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# A New Space Policy: Critical for the development of the Space Sector in India

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## ABSTRACT

*Since the launch of Sputnik by the Soviet Union in 1957, space capabilities have come a long way. The first rocket launch in India took place in 1963, and ISRO has now grown to be one of the world's most developed space agencies. With the advancement in space technology, the law that governs space and activities carried out in outer space and other celestial bodies must be developed too. Several treaties like the Outer Space Treaty (1967), Liability Convention (1972), Registration Convention (1976), Rescue Agreement (1968), and the Moon Agreement (1984) were signed. India is a signatory to all five of these treaties but has ratified only four. Despite ratification, a comprehensive space policy that covers all aspects of these treaties has still not been enacted in India. With the growth and development of the space sector, many issues have emerged. In this paper, the author has made an intricate analysis of the issues faced by the space industry, scrutinized the existing space legislations meticulously and based on the same and has made a few recommendations on how a comprehensive space policy can be beneficial for India.*

**Keywords:** Space Law, ISRO, Outer Space Treaty, Space Policy

## I. INTRODUCTION

India has been in the space race for more than 50 years now. The first rocket launch took place in 1963 under the leadership of Dr Vikram Sarabhai. Soon, India put *Aryabhata*, the first scientific satellite into space. Since then, India has been having a diverse set of space missions, including remote sensing, communication, broadcasting, meteorology, monitoring environment and prevention of natural disasters. All because of the technological advancements made by the Indian Remote Sensing Satellite (IRS) and the Geosynchronous Earth Satellite (GSAT). India has made itself completely self-sufficient in terms of satellite launch capabilities by introducing the Polar Satellite Launch Vehicle (PSLV) and Geosynchronous Satellite Launch Vehicle (GSLV). The launch of Chandrayaan (moon mission) and Mangalyaan (Mars mission) pushed India into the top tier of spacefaring nations.

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Space has mainly been an exclusive domain for India's public sector, with very little private intervention. Indian Space and Research Organization (ISRO) is the primary space organisation in India, along with Antrix, which is the commercial arm of ISRO. The need for Antrix was felt when India could launch satellites at much cheaper rates than its global counterparts and therefore decided to exploit that opportunity and to further create enormous potential for India in the commercial launch market. With the advancements India continues to make in the space sector, one can only assume that it is also equally developed in terms of the law that governs these space activities. Alas, this natural corollary is not true. While many nations which much less mature space programmes like Canada, the Netherlands, South Africa and Ukraine have made a well established legal framework.<sup>2</sup> There are five international legislation governing space, India has ratified four of them, and signed one. Ratification usually means that a country enacts the legislation into the domestic law to make it binding within a given time frame. However, it has been over five decades since India ventured into space but still has not enacted any of the treaties in the form of a legislation. On 4<sup>th</sup> June, 2020, the union cabinet approved the creation of the Indian National Space Promotion and Authorisation Centre (IN-SPACe) to coordinate the activities of the private players in the Indian Space Market.<sup>3</sup> This comes when India has opened its space industry to private players. These are steps in a very fruitful direction, however, without airtight space legislation, several issues may arise and hamper the growth of the space industry. This paper aims to highlight the reasons why India needs a dedicated space legislation.

## II. KEY ISSUES AND AREAS OF DEVELOPMENT IN SPACE

### A. SPACE DEBRIS

The first satellite mission was undertaken by Russia when they launched the *Sputnik* into space. After this, a lot has changed in the space industry; thousands of missions have been conducted by different public and private space agencies worldwide. These missions are critical to the global economy as they provide services like communication, meteorology, disaster management, GPS, etc. About nine thousand satellites have been launched till date, and more than five thousand of them are still in space.<sup>4</sup> Out of these five thousand satellites, about one thousand nine hundred and fifty satellites are still functioning while others have become

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<sup>2</sup> Senjuti Mallick, *Why India needs a space law*, THE HINDU, (Feb 10, 2021, 11:50 AM), <https://www.thehindu.com/opinion/open-page/why-india-needs-a-space-law/article19094453.ece>.

<sup>3</sup> Vasu Manchanda, Kshitij Dahiya, *Indian Space Age: The need for space legislation*, LATEST LAWS, (Feb 10, 2021, 01:28 PM), <https://www.latestlaws.com/articles/indian-space-age-the-need-for-space-legislation/>.

<sup>4</sup> Louis de Gouyon Matignon, *The Legal Status of Space Debris*, SPACE LEGAL ISSUES, (Feb 10, 2021, 03:28 PM), *The legal status of space debris - Space Legal Issues*.

defunct. These defunct satellites keep orbiting the Earth for a very long period of time before they finally make reentry into Earth's atmosphere and fall back to the Earth's surface. Waste disposal is essential to a satellite's functioning, and therefore the orbit also contains small sensors, nuts and bolts, chips of paint from satellites, separated rocket boosters, etc. An official, legal definition of orbital debris has not been internationally adopted. The Scientific and Technical Subcommittee (STSC) of the United Nations Committee on Peaceful Uses of Outer Space (COPUOS) came up with a definition. According to the STSC, "Space Debris are man-made objects, including their fragments and parts, whether their owners can be identified or not, in Earth orbit or re-entering the dense layers of the atmosphere that are non-functional with no reasonable explanation of their being able to resume their intended functions or any other functions for which they are or can be authorised."<sup>5</sup>

There are tons of legal issues that surround space debris. Article VII of the Outer Space Treaty says that the launching state shall be liable for damage to another state party if the damage is caused by any satellite or its parts in the airspace, outer space or the Earth. This imposes an overwhelming degree of liability on the launching state. Article VIII of the Outer Space Treaty further adds that "A State Party to the Treaty on whose registry an object launched into outer space is carried shall retain jurisdiction and control over such object and over any personnel thereof". After reading these two articles, one can conclude that space debris essentially consists of component parts of the satellites that are launched into outer space, and therefore space debris becomes the property of the launching state.<sup>6</sup> Several international mechanisms exist that play a large role in creating norms, best practices, and guidelines for mitigating space debris over the years. The Inter-Agency Debris Coordination Committee (IADC) is one such organisation that has been working towards establishing clear and internationally recognised policies and technical frameworks for nations to adopt or use as a basis for their national space sustainability policies. The UN Committee on the Peaceful uses of Outer Space (COPOUS) came out with the first space sustainability guidelines in 2007. All 92 member states accepted these guidelines in June 2019. The objectives mentioned in these guidelines are in consonance with Article I of the Outer Space Treaty, states that use of outer space should be for the well-being and interests of all countries. Thus, the first guideline presented encourages states to "adopt, revise and amend the national framework for outer space activities" to promote sustainability in space. These guidelines consist of several additions or revisions of the national frameworks

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<sup>5</sup> Nicholas L. Johnson, *Saving Space: The Multilateral Approach to Orbital Debris*, 15, GEORGETOWN JIA. 130-138, 131(2014)

<sup>6</sup> MATIGNON, *supra* note 3.

to encourage responsible behaviour by states and taking all possible measures to limit the space debris released during operations. The guidelines also emphasise on the need to increase communication among countries and non-governmental entities, as the number of satellites made by private non-governmental entities are on the rise. Many countries have adopted these guidelines and are looking to be leaders in space sustainability. In a study conducted by the Institute for Defence Analyses (IDA), IDA found that several countries have a wide spectrum of space debris mitigation measures and guidelines. Australia, for example, has laid out official guidelines for applicants seeking to launch a satellite. The organisation is required to develop a debris mitigation and reduction strategy in consonance with COPOUS guidelines. Canada also has set up a regulatory framework to tackle the issue of space debris. According to the Canadian regulations, the satellite operator must provide an assessment of the total debris creation and a plan for disposal after the mission has ended. Countries like France, Finland, Austria, Japan and Nigeria also enacted national rules to prevent, mitigate, and reduce space debris creation.<sup>7</sup>

However, India still does not have a space legislation and therefore has no set of guidelines or a framework to prevent or mitigate space debris. This comes as a shocking revelation considering India is a major space power now. India had a total of six orbital launches in 2019 and is a major contributor to space debris after the United States, Russia and China.<sup>8</sup> With the setting up of ISRO's second commercial arm, New Space India Limited (NSIL), which is exclusively meant for smaller satellite launches in Low Earth Orbit it is all the more necessary for India to create a legislation that governs launches as well as the debris created by these spacecrafts.<sup>9</sup>

## **B. COMMERCIALISATION AND PRIVATISATION OF SPACE**

The space industry in India was recently opened up to private entities. This is a big boost to the mostly public dominated sector. The government has also approved the creation of a new organisation to ensure greater private participation in India's space activities. The Indian National Space Promotion and Authorisation Centre (IN-SPACe) will be functional soon. Its main function is to analyse the needs and demands of private players, including educational and research institutions and accommodate these requirements. India is one of the key space

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<sup>7</sup> Kaitlyn Johnson, *Key Governance Issues in Space*, CENTRE FOR STRATEGIC AND INTERNATIONAL STUDIES, (Feb 11, 2021, 07:32 PM), <https://www.csis.org/analysis/key-governance-issues-space>.

<sup>8</sup> Pratik Jakhar, *Is India becoming a major source of space debris*, BBC, (Feb 11, 2021, 01:31 PM), <https://www.bbc.com/news/50827462>.

<sup>9</sup> India Science Wire, *ISRO's Commercial wing New Space India Limited receives its first order*, FIRSTPOST, (Feb 11, 2021, 7:20PM), <https://www.firstpost.com/tech/science/isro-commercial-wing-new-space-india-limited-receives-its-first-order-7126961.html>.

powers; however, it has a mere three per cent share in the global space economy. This is because 95% of the global space economy comprises satellite-based and ground-based systems. Indian industry is unable to compete because a majority of the private players are suppliers of components and sub-systems used in satellites and therefore do not have the technology to provide space-based services.<sup>10</sup> The demand for a lot of space-based services is also on the rise within India and ISRO alone will not be able to adhere to such needs. We need to understand that ISRO, like NASA, is a scientific organisation with a primary focus on space exploration and research. Till now, ISRO has been performing all space-related functions. To overcome this challenge, it is very crucial that there are proper legislation governing the space industry's operations.

### **C. LIABILITY IN SPACE**

As privatisation activities are on the rise in the space sector, it has become critical to determine liability issues in space. Article VII of the OST states that "Each State Party to the treaty that launches or procures the launching of an object into outer space, including the moon and other celestial bodies, and each state party from whose territory or facility an object is launched, is internationally liable for damage to another state party to the treaty or to its natural or juridical persons by such object or its component parts on the Earth, in air space or outer space, including the Moon and other celestial bodies".<sup>11</sup> This article later gave birth to the Liability Convention (1972). Now, if the Space industry is commercialised in India, several satellite manufacturers from India and overseas will approach ISRO for launching facilities. Therefore, India becomes the launching state and has to bear International Liability for a satellite made by an Overseas Equipment Manufacturer (OEM). At present, things are done on a contractual basis and there are clauses that indemnify the government from incurring any liability.

### **D. DEVELOPMENT OF SPACE INSURANCE**

The liability convention clearly states that a Nation is liable to third parties for damages caused by its space activities. Therefore, many national policies of the launching states are created to ensure that these costs are passed on to the private actor in the case of a liability claim. Because of this, insurance for space missions is on the rise. Now, most spacefaring countries self-insure national space missions. This means that the government will assume all financial liability and risk of the mission if it fails. Unfortunately, private entities cannot have the same luxury. In the

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<sup>10</sup> Amitabh Sinha, *IN-SPACE explained: what it means to the future of space exploration*, THE INDIAN EXPRESS, (Feb 12, 2021, 07:29 PM), <https://indianexpress.com/article/explained/in-space-india-space-missions-private-participation-isro-6476532/>.

<sup>11</sup> Outer Space Treaty, Art. 7, Jan 27, 1967. <https://www.history.nasa.gov/1967treaty.html>

1980's there was a global surge in the privatisation and commercialisation of space activities. Several private launch companies came up to provide launch services, ground-based services and space-based services. The United States of America was one of the first countries to develop a legislation that governs space activities, followed closely by the UK and France. These national laws regulate the activities of private entities. India is going through the wave of privatisation and commercialisation now; therefore it is imperative that the Centre should introduce a legislation that governs space activities in India. Like all other kinds of insurance, the function of space insurance is to mitigate risk and protect against financial loss. Space is a riskier business because there are several points of failure. Space Insurance can cover a variety of risks like launch failure, deployment failure and mission failure.<sup>12</sup>

In India, due to the absence of a domestic space legislation, there is no policy governing space liability and insurance issues. However, the recently released draft Space Based Communications Policy holds private entities liable for any liability arising from any such operations and also mandates such entities to ensure themselves against any liability arising from such operations in India or outside India.<sup>13</sup> In several developed spacefaring nations such as United States, Australia and France, a cap or a ceiling amount is set for incurring liability. If the liability incurred by the private entity exceeds that limit, the state shall cover the remaining amount. If India wants the space sector to grow exponentially and foster innovation, it needs to take a similar approach, because Indian start-ups may have the technical know-how but it will be childish to assume that they can afford billions of dollars in case the situation arises. The government can cap the amount for Start-ups and MSME's and any liability exceeding that can be incurred by the state. This has two benefits, it will reduce the burden on private entities and also foster innovation. Nevertheless, India's space policy is at a very nascent stage and therefore the with the right policy decisions, it can play a vital role in the development of space insurance and space sector in India.<sup>14</sup>

### **III. CURRENT SPACE LAW FRAMWORK IN INDIA**

#### **A. SATELLITE COMMUNICATION POLICY, 1997**

The Department of Space released the Satellite Communication Policy<sup>15</sup> (SATCOM) in 1997. It was released keeping in mind the vast growth and developmental opportunities that the space

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<sup>12</sup> Louis de Gouyon Matignon, *Space Insurance and Space Law*, SPACE LEGAL ISSUES, (Feb 13, 2021, 01:58 PM), <https://www.spacelegalissues.com/space-insurance-space-law/>.

<sup>13</sup> Ikigai Law, *Limiting Space Liability and Insurance for Indian Start-Ups*, MONDAQ, (Feb 13, 2021, 03:01 PM), *Limiting Space Liability And Insurance For Indian Start-ups - Insurance - India* (mondaq.com).

<sup>14</sup> *Ibid.*

<sup>15</sup> Satellite Communication Policy, 1977. (India).

sector had to offer. One might wonder that a such a policy would have elaborate guidelines on broadcasting, telecommunication, satellite launches and advancement, etc. However, the policy was just a two page document with 5 pointers. The government soon realised that it was insufficient and came up norms and guideline procedure for SATCOM. These guidelines were an elaborate form of the policy and emphasised on the further improvement of the INSAT network, use of INSAT by private entities, performing essential functions like telecommunication, broadcasting and meteorological services in India.

#### **B. REMOTE DATA SENSING POLICY, 2011**

The government released the Remote Data Sensing Policy<sup>16</sup> in 2011 for various developmental activities, getting high resolution imagery, strategic and military uses. The Department of Space ("DoS") was made the nodal agency for all actions related to remote sensing data. This policy was intended to open up the remote sensing sector and facilitate the availability of high resolution data for developmental activities.<sup>17</sup>

### **IV. CONCLUSION**

India has developed exponentially in its space capabilities and it is one of the elite spacefaring nations of the world. However, the trends are changing now. With an increased focus on privatisation and commercialization, national space agencies are solely focusing on space exploration and research while private entities like SpaceX and Blue Horizon are launching mega constellations of satellite into space. These developments have made the global space market worth \$360 Billion and is further projected to grow exponentially. Keeping in mind the sustainability problem posed by an increasing amount of space debris, IN-SPACE as a regulator must come out with guidelines to ensure that all satellite launches done by private entities are in accordance to the Debris Mitigation guidelines set by the IADC. The problem of incurring liability can be solved by the development of space insurance. Space Insurance is a highly complex and specialised form of insurance, with the Ministry of Finance recently announcing that Foreign Direct Investment can be up to 74% in the insurance sector, it presents a huge opportunity for the development of space insurance.

A comprehensive policy that allows for the development of space insurance and at the same limits the liability of certain private players and start-ups will pave way for creating a multi-billion-dollar space ecosystem in India. Currently, there is a separate remote sensing policy and

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<sup>16</sup> Norms, Guidelines and Procedures for Satellite Communications, Department of Space, Indian Space Research Organization, 2000. <https://www.isro.gov.in/update/08-may-2000/norms-guidelines-and-procedures-satellite-communications-announced>.

<sup>17</sup> *Id* at 2.



a SATCOM policy, these policies must be brought under one umbrella. The draft Space Communications Policy, 2020 must be further amended to include the above suggestions. A single policy that covers space debris, security measures, space insurance and liability, and the existing remote sensing, communications and broadcasting rules will make sure that the space sector gets a boost in the right direction.

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