REGULATING PRIVATE SPACE COMPANIES IN INDIA: A CRITICAL ANALYSIS OF THE LEGAL FRAMEWORK AND THE NEED FOR LEGISLATIVE REFORM

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ABSTRACT

The global space sector has witnessed a significant shift over the past decade, with private companies playing an increasingly important role in space activities. What was once a government-dominated field has gradually evolved into a competitive sector driven by innovation, technological progress and private investment. As commercial participation continues to expand, countries are required to develop effective legal frameworks that can regulate private operators while ensuring accountability, sustainability and compliance with international space law. India has responded to this changing landscape through the Space Sector Reforms, 2020, the Indian Space Policy, 2023, the establishment of IN-SPACe and the liberalisation of foreign direct investment, reflecting its commitment to building a competitive and commercially oriented space ecosystem.

This study examines whether India's existing legal and regulatory framework is capable of effectively governing private space companies in the evolving commercial space sector. It adopts a doctrinal and comparative research approach by examining constitutional provisions, statutory laws, government policies, judicial decisions and international treaties. The study also analyses the regulatory frameworks of the United States, Luxembourg and the United Arab Emirates to identify best practices and evaluate the strengths and limitations of India's existing regulatory framework.

The analysis shows that while recent policy reforms have encouraged private participation and strengthened India's commercial space ecosystem, the legal framework has not developed at the same pace. Important issues such as licensing, regulatory supervision, liability, investor protection, commercial accountability and emerging space activities are still not governed through a comprehensive statutory framework. As a result, the gap between rapid commercial growth and legislative development has emerged as one of the most significant challenges in regulating India's private space sector.

India's aspiration to emerge as a leading global space power requires more than technological progress and policy reforms. It also requires a comprehensive Space Activities Act that provides a clear legal framework for regulating private space activities while ensuring consistency with India's international obligations. Such legislation would strengthen regulatory governance, encourage responsible innovation and create a stable legal environment that supports the long-term growth of India's commercial space sector.

Keywords: Private Space Companies, Commercial Space Activities, Regulatory Governance; Space Activities Act, Indian Space Policy, 2023, International Space Law, Treaty Implementation, Comparative Space Regulation, Liability Framework, Commercial Space Ecosystem.

1. INTRODUCTION

The global space sector has changed significantly over the past decade, with private companies playing an increasingly important role in space activities. While governments once led almost every aspect of the sector, private enterprises are now actively involved in launch services, satellite manufacturing, earth observation, satellite communication and emerging areas such as space resource utilisation and in-space manufacturing. This changing landscape has encouraged many space-faring nations to strengthen their legal and regulatory frameworks to support commercial growth while ensuring national security, regulatory oversight and compliance with international obligations.

India has taken several important steps to open its space sector to private participation through the Space Sector Reforms, 2020[1], the establishment of the Indian National Space Promotion and Authorization Centre (IN-SPACe), the Indian Space Policy, 2023[2] and the liberalisation of Foreign Direct Investment (FDI)[3]. These reforms have created new opportunities for private companies such as Skyroot Aerospace, Agnikul Cosmos, Pixxel and Bellatrix Aerospace to participate in launch services, satellite technology and downstream space applications. As a result, India's space sector is gradually moving from a government-led model to a more

[1] Press Information Bureau, Government of India, Union Cabinet Approves Reforms in Space Sector (June 24, 2020), https://pib.gov.in/PressReleasePage.aspx?PRID=1635892
[2] Department of Space, Government of India, Indian Space Policy 2023 (2023), https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf
[3] Department for Promotion of Industry and Internal Trade, Ministry of Commerce & Industry, Press Note No. 1 (2024 Series): Review of FDI Policy for the Space Sector (Feb. 21, 2024), https://dpiit.gov.in/sites/default/files/PN1_2024.pdf

competitive and commercially driven ecosystem.

Despite these developments, the legal framework has not evolved at the same pace as the sector itself. Most aspects of private space activities continue to be governed through government policies, institutional mechanisms and administrative guidelines rather than a dedicated legislation. This creates regulatory uncertainty in areas such as licensing, liability, investor protection and regulatory oversight, making a comprehensive statutory framework increasingly important for the future growth of India's commercial space sector.

1.1 Research Problem

Although India's commercial space sector has grown rapidly in recent years, the country still does not have a comprehensive legislation governing private space activities. The existing regulatory framework is based on constitutional principles, government policies, institutional mechanisms and sector-specific guidelines implemented by different authorities. While these measures have encouraged private participation, they do not provide a complete legal framework for important issues such as licensing, continuous governmental supervision, liability, insurance, investor protection, commercial dispute resolution and emerging space activities.

The absence of a dedicated statutory framework creates uncertainty for private companies and investors, affects long-term business planning and makes it more difficult for India to effectively fulfil its obligations under the **Outer Space Treaty, 1967**[4] and other international space law instruments. The real challenge, therefore, is no longer opening the space sector to private participation, but ensuring that the existing legal framework is capable of regulating an industry that is expanding rapidly and becoming increasingly complex.

1.2 Research Objectives

This study examines India's existing legal and regulatory framework governing private space companies by analysing constitutional provisions, statutory laws, government policies, institutional mechanisms, judicial decisions and international legal obligations. It also compares India's regulatory approach with those adopted by the **United States, Luxembourg**

[4] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies, Jan. 27, 1967, 18 U.S.T. 2410, 610 U.N.T.S. 205.

and the United Arab Emirates to identify legal principles and best practices that may be relevant to India's evolving commercial space sector. Based on this analysis, the paper suggests policy measures aimed at developing a comprehensive and future-ready legislative framework that promotes sustainable commercial growth while ensuring effective regulatory governance and compliance with international obligations.

1.3 Research Methodology

This study follows a doctrinal research methodology and is based on a qualitative analysis of legal sources. It primarily examines constitutional provisions, statutes, government policies, international treaties, judicial decisions, parliamentary reports and other official publications, along with books, journal articles and other scholarly literature. The study also adopts a comparative legal approach by examining the regulatory frameworks of selected space-faring nations to identify best practices and assess how they can contribute to strengthening India's legal framework for regulating private space companies.

2. EVOLUTION OF INDIA'S COMMERCIAL SPACE ECOSYSTEM

India's space programme began as a government-led initiative with the primary objective of promoting scientific research, technological development and national self-reliance under the leadership of the Indian Space Research Organisation (ISRO). For many years, ISRO played a central role in planning, developing and implementing the country's space missions. This approach enabled India to make remarkable progress in satellite communication, remote sensing, navigation and planetary exploration, while also supporting national development, disaster management and strategic interests.

In recent years, the global space sector has changed significantly with the rise of the New Space Economy, driven by reusable launch technologies, small satellites, increasing private investment and the growing demand for commercial space services. As a result, space activities are no longer limited to scientific research and government missions. They have become an important commercial sector that offers new opportunities for innovation, investment and technological development. In response to these changes, many space-faring nations have updated their legal and regulatory systems to encourage private participation while ensuring effective government oversight and compliance with international obligations.

India also recognised the need to open its space sector to private participation. An important step in this direction was the Space Sector Reforms, 2020[5], which allowed non-governmental entities to participate in space activities. This was followed by the establishment of IN-SPACe, the adoption of the Indian Space Policy, 2023[6], the liberalisation of Foreign Direct Investment (FDI) and the introduction of sector-specific regulatory guidelines. Together, these initiatives have created a more supportive environment for private investment and commercial space activities.

The impact of these reforms is already visible. India is now home to more than 400 space start-ups, which have attracted over US$500 million in private investment and are actively engaged in launch vehicles, satellite manufacturing, earth observation, communication technologies and other downstream space services. The Government has also set an ambitious goal of increasing the size of India's space economy from about US$8.4 billion to US$44 billion by 2033[7], with the aim of raising the country's share in the global space market from nearly 2%[8] to 8%[9] through greater private sector participation.

The growth of companies such as Skyroot Aerospace, Agnikul Cosmos, Pixxel and Bellatrix Aerospace shows how India's space sector is changing. Private companies are no longer limited to supporting government missions, they are now actively developing launch vehicles, satellites and other space technologies while contributing to innovation and commercial growth. Their increasing role has also expanded India's presence in the global space industry.

This shift has changed the focus of space governance in India. Earlier, the regulatory framework was primarily designed for government-led space missions. Today, it must also address the legal and regulatory issues arising from private investment, commercial contracts, international collaborations and other commercial space activities. These developments

[5] Press Information Bureau, Government of India, Union Cabinet Approves Reforms in Space Sector (June 24, 2020), https://pib.gov.in/PressReleasePage.aspx?PRID=1635892
[6] Department of Space, Government of India, Indian Space Policy 2023 (2023), https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf
[7] Reuters, India's Space Strategy: Harness Data and Tiny Satellites to Capture Market Beyond SpaceX (Oct. 14, 2024), https://www.reuters.com/technology/space/indias-space-strategy-harness-data-tiny-satellites-capture-market-beyond-spacex-2024-10-14/
[8] Press Information Bureau, Government of India, Empowering India's Space Economy: ₹1,000 Crore Venture Capital Fund Initiative for Innovation and Growth (Oct. 25, 2024), https://pib.gov.in/PressReleasePage.aspx?PRID=2068155
[9] ANI, Indian Space Economy to Reach USD 44 Billion by 2033: FICCI-EY Report, The Economic Times (Mar. 12, 2025), https://economictimes.indiatimes.com/news/science/indian-space-economy-to-reach-44-bn-by-2033-ficci-ey-report/articleshow/118942520.cms

highlight the growing need for a modern legal framework that can effectively regulate an increasingly competitive private space sector.

The evolution of India's commercial space ecosystem is more than a policy or institutional change, it reflects a new approach to the way the country's space sector is governed. While recent reforms have encouraged private investment and expanded commercial opportunities, the legal framework has not kept pace with these developments. As private companies take on a larger role in space activities, new legal issues relating to licensing, regulatory supervision, liability, insurance, investor protection and compliance with international obligations have become increasingly important.

These developments show that encouraging private participation is only one part of the reform process. Equally important is the creation of a clear and comprehensive legal framework that can regulate commercial space activities, provide certainty to private operators and investors and support the long-term growth of India's commercial space sector in line with international standards.

3. EXISTING LEGAL AND REGULATORY FRAMEWORK GOVERNING PRIVATE SPACE COMPANIES IN INDIA

3.1 Constitutional Foundation

Although the Constitution of India[10] does not contain specific provisions on outer space, it provides a strong constitutional basis for Parliament to enact laws regulating commercial space activities. Articles 245 and 246 empower Parliament to legislate on matters within its jurisdiction, while Article 253 authorises it to enact laws for implementing international treaties and conventions. This power is particularly significant because India is a party to the Outer Space Treaty, 1967[11], the Liability Convention, 1972[12] and the Registration Convention, 1975[13]. In addition, Article 51(c) encourages the State to respect international law and fulfil its treaty obligations, thereby reinforcing the constitutional foundation for developing a

[10] https://legislative.gov.in/constitution-of-india/
[11] Outer Space Treaty (1967): https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html
[12] Liability Convention (1972): https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liability-convention.html
[13] Registration Convention (1975): https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/registration-convention.html

comprehensive legal framework for private space activities.

These constitutional provisions have become even more important with the growing participation of private companies in India's space sector. As commercial launches, satellite services and other space-related activities increasingly involve non-governmental entities, Parliament has the constitutional authority to enact a dedicated legislation regulating private space activities. Such a law can provide a clear legal framework for licensing, regulatory oversight, liability, investor protection and the implementation of India's international obligations, ensuring that commercial growth is supported by effective legal governance.

3.2 Space Sector Reforms, 2020

The Space Sector Reforms, 2020[14] marked an important turning point in India's space sector by allowing private participation in launch services, satellite manufacturing, satellite applications and other commercial space activities. As part of these reforms, IN-SPACe was established to facilitate and authorise the participation of non-governmental entities, while NewSpace India Limited (NSIL)[15] was established to commercialise ISRO's technologies and space-based services. These reforms laid the foundation for greater private participation and reflected India's shift towards a more open and commercially oriented space sector.

The reforms expanded opportunities for private enterprises and accelerated the growth of India's space start-up ecosystem. They also recognised that the future growth of the Indian space economy would depend on greater collaboration between government institutions and private industry. Although the reforms opened the sector to private participation, they also highlighted the need for a corresponding legal framework to regulate an increasingly commercialised space sector.

3.3 Indian Space Policy, 2023

The Indian Space Policy, 2023[16] is India's first comprehensive policy aimed at promoting commercialisation and private sector participation in the space sector. It defines the respective roles of ISRO, IN-SPACe and NSIL, while allowing private entities to participate across the

[14] Press Information Bureau, Government of India, Union Cabinet Approves Reforms in the Space Sector (June 24, 2020) https://pib.gov.in/PressReleasePage.aspx?PRID=1635892
[15] https://www.nsilindia.co.in/about-us
[16] Department of Space, Government of India, Indian Space Policy, 2023 (2023). https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf

space value chain, including launch vehicle development, satellite manufacturing, satellite operations, ground infrastructure and downstream services.

The Policy has strengthened India's commercial space ecosystem by promoting public-private partnerships, technology transfer, innovation and foreign investment. It also reflects the Government's vision of developing India into a globally competitive space economy while providing greater institutional clarity for private participants.

However, the Policy serves primarily as a strategic roadmap and not as a statutory legal framework. While it encourages commercial participation, important issues such as licensing standards, operator liability, insurance obligations, commercial dispute resolution and regulatory enforcement are still left to future legislation. As a result, although the Policy supports the growth of the commercial space sector, it does not provide a complete legal framework for regulating private space companies.

3.4 Draft Space Activities Bill, 2017

The Draft Space Activities Bill, 2017[17] was India's first major legislative initiative to regulate private space activities and bring domestic law in line with its international space obligations. The Bill proposed a comprehensive legal framework covering licensing, registration of space objects, government authorisation, liability, insurance, offences and the supervision of non-governmental entities engaged in space activities.

The Bill was significant because it sought to implement Article VI of the Outer Space Treaty[18], which requires States to authorise and continuously supervise private space activities. If enacted, it would have provided greater legal certainty by clearly defining the rights, responsibilities and obligations of private operators, while also strengthening India's compliance with its international space law obligations.

However, the Bill received criticism from industry stakeholders due to its broad governmental control, stringent liability provisions and the absence of adequate safeguards for private operators. Concerns were also expressed over unlimited liability, wide discretionary powers

[17] Department of Space, Government of India, Draft Space Activities Bill, 2017 (2017) https://www.isro.gov.in/media_isro/pdf/DraftSpaceActivitiesBill2017.pdf

[18] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies art. VI, Jan. 27, 1967 https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html

and their possible impact on innovation and investment. As the Bill was never enacted, India continues to lack a comprehensive statutory framework specifically regulating commercial space activities.

3.5 IN-SPACe Norms, Guidelines and Procedures (NGP), 2024

To implement the Indian Space Policy[19], 2023, IN-SPACe introduced the Norms, Guidelines and Procedures (NGP), 2024[20] to regulate the authorisation of private space activities. The NGP sets out the approval process for launch vehicles, satellites, testing facilities, ground infrastructure and other commercial space operations. It also specifies the technical, safety and compliance requirements that private operators must satisfy before undertaking space activities.

The NGP has improved regulatory transparency by establishing a clear approval process for private companies and reducing procedural uncertainty. It has also made it easier for start-ups and commercial operators to access national space infrastructure under a defined administrative framework, helping to put the objectives of the Indian Space Policy, 2023 into practice.

Despite these developments, some practical challenges still remain. The NGP continues to rely mainly on administrative approvals, with limited statutory guidance on timelines, appellate remedies, regulatory accountability and long-term enforcement. As private participation continues to grow, a clearer legislative framework would improve regulatory certainty and provide greater confidence to investors.

3.6 Foreign Direct Investment (FDI) Policy for the Space Sector, 2024

The Government liberalised the FDI Policy for the Space Sector, 2024[21] in recognition of the significant capital and advanced technology required for commercial space activities. The revised policy permits up to 100% foreign investment[22] in specified space activities, with

[19] Department of Space, Government of India, Indian Space Policy, 2023 (2023). https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf
[20] 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 (2024). https://www.inspace.gov.in/ngp
[21] Ministry of Commerce and Industry, Press Note No. 1 (2024 Series): Review of Foreign Direct Investment (FDI) Policy for the Space Sector (Feb. 21, 2024) https://dpiit.gov.in/sites/default/files/PressNote_1_2024.pdf
[22] Press Information Bureau, Government of India, Cabinet Approves Amendments to FDI Policy in Space Sector (Feb. 21, 2024) https://pib.gov.in/PressReleasePage.aspx?PRID=2008564

different approval requirements based on the nature of the activity. This has encouraged greater investment in satellite manufacturing, launch vehicle technologies, component manufacturing and downstream space services.

The liberalised FDI regime supports India's goal of attracting global investment, advanced technology and technical expertise to strengthen its commercial space sector. It also aligns with the Government's vision of making India a globally competitive hub for space activities.

However, liberalising investment alone is not sufficient to ensure the long-term growth of the commercial space sector. Investors also need a clear and predictable legal framework governing licensing, contractual certainty, liability, regulatory compliance and dispute resolution. While the FDI Policy strengthens the sector's investment ecosystem, its long-term success will also depend on a comprehensive statutory framework that provides certainty and supports commercial confidence.

3.7 Parliamentary Standing Committee Reports

The Department-related Parliamentary Standing Committee Reports[23] on the Department of Space have consistently acknowledged the growing importance of private sector participation in achieving India's long-term space objectives. The Committee has emphasised the need for better institutional coordination, increased domestic innovation, improved technology transfer and a supportive environment for private space companies. These observations reflect Parliament's recognition that India's space sector is no longer limited to government activities and now includes an expanding commercial dimension.

The Committee has also emphasised the need for a stronger regulatory framework governing private participation in the space sector. Although its recommendations have influenced subsequent policy reforms, they remain advisory in nature and require legislative backing for effective implementation. This shows that Parliament recognises the need for legal reform, but a comprehensive statutory framework governing private space activities is still yet to be enacted.

[23] Department-related Parliamentary Standing Committee on Science & Technology, Environment, Forests and Climate Change, Report on the Demands for Grants (Department of Space), Rajya Sabha Secretariat https://rajyasabha.nic.in/rsnew/Committee_site/CommitteeHome.aspx?Code=18

3.8 Sector-Specific Regulatory Framework

Private space companies are also subject to several sector-specific laws and policy instruments, including the Telecommunications Act, 2023[24], the National Geospatial Policy, 2022[25], the Geospatial Guidelines, 2021[26] and the satellite communication framework. Together, these instruments regulate key aspects of commercial space activities, including spectrum management, satellite communication services, Earth observation, remote sensing and geospatial data.

While these frameworks support different aspects of private space activities, each is limited to a specific area of the commercial space sector. None of them provides a comprehensive legal framework for issues such as launch authorisation, commercial missions, operator liability, insurance, investor protection, regulatory enforcement or future activities like space resource utilisation. As a result, private operators must comply with multiple regulatory frameworks instead of operating under a single, integrated legislative regime.

3.9 Critical Regulatory Assessment

India's commercial space sector has developed significantly through constitutional support, sectoral reforms, institutional restructuring, policy liberalisation, investment reforms and administrative regulation. Together, these measures have opened the space sector to private participation, encouraged technological innovation and enhanced India's role in the global space economy.

However, the existing legal framework has evolved gradually rather than through a single, coordinated legislative approach. Constitutional provisions provide the basis for law-making, executive policies encourage private participation, administrative guidelines regulate operational approvals and sector-specific laws govern different aspects of commercial space activities. Despite these developments, India still lacks a single legislation that brings these elements together and provides a comprehensive legal framework for regulating the entire

[24] The Telecommunications Act, 2023 (Act No. 44 of 2023)
[25] Department of Science & Technology, Government of India, National Geospatial Policy, (2022) https://dst.gov.in/sites/default/files/National%20Geospatial%20Policy.pdf
[26] Department of Science & Technology, Government of India, Guidelines for Acquiring and Producing Geospatial Data and Geospatial Data Services, 2021 https://dst.gov.in/sites/default/files/Guidelines%20for%20Acquiring%20and%20Producing%20Geospatial%20Data.pdf

lifecycle of private space activities.

As commercial launches, satellite constellations, downstream applications and future activities such as space resource utilisation continue to grow, a fragmented regulatory approach is likely to create uncertainty for regulators, investors and private operators. To support the next phase of India's commercial space sector, there is a clear need for a comprehensive statutory framework that brings together the existing regulatory measures, aligns domestic law with international obligations and promotes legal certainty, institutional accountability and sustainable commercial growth.

4. JUDICIAL DEVELOPMENTS SHAPING COMMERCIAL SPACE REGULATION

4.1 Antrix Corporation Ltd. v. Devas Multimedia Pvt. Ltd. (2022)

The Antrix-Devas[27] litigation remains the defining judicial development in India's commercial space sector. The dispute arose after Antrix Corporation, the commercial arm of ISRO, entered into an agreement with Devas Multimedia for the commercial utilisation of S-band satellite spectrum. Following the Government's decision to terminate the agreement on strategic and national security grounds, the dispute expanded into domestic litigation, international arbitration, and cross-border enforcement proceedings, making it India's most significant commercial space dispute.

Although the Supreme Court ultimately upheld the winding-up of Devas after finding that its affairs were tainted by fraud, the litigation also brought broader regulatory concerns to light. The dispute highlighted the absence of clear statutory standards governing commercial space contracts, government intervention in strategic projects, allocation of satellite spectrum and the protection of private commercial interests. It also showed that, in the absence of a dedicated space law, issues specific to commercial space activities had to be resolved through general principles of company and contract law instead of a specialised legal framework.

One of the most important lessons from this case is its impact on investor confidence. The cancellation of a long-term commercial agreement led to years of domestic and international litigation, showing how regulatory uncertainty can turn commercial disputes into international investment disputes. As India's private space sector continues to grow, clear legislative

[27] Devas Multimedia Pvt. Ltd. v. Antrix Corp. Ltd., Civil Appeal No. 5766 of 2021, Supreme Court of India (Jan. 17, 2022).

standards on contractual stability, government intervention and regulatory accountability will be essential to provide confidence to investors and support the long-term growth of the industry.

4.2 Centre for Public Interest Litigation v. Union of India (2G Spectrum Case) (2012)

Although the 2G Spectrum Case[28] arose in the telecommunications sector, the constitutional principles laid down by the Supreme Court are equally relevant to the regulation of commercial space activities. The Court held that valuable public resources should be allocated through transparent, fair and non-arbitrary procedures in accordance with Article 14 of the Constitution.

These principles have become increasingly relevant as private participation expands into satellite communication, orbital resources and other spectrum-dependent commercial activities. Satellite spectrum is not only a valuable commercial asset but also a strategic national resource that requires a transparent and fair allocation process balancing public interest with commercial participation. The judgment therefore provides an important constitutional basis for developing future regulatory frameworks governing commercial access to satellite spectrum and orbital resources.

Although the decision does not directly regulate private space activities, it lays down constitutional principles that can guide future space legislation. Applying these principles to the commercial space sector would help reduce regulatory discretion, improve transparency and increase the confidence of private operators competing for limited national space resources.

4.3 CC/Devas (Mauritius) Ltd. v. Antrix Corporation Ltd. (U.S. Supreme Court, 2025)

The proceedings in the case of CC/Devas (Mauritius) Ltd. v. Antrix Corporation Ltd.[29] show that commercial space disputes can extend beyond domestic courts into the field of international investment and cross-border enforcement. Following the arbitral awards in favour of the investors against Antrix, enforcement proceedings were initiated before courts in the United States, raising questions relating to jurisdiction and sovereign immunity under the Foreign Sovereign Immunities Act.

Unlike the proceedings in India, which mainly dealt with allegations of fraud and corporate

[28] Centre for Public Interest Litigation v. Union of India, AIR 2012 SC 1002.
[29] CC/Devas (Mauritius) Ltd. v. Antrix Corp. Ltd., No. 23-1201, 605 U.S. ___ (U.S. June 5, 2025).

misconduct, the litigation before the U.S. courts focused on the enforcement of international arbitral awards arising from a commercial space contract. This difference shows how the same dispute can be examined from different legal perspectives across jurisdictions, particularly when foreign investment and international commercial obligations are involved.

The proceedings also highlight an important lesson for India's commercial space sector. As foreign investment and international collaboration continue to expand, regulatory uncertainty within India can have consequences beyond its national borders. A clear and predictable statutory framework would not only strengthen domestic regulation but also enhance India's credibility as a reliable destination for global investment in the commercial space sector.

4.4 Judicial Analysis

India's judicial engagement with commercial space activities is still at an early stage, largely because private participation has expanded only after the Space Sector Reforms, 2020. Even so, the existing decisions offer valuable guidance for the future development of commercial space regulation. The **Antrix-Devas**[30] litigation highlights the importance of certainty in commercial contracts and government decision-making, the **2G Spectrum**[31] judgment lays down constitutional principles for the allocation of strategic national resources and the **CC/Devas**[32] proceedings show how domestic regulatory uncertainty can lead to international commercial disputes.

Taken together, these decisions show that the legal issues facing India's private space sector now extend beyond technological advancement. They increasingly involve commercial governance, investment protection, contractual stability and regulatory certainty. As commercial launches, satellite constellations and international partnerships continue to grow, relying solely on general principles of constitutional, company and contract law is unlikely to be sufficient for resolving the specialised legal issues arising from commercial space activities.

These judicial developments highlight the growing need for a dedicated statutory framework before disputes arise. A comprehensive legal framework would provide clear standards for regulating private space activities, reduce regulatory uncertainty and improve commercial

[30] Devas Multimedia Pvt. Ltd. v. Antrix Corp. Ltd., Civil Appeal No. 5766 of 2021, Supreme Court of India (Jan. 17, 2022).
[31] Centre for Public Interest Litigation v. Union of India, (2012) 3 S.C.C. 1 (India).
[32] CC/Devas (Mauritius) Ltd. v. Antrix Corp. Ltd., No. 23-1201, 605 U.S. ___ (U.S. June 5, 2025).

confidence. It would also strengthen India's position as a secure, innovation-driven and globally competitive destination for commercial space investment.

5. COMPARATIVE ANALYSIS OF INTERNATIONAL REGULATORY FRAMEWORKS

5.1 Outer Space Treaty, 1967

The Outer Space Treaty, 1967 (OST)[33] is the primary international agreement governing space activities and forms the foundation of international space law. Although the Treaty was adopted before the rapid growth of the commercial space industry, its provisions continue to apply to private space activities because States remain internationally responsible for activities carried out by non-governmental entities.

Under Article VI, States are required to authorise and continuously supervise the activities of private space operators. Articles VII and IX further place responsibility on States for damage caused by space objects and require them to carry out space activities with due regard to the interests of other nations. Together, these provisions make effective governmental supervision a key requirement for regulating private space activities.

For India, the Treaty has become increasingly relevant with the entry of private companies into the space sector. Although IN-SPACe and the Indian Space Policy, 2023[34] have facilitated private participation, the Treaty highlights the importance of clear legal standards for governmental supervision and the discharge of India's international responsibilities as commercial space activities continue to grow.

5.2 Liability Convention, 1972

The Convention on International Liability for Damage Caused by Space Objects, 1972 [35]lays down the international legal framework for liability arising from space activities. As private companies become more actively involved in satellite launches and other commercial missions,

[33] Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, Including the Moon and Other Celestial Bodies arts. VI, VII & IX, Jan. 27, 1967 https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/outerspacetreaty.html
[34] Department of Space, Government of India, Indian Space Policy, 2023 (2023) https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf
[35] Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972. https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/liability-convention.html

the Convention provides the basic principles for determining responsibility for damage caused during space operations.

The Convention follows a dual liability regime. It imposes absolute liability for damage caused on the surface of the Earth or to aircraft in flight, whereas fault-based liability applies to damage occurring in outer space. While these rules govern responsibility between States, they also require domestic legal systems to establish clear provisions on operator liability, insurance and financial responsibility.

For India, the Convention draws attention to the need for clear rules on operator liability and insurance as private space activities become more diverse. Although recent reforms have encouraged private participation, a well-defined liability framework would help allocate commercial risks more effectively and promote responsible space operations.

5.3 Registration Convention, 1975

The Convention on Registration of Objects Launched into Outer Space, 1975[36] establishes an international system for the registration of space objects. It requires launching States to maintain national registers and provide relevant information to the United Nations, ensuring that space objects and their launching States can be readily identified.

Although the Convention applies primarily to States, it has become increasingly relevant with the expansion of private space activities. Registration helps identify the responsible launching State, clarifies jurisdiction over space objects and supports effective regulatory oversight of commercial space operations.

For India, the Convention points to the need for a reliable system for registering privately operated space objects. Such a system would improve transparency, facilitate regulatory coordination and assist India in fulfilling its obligations under international space law.

5.4 Artemis Accords

The Artemis Accords, introduced in 2020[37], reflect the changing approach to international

[36] Registration Convention (1975) https://www.unoosa.org/oosa/en/ourwork/spacelaw/treaties/registration-convention.html
[37] NASA, The Artemis Accords (2020). https://www.nasa.gov/artemis-accords/

space governance in response to growing commercial space activities. Unlike the United Nations space treaties, the Accords are non-binding and provide guiding principles for cooperation in future space exploration without creating legally enforceable obligations.

The Accords focus on emerging areas of commercial space activity that are not comprehensively addressed under the existing treaty framework. They promote principles such as transparency, interoperability and the responsible use of space resources while encouraging international cooperation in future activities, including lunar exploration. In doing so, they provide a practical reference for States developing regulatory approaches to new commercial space ventures.

For India, the Artemis Accords offer useful guidance for regulating future commercial space activities. As Indian companies move beyond satellite services into areas such as lunar exploration and space resource utilisation, aligning domestic regulation with emerging international practices will strengthen international cooperation and support the country's long-term space ambitions.

5.5 United States

The United States has established a well-developed legal framework for commercial space activities through legislation such as the Commercial Space Launch Act and the U.S. Commercial Space Launch Competitiveness Act, 2015[38]. These laws regulate commercial launches, licensing and governmental oversight, while providing a stable legal environment for private investment and technological innovation.

A key strength of the U.S. framework is the legal certainty it provides to private space enterprises. Clear statutory rules governing commercial space activities have encouraged private investment and enabled companies such as SpaceX and Blue Origin to undertake increasingly advanced commercial missions within a predictable regulatory environment.

For India, the U.S. experience shows that sustained private sector growth requires a stable and predictable legal framework. As the commercial space sector develops, clear statutory rules can reduce regulatory uncertainty, encourage long-term investment and support responsible

[38] Commercial Space Launch Competitiveness Act, Pub. L. No. 114-90 (2015).

commercial operations.

5.6 Luxembourg

Luxembourg has taken an early legislative approach to regulating commercial space activities through the Space Resources Act, 2017[39]. The Act provides a legal basis for the exploration and utilisation of space resources while ensuring governmental supervision in line with international space law.

A notable aspect of Luxembourg's approach is that it introduced legislation before commercial space resource activities developed on a large scale. This early legal framework reduced regulatory uncertainty, encouraged private investment and strengthened Luxembourg's position as a recognised centre for the NewSpace industry.

For India, Luxembourg shows the value of preparing for emerging commercial space activities before regulatory gaps arise. Timely legislation can better equip the legal framework to address areas such as space resource utilisation, on-orbit servicing and in-space manufacturing while providing greater certainty for both regulators and private enterprises.

5.7 United Arab Emirates

The United Arab Emirates (UAE) regulates commercial space activities through Federal Decree Law No. 12 of 2019 on the Regulation of the Space Sector.[40] The legislation governs licensing, commercial operations, safety standards and governmental supervision, creating a clear legal framework for private sector participation.

One of the strengths of the UAE framework is its clear allocation of institutional responsibilities. By defining the roles of regulatory authorities and private operators within a single legal framework, the UAE has reduced administrative overlap and created a more efficient system for regulating commercial space activities.

For India, the UAE experience highlights the importance of clear institutional responsibilities alongside effective legal regulation. Well-defined roles for regulatory bodies can improve

[39] Government of Luxembourg, Law of 20 July 2017 on the Exploration and Use of Space Resources (2017) https://space-agency.public.lu/en/space-resources/law.html
[40] United Arab Emirates, Federal Decree Law No. 12 of 2019 on the Regulation of the Space Sector (2019) https://uaelegislation.gov.ae/en/legislations/1153

administrative efficiency, reduce overlapping functions and support more effective implementation of commercial space regulation.

5.8 Comparative Regulatory Lessons for India

The comparative analysis shows that the success of a commercial space sector depends as much on a strong legal framework as on technological capability. While international treaties lay down the basic legal principles, the countries examined in this study have implemented them through domestic laws and institutions that reflect their own regulatory priorities.

Although the jurisdictions examined in this study follow different regulatory models, they share a common approach of supporting commercial space activities through clear legislation and effective institutions. Their experience suggests that long-term regulatory stability depends on statutory frameworks backed by efficient administrative mechanisms, rather than policy measures alone.

For India, these comparative experiences highlight the need to strengthen the legal framework supporting recent policy reforms. Existing initiatives such as the Space Sector Reforms, 2020, IN-SPACe and the Indian Space Policy, 2023 provide a strong foundation, but a more integrated regulatory framework would better support the long-term development of the commercial space sector. These insights form the basis of the findings and recommendations presented in the following chapters.

6. FINDINGS AND CRITICAL ANALYSIS

India's commercial space sector has grown significantly in recent years due to policy reforms, institutional changes and increased private sector participation. Measures such as the Space Sector Reforms, 2020[41], the Indian Space Policy, 2023[42], the establishment of IN-SPACe and the liberalisation of Foreign Direct Investment (FDI)[43] have opened new opportunities for commercial space activities. However, these reforms are still based mainly on policies and administrative mechanisms, as India does not yet have a comprehensive statutory framework

[41] Press Information Bureau, Government of India, Union Cabinet Approves Reforms in the Space Sector (June 24, 2020) https://pib.gov.in/PressReleasePage.aspx?PRID=1635892
[42] Department of Space, Government of India, Indian Space Policy, 2023 (2023) https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf
[43] Department for Promotion of Industry and Internal Trade (DPIIT), Press Note No. 1 (2024 Series): Review of FDI Policy for the Space Sector (2024) https://dpiit.gov.in/sites/default/files/PressNote_1_2024.pdf

to regulate private space activities.

Despite these reforms, India's regulatory framework is still spread across different policies, institutions and sector-specific regulations. Important areas such as licensing, regulatory oversight, liability, insurance, investor protection and commercial dispute resolution are governed through separate mechanisms rather than a single legal framework. As a result, the existing system does not provide the clarity and consistency needed to regulate a growing commercial space sector effectively.

Judicial decisions also expose the limitations of the existing regulatory framework. The **Antrix–Devas** dispute, the **2G Spectrum** judgment and the **CC/Devas** proceedings highlight the need for greater contractual certainty, transparent allocation of strategic resources and a more predictable regulatory framework. Although these decisions clarify important legal principles, they also show that the growing commercial space sector requires dedicated legislation rather than reliance on general principles of law.

The same position is reflected at the international level. While the international space treaties lay down the basic obligations of States, countries such as the United States, Luxembourg and the United Arab Emirates have strengthened those obligations through domestic laws regulating private space activities. Their experience shows that long-term commercial growth is supported by a clear statutory framework, effective institutions and continuous governmental supervision.

Taken together, these findings show that India's regulatory challenge is no longer opening the space sector to private participation, but providing a legal framework capable of supporting its long-term growth. The existing policy-based approach has encouraged commercial activity, but it cannot by itself address the legal and regulatory issues arising from an expanding private space sector. The recommendations in the following chapter therefore focus on legislative and institutional reforms to strengthen India's commercial space regulatory framework.

7. POLICY RECOMMENDATIONS FOR STRENGTHENING INDIA'S COMMERCIAL SPACE REGULATORY FRAMEWORK

7.1 Enactment of a Comprehensive Space Activities Act

The continued growth of India's commercial space sector can no longer be governed effectively

through fragmented policies and executive guidelines alone. A comprehensive Space Activities Act should therefore be enacted as the primary legislation regulating private space activities under a clear legislative roadmap. The proposed Act should bring together provisions on licensing, authorisation, registration, commercial operations, contractual obligations, liability, insurance, dispute resolution and regulatory oversight, while also incorporating India's obligations under the Outer Space Treaty, 1967, Liability Convention, 1972 and Registration Convention, 1975. Replacing the existing policy-driven approach with a unified statutory framework would improve regulatory coordination, reduce institutional overlap and provide a stable legal foundation for the long-term governance of India's commercial space sector.

7.2 Strengthening the Statutory Licensing and Authorisation Framework

Effective regulation of commercial space activities requires a licensing framework based on statutory authority rather than administrative discretion. Future legislation should establish a transparent authorisation regime with clear standards on technical competence, financial capability, operational safety, cybersecurity compliance, licence renewal, suspension, revocation and appellate review. Consistent with Article VI of the Outer Space Treaty, the framework should also require continuous governmental supervision throughout the operational lifecycle of private space activities. Such a statutory regime would promote regulatory consistency, reduce uncertainty in commercial approvals and encourage responsible participation by private space enterprises.

7.3 Developing a Dedicated Liability and Insurance Framework

The growing commercialisation of outer space requires a dedicated legal framework to clearly regulate liability and insurance. Future legislation should define the respective liabilities of private operators, the Government and other participating entities, while prescribing mandatory third-party insurance, compensation mechanisms and indemnification obligations. Given the diversity of commercial space missions, liability should follow a risk-based approach, with financial obligations determined by the nature and complexity of each activity. Such a framework would ensure fair allocation of responsibility while remaining consistent with the principles of the Liability Convention, 1972.

7.4 Enhancing Institutional Coordination and Regulatory Governance

Effective commercial space regulation requires not only a strong legal framework but also clear

institutional responsibilities. At present, regulatory functions are shared among the Department of Space (DoS), ISRO, IN-SPACe and NSIL, which may lead to overlapping responsibilities as private participation continues to grow. Future legislation should establish a statutory National Space Regulatory Authority (NSRA) to oversee licensing, compliance monitoring, inspections, enforcement and regulatory coordination, while allowing existing institutions to continue their operational and commercial roles. A clearly defined institutional structure would improve administrative efficiency, strengthen accountability and support more effective governance of India's commercial space sector.

7.5 Strengthening Investor Protection and Commercial Certainty

The long-term growth of India's private space sector depends on a stable and predictable regulatory environment that protects investment while safeguarding public interest. Future legislation should ensure transparent licensing, regulatory stability, enforceable commercial contracts and specialised dispute resolution through institutional arbitration or designated commercial forums. It should also provide clear procedural safeguards against arbitrary regulatory action. These measures would encourage sustained domestic and foreign investment while strengthening India's reputation as a reliable destination for commercial space business.

7.6 Regulating Emerging Commercial Space Activities

Rapid technological advances require a legal framework that can adapt to future developments in the commercial space sector. Future legislation should include provisions for emerging activities such as space resource utilisation, on-orbit servicing, active debris removal, in-space manufacturing, space tourism and other evolving commercial space operations. The Act should also empower the Government to update technical and operational requirements through delegated legislation as new technologies emerge. Such a framework would keep the law relevant and provide greater certainty for future commercial space activities.

7.7 Adopting a Phased Regulatory Framework for Commercial Space Governance

Given the rapid growth of India's commercial space sector, legislative reform should be implemented in a phased manner. The first phase should focus on licensing, authorisation, registration and institutional governance. The second should strengthen liability, insurance, commercial contracting and dispute resolution, while the final phase should regulate emerging

activities such as space resource utilisation, orbital servicing and other future commercial technologies. A phased implementation strategy would allow both regulatory institutions and private operators to adapt gradually while ensuring effective and consistent implementation.

7.8 Institutionalising Periodic Regulatory Review and International Harmonisation

Commercial space regulation should evolve alongside technological innovation and changing international practices. The proposed legislation should require a comprehensive regulatory review every five years, supported by consultations with industry, academia and regulatory institutions, to assess emerging technologies and identify the need for legislative reforms. Regular review of the legal framework would help maintain consistency with international obligations and global best practices. This approach would keep India's commercial space laws relevant, competitive and better prepared to address future challenges.

Policy Perspective

India's rise as a leading commercial space power will depend not only on its scientific achievements but also on the strength of its legal and regulatory framework. The next stage of India's space sector growth requires a shift from policy-led reforms to a comprehensive statutory framework that provides clarity, consistency and long-term regulatory stability. By combining transparent regulation, institutional accountability, adaptive legislation and compliance with international obligations, India can build a legal framework that supports responsible commercial growth while protecting national interests. Such a framework would strengthen India's position as a trusted and globally competitive jurisdiction, capable of contributing to the future development of commercial space governance.

8. CONCLUSION

The rapid commercialisation of the global space sector has changed the way States regulate and govern space activities, making an effective legal framework essential for sustainable growth. India has responded through major policy reforms, institutional restructuring and greater private sector participation, opening new opportunities for innovation, investment and commercial development. These reforms have marked a significant shift from a government-led space programme to a growing commercial space ecosystem with increasing global relevance.

This study finds that India's commercial space sector has grown more rapidly than its legal framework. Although existing policies, institutional mechanisms and regulatory guidelines have encouraged private participation, they do not provide a single statutory framework to regulate licensing, regulatory oversight, liability, commercial accountability and other emerging legal issues. The study also shows that long-term growth of the sector depends not only on policy reforms but also on comprehensive legislation supported by clear institutional responsibilities and effective implementation of India's international obligations.

This study concludes that the future of India's space governance depends not only on expanding private participation but also on building a modern legal framework to regulate it effectively. A comprehensive Space Activities Act, supported by transparent licensing, proportionate liability standards, coordinated institutional governance and internationally aligned regulatory principles, would provide a strong legal foundation for the long-term growth of India's commercial space sector.

As the global space economy enters a new phase of commercial competition and technological innovation, India's leadership will depend not only on its scientific achievements but also on the strength of its legal and regulatory framework. A transparent, accountable and future-oriented system of space governance will support responsible private participation, protect national interests and encourage long-term commercial growth. With such a framework in place, India can strengthen its position as a leading space-faring nation and set a global standard for the regulation of private space activities.