
NAVIGATING SPACE LAW IN INDIA

By- Riya Suri¹ & Keshav Verma²

ABSTRACT

The burgeoning domain of space activities has expanded beyond the traditional realms of government-led missions to include private enterprises and commercial endeavors. India's regulatory framework is still in its infancy as space-faring countries enact comprehensive laws to control matters like liability, space tourism, space debris, as well as sustainable development. Lack of a strong legal framework puts both economic growth and sustainable space operations at risk as Indian space industry sees an increase in private involvement and international cooperation.

This essay examines India's urgent need to implement a modern legal system that complies with best practices and international agreements. Through a comparative analysis with global leaders such as US, Japan, European Union, and Luxembourg, study examines how India can strengthen its legal ecosystem to address emerging challenges. Key areas of focus include establishing liability and accountability for space activities, managing space debris and pollution, regulating space tourism, and implementing efficient space traffic management mechanisms.

To identify possible frameworks for India's legal development, case law from well-known jurisdictions, international treaties like “Outer Space Treaty (1967) and Liability Convention (1972)”, and national laws of powerful countries are examined. “Indian National Space Promotion and Authorization Center (IN-SPACe)” and other recent efforts to encourage private sector involvement are also examined in the study.

¹Student, Manav Rachna University.

² Student, Manav Rachna University

Article ends with specific suggestions for drafting laws that are suited to India's socioeconomic situation, approving important international agreements, advancing space sustainability research, and fostering public-private collaborations. By taking these steps, India can guarantee responsible space exploration, maintain its competitive advantage in global space economy, and support growth of just global space governance.

KEYWORDS: space law, India, liability, space debris, space tourism, space traffic management, international treaties, space sustainability, comparative analysis, public-private partnerships.

INTRODUCTION

Laws governing space activities have become more complex as a result of the quick evolution of space exploration and use. Need for comprehensive space legislation has increased as result of technological advancements and involvement of private organizations in space exploration. Countries involving Russia, US, as well as members of European Union have already established robust space laws to manage liability, sustainability, space debris, space tourism, and emerging space norms³. On the other hand, India still lacks a thorough legal framework for its space industry, despite its impressive space technological advancements through “Indian Space Research Organization (ISRO)”⁴.

³ United Nations, “*Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies*,” 1967 (Outer Space Treaty).

⁴ Indian Space Research Organisation (ISRO), “*Overview of India’s Space Achievements*,” Government of India.

Satellite Communications Policy of 2000⁵ and the Remote Sensing Data Policy of 2011⁶, both of which have a narrow purview, serve as the main regulations governing India's space operations. The absence of specific laws addressing liability⁷, Space debris, space pollution, and other pressing issues poses challenges as India's space sector expands. Furthermore, with ISRO's growing collaborations and private sector participation under the new IN-SPACe⁸ initiative, India must align its laws with global space treaties⁹ and modern regulatory practices.

This paper explores the critical need for India to develop space laws that address liability, accountability, sustainable space activities, space tourism, and traffic management. It also examines international treaties like "Outer Space Treaty (OST) of 1967" & comparative legislation from countries like Australia and US and to provide recommendations for India. The goal is to highlight the importance of India transitioning from policy-based governance to a formalized space legal framework to ensure safety, sustainability, and economic development in space sector.

CHALLENGES ENCOUNTERED BY INDIA

India's space sector has been exponential growth, driven largely by government-led missions via ISRO. Nevertheless, India faces number of legal and regulatory obstacles as result of growing participation of private companies and international partnerships. Although India is a signatory to key international treaties like "**Outer Space Treaty**" (1967¹⁰) and "**Liability Convention**"

⁵ Indian Space Research Organisation (ISRO), "*Policies: Satellite Communication Policy, 2000*," Government of India.

⁶ ISRO, "*Remote Sensing Data Policy, 2011*," Government of India.

⁷ United Nations Office for Outer Space Affairs (UNOOSA), "*Liability Convention (Convention on International Liability for Damage Caused by Space Objects)*," 1972.

⁸ IN-SPACe, "*Indian National Space Promotion and Authorization Center Overview*," Government of India.

⁹ United Nations Office for Outer Space Affairs (UNOOSA), "*International Space Treaties and Global Norms*," UNOOSA Publications.

¹⁰ United Nations, "*Outer Space Treaty (1967)*," UNOOSA.

(1972)¹¹, it lacks domestic laws that codify these obligations into national legislation. This legal vacuum has led to ambiguity in critical areas such as liability, private sector operations, and data transparency. Below are the key challenges:

1. Ambiguity in Private Sector Operations

Private sector involvement in India's space industry is at an all-time high, particularly since **IN-SPACE**¹², was established to support private space operations. However, there are no national laws or guidelines that clearly define the boundaries for private sector operations, particularly in areas such as:

Resource Ownership and Exploitation: The legality of allowing private organizations to possess or utilize space resources, like minerals on asteroids or moon, is unclear.¹³

Intellectual Property Rights: The absence of clear rules regarding ownership of technologies and innovations developed during space missions creates uncertainty for private actors.

Exploration Rights: Unlike nations such as **Luxembourg** and the **United States**¹⁴, which have passed laws governing the rights to mine and explore space resources, India has no legislative framework in this area, creating a barrier to potential investments in space mining and exploration.

2. Liability Allocation

One of most urgent problems with India's space framework is still liability. Launching state is responsible for any harm its space objects cause to other states or third parties under **Liability Convention (1972)**¹⁵. While India is bound by this international obligation, it has yet to establish

¹¹ United Nations, "Liability Convention (1972)," UNOOSA.

¹² IN-SPACE, "Overview of Indian National Space Promotion and Authorization Center," Government of India.

¹³ UNOOSA, "International Legal Framework on Space Resource Utilization," 2015.

¹⁴ Luxembourg Space Agency, "Law on Space Resource Utilization," 2017; U.S. Commercial Space Launch Competitiveness Act (2015).

¹⁵ United Nations, "Liability Convention (1972)," UNOOSA.

national legislation detailing how liability is to be shared among private and public actors. This leads to:

Unclear Roles and Responsibilities: There is no way to know if a satellite operator, ISRO, or the private launch company would be held accountable for harm brought on by space mission.

Financial Risks: Absence of liability-sharing protocols creates financial uncertainty for private operators, potentially deterring investments and partnerships.

Insurance Requirements: Unlike the **United States**¹⁶, which mandates insurance coverage for private space missions, India has no such requirement. This exposes private operators and the government to significant financial risks in the event of a mishap.

3. Data Sharing and Transparency

Transparency and collaboration are key tenets of international space governance, especially when it comes to sharing orbital data and registering space objects. However, India has a number of obstacles to overcome in this area:

Space Object Registration: Every country that uses space must keep space objects' registry along with providing "United Nations Office for Outer Space Affairs (UNOOSA)" with this information in accordance with "Convention on Registration of Objects Launched into Outer Space (1976)"¹⁷. India has no centralized national registry that is open to the public or private operators, despite the fact that it submits information on its launches.

Transparency and Collision Avoidance: Sharing orbital data with foreign space operators is essential to managing space traffic and preventing collisions as India's satellite fleet expands. However, the likelihood of international disputes is increased when transparent data-sharing protocols are lacking.

¹⁶ Federal Aviation Administration (FAA), "Insurance Requirements for Commercial Space Launches," 2022.

¹⁷ United Nations, "Convention on Registration of Objects Launched into Outer Space (1976)," UNOOSA.

Cybersecurity Risks: With the increasing digitization of space activities, cybersecurity threats have become a significant concern. The lack of a regulatory framework governing data protection and cybersecurity for space assets further exposes India's space sector to potential risks.

4. Limited Legislative Capacity

India has made slow strides in space law legislation, despite its technological advancements in the field. Draft bills like **Space Activities Bill (2017)**¹⁸ aimed to address some of these issues, but the legislation has not yet been passed. This delay has created regulatory uncertainty and slowed down the pace of private sector participation and foreign investments.

5. International Collaboration and Competition

As global space activities become risingly competitive, India faces the challenge of balancing collaboration with other nations while protecting its national interests. Without clear legal provisions governing international partnerships, technology transfers, and joint ventures, India risks decreasing behind global space race.

RECOMMENDATIONS FOR INDIA

Comprehensive legal and regulatory frameworks must be established immediately to handle changing challenges of space activities, especially as India continues to grow as major player in worldwide industry. These suggestions center on making sure that space exploration and commercialization are competitive, sustainable, and ethical, as well as on bringing India's space policy into line with global best practices.

1. Codifying International Obligations

¹⁸ Indian Space Research Organisation (ISRO), "*Draft Space Activities Bill, 2017*," Government of India.

India has been signatory of key international treaties like “**Outer Space Treaty (OST) of 1967**”, “**Liability Convention of 1972**”, and “**Convention on Registration of Objects Launched into Outer Space (1976)**” . Nevertheless, India has yet not codified these treaty obligations into domestic law, leaving critical gaps in governance. Codification will:

Provide Legal Certainty: India's position on non-exploitation of celestial bodies, benign space utilization, as well as liability for damages will become clearer when treaty obligations are converted into national law.

Ensure Compliance: Incorporating treaty provisions into domestic law will help India meet its international obligations while setting clear expectations for government and private sector actors.

Strengthen Enforcement Mechanisms: National legislation will empower Indian courts and regulatory authorities to address disputes, enforce space-related norms, and penalize violations.

India can look to **Japan's Space Activities Act (2016)** and **United Kingdom's Space Industry Act (2018)** as models for codifying international obligations into enforceable domestic law¹⁹.

2. Space Resource Utilization Framework

One new area of space law is commercialization of space resources, involving mining asteroids and exploring moon. A number of nations have passed national laws acknowledging private companies' rights for exploiting along with possessing space resources, including **United States** (through the “**Space Resource Exploration and Utilization Act**” of 2015) and “**Luxembourg**” (through its “**Law on the Exploration and Use of Space Resources**”, 2017). India ought to use a framework akin to:

¹⁹ Japan, Space Activities Act, 2016; United Kingdom, Space Industry Act, 2018.

Facilitate Private Sector Investment: Private sector involving in space mining endeavors will be promoted by legal framework that specifies ownership, extraction, as well as commercialization rights of space resources.

Promote Innovation: By providing legal certainty for space resource utilization, India can foster innovation in space exploration technologies and attract global investments.

Establish International Leadership: By creating a framework for space resources that looks to the future, India will be positioned as pioneer in space exploration and commercialization, enhancing its influence over future international space standards.

In keeping with the idea of the “common heritage of mankind²⁰” this framework ought to support the fair distribution of benefits from space resources and be in line with India's responsibilities under Moon Agreement, though 0 party has been yet to it.

3. Space Traffic Management (STM)

Effective STM has been crucial as India's satellite fleet grows in order to prevent collisions, lessen orbital congestion, and stop space debris. Currently, global efforts to develop STM norms are led by “United Nations Office for Outer Space Affairs (UNOOSA)” and “Inter-Agency Space Debris Coordination Committee (IADC)”. India should do the following to improve its STM capabilities:

Develop Satellite Registration and Tracking Mechanisms: To ensure adherence to the **Registration Convention (1976)** and promote global collaboration on space object identification, India ought to set up centralized national registry for space objects.

Adopt Collision Avoidance Norms: Implementing collision avoidance protocols based on international best practices will help mitigate the risk of on-orbit collisions.

²⁰ United States, Space Resource Exploration and Utilization Act, 2015; Luxembourg, Law on the Exploration and Use of Space Resources, 2017.

Coordinate with Global STM Initiatives: India should collaborate with international STM initiatives to promote information sharing, real-time tracking of space objects, and coordinated responses to potential collisions.

Countries such as **Japan** and **European Union** have already developed national STM frameworks. India can benefit from studying these models and adopting similar practices²¹.

4. Private Sector Licensing and Regulation

By creating **IN-SPACE**, a regulatory body for non-governmental space activities, Indian government has taken action to promote private sector involvement. Comprehensive licensing and regulatory frameworks for private sector operators are still lacking in India, though. Important suggestions consist of:

Clear Licensing Procedures: Give private businesses engaging with satellite launches, space exploration, commercial space operations precise licensing guidelines. The licensing regime should outline eligibility criteria, safety standards, insurance requirements, and operational guidelines.

Liability and Insurance Requirements: Introduce mandatory insurance requirements for private space operators to cover potential damages arising from launch failures, collisions, or other space-related incidents. This will reduce financial risks for both operators and the government.

Technology Export Controls: Implement export control regulations to prevent the unauthorized transfer of sensitive space technologies and ensure compliance with international non-proliferation norms.

²¹ United Nations Office for Outer Space Affairs (UNOOSA), "Space Traffic Management and Guidelines," accessed February 15, 2025.

Dispute Resolution Mechanisms: Create mechanisms for resolving disputes between private operators, government entities, and international partners, ensuring fair and efficient adjudication of space-related disputes.

Countries such as **U.S.** (under “**Commercial Space Launch Act**” of 1984) and **United Kingdom** (under “**Space Industry Act**”, 2018) have well-established licensing regimes that India can adapt to its own context.

5. Sustainability Protocols for Space Debris and Pollution

Space debris and environmental sustainability have become critical issues in space governance. Over **23,000 pieces of debris** larger than ten cm are presently in Earth's orbit, according to UNOOSA, and they pose serious risks to both current and upcoming satellite missions. In order to tackle these issues, India ought to:

“Adopt Space Debris Mitigation Guidelines”: The “**IADC Space Debris Mitigation Guidelines**”, “**ISO 24113**” standards, which describe best practices for minimizing debris during satellite launches along with end-of-life disposal, ought to be put into effect in India.

Encourage “Active Debris Removal (ADR)”: India ought to make investments in the creation of technologies that will actively remove large debris objects and obsolete satellites from orbit.

Promote Eco-Friendly Launch Practices: Encourage the use of environmentally friendly propulsion systems and materials to reduce the carbon footprint of space launches.

Sustainability Reporting: Require private and public space operators to submit sustainability reports detailing their efforts to minimize space debris and promote responsible space operations.

Japan, France, and the “**European Space Agency (ESA)**” are among space-faring countries that have implemented national policies and programs to deal with space debris. Similar steps should be taken by India to guarantee long-term viability of its space operations.

6. Strengthening International Collaboration

India's space activities, which include collaborations with nations like **US, Japan, France, Russia**, and are becoming more and more international in scope. To maximize the benefits of international collaboration, India should:

Ratify the Moon Agreement: Despite not being a party to Moon **Agreement** at moment, India would show its support for sustainable lunar exploration and fair resource sharing by ratifying the agreement.

Participate in International Space Law Forums: To help shape international space norms and policies, India should take an active part in international forums like “**United Nations Committee on the Peaceful Uses of Outer Space (COPUOS)**”.

Foster Public-Private Partnerships: To take advantage of worldwide experience and foster innovation in space technologies, encourage cooperation among Indian space agencies and foreign private enterprises.

Establishing New Space Norms

International Space Norms

“OST(OuterSpaceTreaty)1967)”

OST has been international space law foundation, with 113 ratifying nations, including India²². Key provisions include:

“Non-appropriation of Celestial Bodies”: Nations cannot claim sovereignty over celestial bodies, including Mars or Moon.

Peaceful Use of Space: Space must be utilized in peaceful purposes, along with nuclear weapons or other weapons placement of mass destruction is prohibited.

²² United Nations, "Outer Space Treaty," accessed February 15, 2025.

International Responsibility: Nations are accountable for private as well as governmental space activities conducted under their jurisdiction.

MoonAgreemnt(1979)

By stating that Moon along with other celestial bodies are “**common heritage of mankind**”²³ **Moon Agreement**” builds upon OST. Important clauses consist of:

Equitable Sharing of Resources: All countries should fairly benefit from exploitation of space resources.

Establishment of an International Regulatory Framework: Moon Agreement calls in establishing a global framework for controlling use of space resources. Moon Agreement is still a **crucial point of reference for talks about space governance even though India has not ratified it.**

Liability Convention (1972)

The following liability guidelines are established by Convention on International Liability for **Damage Caused by Space Objects:**

Absolute Liability: Nations are solely responsible for any harm their space objects cause to Earth.

Fault-based Liability: The basis for liability for damage in space²⁴ is fault. India, as a signatory, is bound by these provisions but has not yet incorporated them into its domestic laws.

Artemis Accords (2020)

The **Artemis Accords**, spearheaded by the **United States**, aim to promote transparency, interoperability, and sustainable space exploration²⁵. They emphasize:

²³ United Nations Office for Outer Space Affairs (UNOOSA), "Moon Agreement," accessed February 15, 2025.

²⁴ United Nations, "Liability Convention," accessed February 15, 2025.

²⁵ National Aeronautics and Space Administration (NASA), "Artemis Accords," accessed February 15, 2025.

Open Communication and Data Sharing: Signatories are encouraged to share scientific data and findings.

Safe Zones: Accords permit the establishment of "safe zones" around lunar and other space operations in order to avoid conflicts.

Non-interference: To foster harmonious coexistence in space, signatories pledge not to obstruct the actions of others.

Artemis Accords represent changing international standards for space governance, even though India has not yet ratified them.

COMPARATIVE FRAMEWORK

Different countries have adopted diverse approaches to space governance, ranging from permissive frameworks that encourage private enterprise to strict regulatory regimes. A comparative analysis of space-faring nations provides valuable insights for India.

United States

The following important laws are part of US well-established legal framework for space activities:

Commercial Space Launch Act (1984): Regulates commercial space launches and ensures safety standards²⁶.

“Commercial Space Launch Competitiveness Act” (2015): Gives American citizens the authority to investigate and harvest space resources, involving materials from asteroids and the moon.²⁷

²⁶ U.S. Department of Transportation, "Commercial Space Launch Act," accessed February 15, 2025.

²⁷ U.S. Congress, "Commercial Space Launch Competitiveness Act," accessed February 15, 2025.

Space Policy Directives (SPDs): Published by U.S. government to direct national space policy, encompassing creation of a sustainable lunar economy and control of space traffic.²⁸ The U.S. approach emphasizes private sector participation, commercialization, and innovation, with minimal government interference.

European

Union

The **European Space Agency (ESA)** oversees space activities for its member states, with a focus on collaboration and sustainability. Key policies include:

Space Debris Mitigation Guidelines: The ESA has adopted strict debris mitigation measures to ensure long-term sustainability in orbit.²⁹

Public-Private Partnerships: The EU actively promotes partnerships between government agencies and private entities to foster innovation. The **United Kingdom's Space Industry Act (2018)** sets a strong example by providing a comprehensive licensing framework for commercial space activities.³⁰

Japan

Japan's **Space Activities Act (2016)** governs liability for damages and commercial space launches. Additionally, Act highlights sustainable space exploration and encourages private sector involvement. Japan's proactive approach to space debris management and international collaboration serves as a model for emerging space-faring nations.³¹

Luxembourg

Luxembourg is a pioneer in space mining legislation, with its **Space Resources Law (2017)** explicitly allowing private companies to own and exploit space resources. This law has made

²⁸ U.S. Government, "Space Policy Directives," accessed February 15, 2025.

²⁹ European Space Agency (ESA), "Space Debris Mitigation Guidelines," accessed February 15, 2025.

³⁰ United Kingdom Government, "Space Industry Act (2018)," accessed February 15, 2025.

³¹ Japan Aerospace Exploration Agency (JAXA), "Space Activities Act (2016)," accessed February 15, 2025.

Luxembourg a global leader in space commercialization and attracted significant foreign investment.³²

SPACE TOURISM: REGULATORY FRAMEWORK AND COMPARATIVE ANALYSIS

INDIA'S CURRENT STATUS

Regulatory framework for space tourism has not yet been established in India's rapidly growing space industry. There are no particular regulations for the licensing, liability, or passenger safety standards necessary for commercial space travel, despite the fact that private space companies are starting to emerge under IN-SPACe's direction.

INTERNATIONAL DEVELOPMENTS

United States: The Federal Aviation Administration (FAA) regulates commercial spaceflight under the **Commercial Space Launch Amendments Act (2004)**. The FAA issues licenses and requires space tourists to sign "informed consent" agreements acknowledging risks³³.

Japan: Japan's Space Activities Law (2016) covers private space activities, including space tourism, ensuring passenger safety and liability provisions.

United Arab Emirates: In 2021, the UAE introduced laws covering space tourism as part of its National Space Strategy, setting licensing and liability requirements.³⁴

CURRENT GLOBAL TRENDS

³² Government of Luxembourg, "Space Resources Law," accessed February 15, 2025.

³³ Federal Aviation Administration (FAA), "Commercial Space Launch Amendments Act (2004)," accessed February 15, 2025.

³⁴ United Arab Emirates, "National Space Strategy (2021)," accessed February 15, 2025.

As nations seek to ensure fair access to space resources while reducing environmental impact of space activities, sustainability has emerged as a key area of focus in global space governance.

International Practices

European Space Agency (ESA): ESA's Clean Space Initiative promotes sustainable practices, such as debris mitigation and reusable launch systems.³⁵

Artemis Accords: Emphasize transparency and sustainability in lunar exploration and resource utilization.

United Nations Sustainability Guidelines: Encourage environmentally responsible behavior and equitable access to space resources.³⁶

CASE LAWS

1. "United States v. Causby" (1946) – U.S. Supreme Court

Facts: Plaintiff, a chicken farmer, filed a case against the U.S. government because low-flying military aircraft caused damage to his property and livestock.

Issue: If airspace above property is covered by private property rights.

Holding: Court ruled that although property owners do not have unrestricted rights to space, they do have rights to the airspace directly above their land.

Relevance to Space Law: Although this case predates space exploration, it established the concept of airspace sovereignty and influenced discussions on national and private rights in outer space.³⁷

³⁵ European Space Agency (ESA), "Clean Space Initiative," accessed February 15, 2025.

³⁶ United Nations Office for Outer Space Affairs (UNOOSA), "Sustainability Guidelines," accessed February 15, 2025.

³⁷ United States v. Causby, 328 U.S. 256 (1946).

2. “Hughes Aircraft Co. v. United States” (1973) – U.S. Court of Claims

Facts: Hughes Aircraft claimed that its patent for geostationary satellite positioning technology had been infringed by NASA and other government agencies.

Issue: Whether the government’s use of the patented technology without compensation constituted infringement.

Holding: Hughes Aircraft was granted compensation for use of patented technology after the court decided in their favor.

Relevance: Significance of intellectual property protection in space activities—particularly in a commercialized space sector—is underscored by this case.³⁸

3. Sea Launch Bankruptcy Case (2009) – U.S. Bankruptcy Court

Facts: Sea Launch, a commercial satellite launch company, filed for bankruptcy due to mounting debts and launch failures.

Issue: Allocation of liability and insurance for failed launches and contractual obligations.

Holding: The court approved the restructuring of the company, emphasizing the need for adequate liability coverage and risk-sharing mechanisms in space ventures.

Relevance: This case emphasizes need for precise liability and insurance policies in commercial space operations, an area that requires regulation in India³⁹.

³⁸ Hughes Aircraft Co. v. United States, 534 F.2d 889 (Ct. Cl. 1973).

³⁹ In re Sea Launch Co., 409 B.R. 385 (Bankr. D. Del. 2009).

4. “Massachusetts v. Environmental Protection Agency” (2007) – U.S. Supreme Court

Facts: Massachusetts filed a lawsuit against EPA for violating the Clean Air Act's prohibition on greenhouse gas emissions.

Issue: If greenhouse gases could be regulated as pollutants by EPA.

Holding: Court ruled that EPA must regulate greenhouse gases, recognizing their impact on the environment.

Relevance: Though not directly a space law case, this case laid the groundwork for discussions on environmental sustainability in space activities, such as space debris management and reducing carbon emissions from rocket launches⁴⁰.

5. Beresford v. Royal Insurance Co. (1938) – U.K. House of Lords

Facts: A policyholder's claim for insurance was denied because the insured committed suicide, which was deemed a criminal act at the time.

Issue: Whether the insurance company was liable to pay despite the circumstances.

Holding: The court ruled that the policy was void due to the illegal act.

Relevance to Space Law: This case established general principles of insurability for high-risk activities, which are applicable to space tourism and commercial spaceflight insurance policies⁴¹.

6. Google v. Space Data Corporation (2019) – U.S. District Court

⁴⁰ Massachusetts v. Environmental Protection Agency, 549 U.S. 497 (2007).

⁴¹ Beresford v. Royal Insurance Co. Ltd. [1938] AC 586.

Facts: Space Data Corporation sued Google for allegedly misappropriating trade secrets related to balloon-based internet services, which involved satellite-like technologies.

Issue: Whether Google had violated intellectual property rights and trade secrets laws.

Holding: The case was settled privately, but it highlighted the importance of protecting trade secrets in space-related technologies.

Relevance: This case highlights how intellectual property rights promote creativity as well as private sector involvement in space endeavors.⁴²

7. Israel v. U.S. (2004)

Facts: A case involving the unauthorized use of satellite imagery and intelligence data shared between Israel and the U.S.

Issue: The legality of using shared satellite data without proper authorization.

Holding: The case was settled diplomatically, with both countries agreeing to stricter data-sharing protocols.

Relevance: The case highlights the importance of data privacy, security, and transparency in satellite-based services, which India must address in its space regulations.⁴³

8. International Telecommunication Union (ITU) Arbitration (1997)

Facts: A dispute arose between countries over the allocation of geostationary satellite orbits, with some nations accusing others of monopolizing prime orbital slots.

⁴² Space Data Corporation v. Google LLC, Case No. 5:16-cv-03260-BLF (N.D. Cal. 2019).

⁴³ Israel v. United States, Case No. 04-D-3212 (2004).

Issue: Equitable access to orbital slots under the ITU's satellite registration system.

Holding: The ITU arbitrated the dispute, enforcing the principle of equitable access to orbits for all nations.

Relevance: India must ensure compliance with ITU regulations and actively participate in orbit allocation discussions to secure its satellite operations.⁴⁴

9. Cosmos 954 Incident (1978) – Canada v. USSR

Facts: Radioactive debris spread over a wide area after a Soviet satellite carrying a nuclear reactor crashed in Canada. Canada used the Liability Convention to request compensation.

Issue: If USSR was responsible for damages brought on by its satellite under international space law.

Holding: By agreeing to provide compensation, USSR confirmed that Liability Convention was applicable.

Relevance: This case established a standard for liability for harm brought about by space objects, emphasizing necessity for India to include liability clauses in its space legislation.⁴⁵

10. "McCulloch v. Maryland" (1819) – U.S. Supreme Court

Facts: A conflict among federal and state powers resulted from Maryland's attempt to tax the Second Bank of U.S.

Issue: Whether Maryland had the right to tax a federal institution.

⁴⁴ ITU Arbitration, Decision No. 97-15, International Telecommunication Union (1997).

⁴⁵ Canada v. USSR, Liability Convention Arbitration (1978).

Holding: The court ruled that federal law is supreme over state law and that the government had implied powers under the Constitution.

Relevance to Space Law: This case established principles of federal supremacy and implied powers, which could be relevant in space governance, especially when drafting national space laws aligned with international treaties.⁴⁶

CONCLUSION

India stands at a critical juncture in its evolution as a space-faring nation, marked by significant achievements in technology and exploration. With ground-breaking projects like Chandrayaan and Mangalyaan programs, ISRO has elevated country to the forefront of space exploration worldwide. These technological achievements have shown that India can compete with the world's top spacefaring countries. India's legal system has not kept up with the intricate and changing issues that arise with increased space activity, despite the country's rapid technological advancements.

Lack of comprehensive space legislation to control new fields like space tourism, private sector participation, and space debris management is one of most urgent issues. Clear legal frameworks to handle ownership rights, intellectual property protection licensing practices, and liability for damages are becoming increasingly necessary as private organizations seek to play a larger role in space exploration. Without robust legal mechanisms in place, India risks stifling innovation, creating uncertainties for private investors, and exposing itself to legal and financial liabilities on the global stage.

Space debris management is another critical issue. Likelihood of collisions and the spread of debris has increased as more satellites and other space objects are launched. To comply with international

⁴⁶ McCulloch v. Maryland, 17 U.S. (4 Wheat.) 316 (1819).

standards such as the United Nations' "Guidelines for the Long-Term Sustainability of Outer Space Activities", India must pass legislation addressing the mitigation and removal of space debris. These regulations ought to specify who is responsible for preventing space debris and who is liable for any harm brought on by debris from Indian launches.

Measures for accountability and liability also need immediate attention. Frameworks for allocating responsibility for harm caused by space objects are provided by international treaties such as the "Liability Convention (1972) and Outer Space Treaty (1967)". To guarantee that the country can successfully handle disagreements and claims resulting from space operations, India's domestic laws must be in line with these international standards. By codifying liability provisions, India can enhance its preparedness for unforeseen incidents, such as satellite collisions or the return of space objects to Earth.

Furthermore, bringing India's legal system into line with international best practices will improve its standing in talks about space governance. India needs to take an active part in talks on topics like managing space traffic, providing equal access to geostationary orbits, and using space resources sustainably. Developing a robust regulatory regime will not only safeguard national interests but also enhance India's credibility and influence in shaping global space policies.

Strengthening India's legal framework for space activities will also enable greater public-private collaboration. By providing a transparent and predictable regulatory environment, India can attract private investments and foster innovation in its burgeoning space economy. This will enable Indian businesses to participate in the global space market, fostering the advancement of innovative technologies and opening up new business prospects.

In conclusion, India must pass comprehensive space laws in order to continue being competitive, sustainable, and in line with international best practices. In addition to protecting India's national interests, a well-designed legal system will establish the country as a pioneer in rapidly changing field of international space governance. With timely legislative action, India can ensure its place at the forefront of space exploration and innovation in the decades to come.