lack of transparency in relations, and recurring crises augment the adverse implications of space militarization. Asymmetry in space capabilities gives India an edge in intelligence gathering, surveillance, and conducting counter-force strikes.²⁶

India's pursuit of ASAT and other counter-space technologies can disturb the delicate deterrence equilibrium of South Asia. During a crisis, India's space capabilities can disrupt Pakistan's command and control system, communication, and situational awareness. This weakens crisis stability because the threat of attack against C4ISR and early warning systems can shorten decision-making time during a crisis, creating incentives for pre-emptive actions.

Space-based ISR enhances the effectiveness and accuracy of India's counter-force capabilities by improving target identification and tracking through high-resolution imagery, enhancing battlefield surveillance, and monitoring military movements. India's space-based assets also support its Ballistic Missile Defense (BMD) systems. Satellite-based sensors assist in early detection of missile launches, followed by secure communication to relevant C2 networks and effective deployment of missile interceptors.²⁷

²⁵ Ministry of Foreign Affairs, Government of Pakistan, "Arms Control and Disarmament," accessed August 11, 2026, <https://mofa.gov.pk/arms-control-and-disarmament>.

²⁶ Awan and Javaid, "Space Militarization Race among China-Russia and USA"

²⁷ Akash Shah, "Deterrence under Surveillance: Indian Space-based ISR Capabilities and Pakistan's Nuclear Deterrence," *Journal of Security and Strategic Analyses* 8, no. 2 (2022): 7–26, <https://doi.org/10.57169/jssa.008.02.0201>.

India's pursuit of conventional and nuclear military modernization, combined with growing space-enabled precision strike capabilities, creates the perception of an indestructible military edge and incentives to strike first.²⁸ This undermines regional strategic stability and encourages an arms race and military modernization in both India and Pakistan.

Asymmetric space capabilities heighten the technological security dilemma, making India's space developments a security threat to Pakistan, especially given the deployment of dual-use systems, which increases the risk of miscalculation. In the absence of regional and global CBMs and arms control agreements governing outer space, the possibility of a regional arms race remains a persistent concern. Furthermore, space militarization can trigger the stability-instability paradox as outer space used as a force multiplier facilitates conventional standoffs by enabling counterforce, high-precision confrontation below the nuclear threshold.²⁹

Policy Recommendations

- The existing space governance framework, particularly the Outer Space Treaty, should be amended to categorize ASATs as space weapons.
- A new, comprehensive, multilateral, legally binding space governance framework should be concluded that addresses the legal loopholes of existing space frameworks, bans the placement of ASATs and counterspace technologies in outer space, and has a robust verification and enforcement system.
- In the absence of a legally binding global space framework, states should unilaterally refrain from testing ASATs.
- A new space governance framework could be formed which regulates the activities of commercial actors in space for increased transparency and accountability. Pakistan should continue to advocate for a comprehensive, legally binding outer space arms control agenda, maintaining its track record and diplomatic credibility on the issue by participating in COPUOS and PAROS negotiations.
- Given asymmetric vulnerability due to India's space militarization, Pakistan should ensure the defense of its space-based infrastructure by investing in non-kinetic space Counterspace capabilities to strengthen its defense posture.

²⁸ Ibid.

²⁹ Sultan. "India's Outer Space Weaponization and Deterrence in South Asia".

- Pakistan can invest in Space Situational Awareness capabilities, including ground-based systems that can be used for threat detection in orbit.
- Pakistan should broaden its cooperation with China for building defensive space infrastructure, especially SSA and ISR capabilities.
- The existing CBMs between India and Pakistan can be extended to the outer space domain, e.g., early notification of ASAT or counter-space-related testing, and hotlines for space-related incidents.
- Mini lateral and bilateral arrangements, through regional CBMs and more engagement between Global South states related to space accessibility on forums like SCO, can be an alternative to global space frameworks. Pakistan can take a lead in negotiations on such forums.

**Misbah Zainab is an MPhil scholar of International Relations at Quaid-i-Azam University, Islamabad, and an intern at the Center for International Strategic Studies (CISS), Islamabad*