SPACE: THE FINAL FRONTIER OF WARFARE?

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ABSTARCT

With Earth's natural resources depleting, space presents an untapped opportunity where historical motivations for expansion resurface in the pursuit of space dominance. This article delves into how the space has changed from a place of scientific exploration to a domain for potential warfare. It elaborates on the historical background of the beginning of the space race and then delves into the foundational international treaties that govern space activities. It highlights the lack of a comprehensive statute and the absence of effective enforcement mechanisms at both the domestic and international levels. It goes on to explain India's position and strategic stance when it comes to balancing international agreements and national interests. Ultimately, the article calls for the evolution of global norms and governance mechanisms to ensure that space remains a shared, sustainable, and conflict-free frontier.

Keywords: Space Law, OST Treaty, Indian Space Policy, Space Militarisation, International Cooperation

INTRODUCTION

"Earth is the cradle of humanity, but mankind cannot stay in the cradle forever." - Konstantin Tsiolkovsky[1]

This quote, penned by a visionary pioneer of space exploration, envisioned a future where humanity transcends its earthly confines to explore the cosmos. The boundless expanse of space, once a symbol of unity and peaceful exploration, is rapidly transforming into the next potential battleground. The space race ignited during the Cold War has transformed from a quest for scientific discovery and national prestige into a modern-day arms race. Nations, and even private companies, are vying for dominance in this "final frontier," raising concerns about the weaponisation of space and its potential consequences for humanity.

The Beginning of the Space Race

The launch of Sputnik 1 in 1957 triggered many legal questions relating to the definition and delimitation of Outer space, such as the rights of the states to pass through other state's territories in space, and liability for damages arising out of space activities. The space race, characterized by intense competition between the then two superpowers, the United States and the Soviet Union brought about rapid development in space exploration. The Soviets claimed the initial victories, launching the first satellite, Sputnik, into orbit and sending the first human, Yuri Gagarin, into space. However, the United States ultimately prevailed by landing humans on the Moon. Recognizing the potential for conflict and the need for cooperation, the international community established the United Nations Committee on the Peaceful Uses of Outer Space in 1959. This committee laid the groundwork for the 1967 Outer Space Treaty (OST), considered the "Magna Carta" of space law.[2] The treaty established key principles, declaring space as a global common open to all nations for peaceful exploration and use. Article IV of the OST prohibits the stationing of nuclear weapons or weapons of mass destruction in space.[3] Furthermore, the treaty stipulates that the moon and other celestial bodies should be used exclusively for peaceful purposes, aiming to maintain peace in the outer space

[1]Uri John, 'Space Station 20th: Historical Origins of ISS' (NASA, 23 August 2023) https://www.nasa.gov/history/space-station-20th-historical-origins-of-iss/ accessed 7 June 2025.
[2] Tim Robinson, 'Space Debris: The Legal Issues' (Royal Aeronautical Society, 3 January 2014) https://www.aerosociety.com/news/space-debris-the-legal-issues accessed 7 June 2025.
[3] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (adopted 27 January 1967, entered into force 10 October 1967) 610 UNTS 205 (Outer Space Treaty) art 4.

domain. However, the OST lacks regulations for Conventional weapons and Anti-satellite systems. Moreover, it lacks strong enforcement mechanisms, relying heavily on international cooperation and self-regulation by states.

The Global Trend of Space Militarisation

Militarisation involves the establishment of military personnel, equipment, and infrastructure in space to support military operations. In contrast, weaponisation means the active deployment of weapons in space itself.[4] Several countries have created units focused on space operations, such as the U.S. Space Force, which was formed in 2019. In that same year, India's Space Agency launched "Mission Shakti," demonstrating India's capability to launch an anti-satellite weapon (ASAT) and positioning itself as a potential space superpower. Other Countries, including Russia and China, have also boosted their military space capabilities. This ongoing trend of countries in space militarisation is likely to cause conflicts. The international treaties explicitly prohibit weapons of mass destruction (WMDs) in space but do not restrict conventional weapons.[5] Since the Term "peaceful purposes" is not defined within the Outer Space Treaty (OST), countries sometimes use this meaning to camouflage military activities in space under the guise of non-aggressive intent.[6] This loophole has allowed states to develop and deploy dual-use technologies and anti-satellite capabilities.[7] There is also no specific treaty prohibiting anti-satellite (ASATs) weapons despite their destructive potential. One of the reasons for the acceleration of the arms race could be the mutual mistrust among the nations. When one nation develops space capabilities, it is perceived as offensive by others, creating a continuous cycle of development and counter-development.

We often overlook how dependent we have become on space. our reliance on Satellites for GPS tracking, military surveillance and reconnaissance has become indispensable. A single attack on a nation's satellite would have a great impact on its economy and military capabilities. ASATs are anti-satellite weapons made to destroy or immobilise satellites. Such weapons could

[4] Richard Sheposh, 'Militarization of Space' (2025) EBSCO Research Starters https://www.ebsco.com/research-starters/military-history-and-science/militarization-space accessed 5 June 2025.
[5] Ibid
[6] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty) (1967), https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html accessed 7 June 2025.
[7] Haldor Mercado, '"Using the Force" Against "Rebel Scum": The Application of International Humanitarian Law in Outer Space Against Non-State Actors' (2025) 16(Online) Harvard National Security Journal https://harvardnsj.org/2025/03/24/using-the-force-against-rebel-scum-the-application-of-international-humanitarian-law-in-outer-space-against-non-state-actors/ accessed 8 June 2025.

bring about major disasters, chaos, and potentially lead to conflict in space. The 1962 detonation of Starfish Prime, the largest nuclear test in space, serves as a chilling reminder of the destructive potential of space-based weapons. [8]

Policies and Guidelines Governing India's Space Activities

India's space program began in 1962, with ISRO being established in 1969. Several governmental bodies and various policies and guidelines govern India's space sector. The Department of Space (DoS) sets overall policy, with key documents including the Indian Space Policy 2023, guidelines and procedures (NGP) issued by IN-SPACe, and older policies such as the Satellite Communication Policy 1997 and the Remote Sensing Data Policy (2011). The Awaited 'Draft Space Activities Bill, 2017' is yet to be enacted, creating a crucial legislative gap.

The Indian Space Policy 2023 provides a framework to promote and regulate the space activities of the country.[9] The policy clearly defines roles for the key players. The Department of Space (DoS) deals with strategic governance, handling policy formation, international cooperation, and dispute resolution. ISRO, India's premier space agency, focuses on research and developing technologies and sharing them with both private and government entities.[10] With IN-SPACe, it has become simpler for private companies to join space activities. It enables private companies to build launch vehicles and satellites, provides access to ISRO infrastructure, and supports the growth of new space facilities.[11] The authority over space at present comes from a government policy rather than law, therefore, there is an urgent call for the Space Activities Bill to be officially enacted. The Department of Space is the guardian of India's space interests. It ensures the activities are based on national priorities and the nation's

[8] Michael Miller, 'The Starfish Prime Nuclear Test: Illuminating the Sky and Shocking the World' (New Space Economy, 29 July 2024) https://newspaceeconomy.ca/2024/07/29/the-starfish-prime-nuclear-test-illuminating-the-sky-and-shocking-the-world/ accessed 8 June 2025.

[9] US Department of Commerce, 'India Commercial Space Sector' (Trade.gov, 27 September 2024) https://www.trade.gov/market-intelligence/india-commercial-space-sector accessed 8 June 2025.

[10] Indian Space Research Organisation (ISRO), 'Department of Space & ISRO HQ' (ISRO, 12 February 2024) https://www.isro.gov.in/DOS&ISROHQ.html accessed 8 June 2025.

[11] Indian National Space Promotion and Authorization Centre (IN-SPACe), 'Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities' (NGP, 2024) https://www.inspace.gov.in/sys_attachment.do?sys_id=5d532e37877102503b0f0d060cbb35cf accessed 8 June 2025.

international responsibilities. This centralised oversight is especially important given India's commitments under international treaties that govern space activities.

A major theme in India's current space policy is the strong push for private sector participation.[12] This policy allows for up to 100% foreign investment in less sensitive areas, thereby not compromising national security. These liberalised FDI norms are expected to have a profound impact on both domestic and international investment in the Indian space sector. The reduced approval requirements are meant to boost worldwide partnerships and investments designed to encourage global investments and collaborations, thereby enhancing India's competitiveness in the global space market.[13]

The biggest gap India faces is the lack of a comprehensive national space law. Currently relying on a patchwork of policies and international treaties, India risks legal ambiguities around liability, intellectual property, and dispute resolution that could deter investment and hinder India's own space ambitions or international collaborations if disputes arise. The Space Activities Bill, first drafted in 2017 and now under revision, aims to solve these problems by granting legal authority to IN-SPACe, defining clear rules for private companies, and making India's regulations consistent with those of other countries.[14] It covers licensing, safety, liability, insurance, and intellectual property protections, while balancing enforcement with industry growth. Hence, passing of this Bill is critical to assure investors, provide legal certainty, manage risks responsibly, and position India as a sustainable, responsible space power.

India's Approach to International Space Law

India has been a signatory to major international space treaties, including the Outer Space Treaty (1967), the Rescue Agreement (1968), and the Liability Convention (1972). India is also a signatory party to the Moon Agreement (1979) but has not ratified it yet. In June 2023, India became a signatory to the Artemis Accords, showing its commitment to peaceful space

[12] Press Information Bureau, 'Parliament Question: Encouraging Private Participation in Space Sector' (Press Release, 20 March 2025) https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=2113214 accessed 8 June 2025.

[13] Simran Singh and Anshika Singh, 'India's Space Economy: Policies, International Engagements and Opportunities' (IMPRI Insights, 23 February 2024) https://www.impriindia.com/insights/indias-space-economy-policies/ accessed 8 June 2025.

[14] Draft Space Activities Bill 2017 (Department of Space via PRS India) https://prsindia.org/files/bills_acts/bills_parliament/1970/Draft%20Space%20Activities%20Bill%202017.pdf accessed 8 June 2025.

exploration norms.[15] India signed the Outer Space Treaty (OST) in 1967 and ratified it in 1982.[16] Article VI of the OST holds states internationally accountable for all space activities conducted under their jurisdiction, whether by governmental or non-governmental entities.[17] Besides, India is also a signatory to the Liability Convention of 1972, which explains the state's responsibility even more clearly.

This convention lays down that a launching state is absolutely liable for any damage caused by its space objects on Earth or to aircraft in flight.[18] India's commitment to international treaties, particularly the Outer Space Treaty and the Liability Convention, imposes that any space activities conducted within India's territory by state or private entities would make it liable before other nations. This international responsibility accentuates the urgent need for a comprehensive domestic space law to manage liability, protect intellectual property, and provide clarity for private sector activities. Without it, the government would be exposed to significant financial and legal risks.

India promotes sustainable and peaceful use of space by actively participating in international multilateral forums. When it comes to outer space, India carefully balances its national interests with international cooperation. India's delay between the signing and ratification of key space treaties shows a deliberate strategic consideration, allowing time to observe how other space-faring nations interpreted these agreements and to strengthen itself in outer space before assuming these responsibilities on an international level. Though India is one of the few nations to demonstrate its anti-satellite capabilities, it has a firm stance against the weaponisation of space and advocates for the prevention of an arms race in outer space (PAROS) Treaty.[19] This dual policy position of India shows its desire to maintain peace without compromising national interests.

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[15] Artemis Accords, 13 October 2020 (US Department of State) https://2021-2025.state.gov/artemis-accords/ accessed 8 June 2025.

[16] Aditya Kalra, 'Space Law in India: A New Development in the Field of Law' (2021) International Journal of Research Publication and Reviews Vol 2(7) 92–95 https://www.ijrpr.com/uploads/V2ISSUE7/IJRPR563.pdf accessed 8 June 2025

[17] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (adopted 27 January 1967, entered into force 10 October 1967) 610 UNTS 205, art 6.

[18] Convention on International Liability for Damage Caused by Space Objects (adopted 29 March 1972, entered into force 1 September 1972) 610 UNTS 217 ("Liability Convention"), UNOOSA web page https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/introliability-convention.html accessed 8 June 2025.

[19] Permanent Mission of India to the United Nations, Geneva, 'Statement by India at the Open-Ended Working Group on Space Threats (August 2022)' (Ministry of External Affairs, 2022) https://pmindiaun.gov.in/Cdgeneva/statement_content/NDQ2 accessed 9 June 2025.

CONCLUSION

The abundance of resources in space, such as minerals, water ice, and rare earth elements, presents significant economic opportunities. These resources could be used for future space exploration and as raw materials for industries on Earth, possibly creating altogether new economic sectors. Hence, there is a pressing need to develop legal frameworks that enable and regulate the space industry and its supporting states, while also safeguard natural resources for the benefit of all humankind. International agreements and norms need to evolve in order to address the challenges presented before us. Only through continued collaboration among the nations can we ensure space remains a frontier for exploration, not warfare. The future of space, and perhaps humanity itself, hangs on the choices we make today. As we strive to harness the potential of space, we must also work tirelessly to prevent it from becoming the final frontier of warfare. How we navigate this final frontier will determine our earthly fate and the future of warfare.