

# COMPREHENDING LEGAL ASPECTS OF OUTER SPACE

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*“We live on the shores of this tiny world, the third planet of nine, circling an average star, the Sun, which is just amongst billions in a great city of stars, the Milky Way, which itself is among a billion other stellar cities stretching on perhaps forever. The Universe is more vast than all imagining and filled with wonders more than we can dream, is a heritage for all mankind.”<sup>1</sup>*

## **Abstract**

Outer Space activities have largely been governed by international treaties and conventions that were products influenced by Cold War geopolitical tensions. Space has emerged as a frontier posing both opportunities and threats. The growing militarisation and colonisation of space and space assets makes it detrimental to comprehend and understand existing laws, treaties and conventions. Further, the entry of commercial and private players further intensifies the call for regulatory framework concerning activities related to outer space. India, as a responsible and emerging space influence lacks a comprehensive national law addressing modalities related to space programmes and activities. This paper is an attempt to revisit and comprehend the international treaties related to Outer Space and also analyse Space laws in the Indian context. Additionally, the paper will

also critically examine the present gaps in the legislation and outlines a suggestive framework for the adoption of a comprehensive Indian national space laws.

## INTRODUCTION

Space has evolved as the next and the final frontier. Exploration driven by curiosity have pushed countries to pursue strategies enabling them to use space as force multipliers and power projections. Presently, space is plagued by several concerns from debris management to militarisation of space by countries. The launch of 'Sputnik' at the fulcrum of the Cold War was another significant indicator of how space was used as a tool of power projections. When Neil Armstrong planted his foot, almost 50 years back, the world was swept by awe and admiration. But today, the development of space has changed and become even more challenging, primarily for two reasons; one, the dynamics of geopolitics is pushing countries to go beyond low-Earth orbit and two, the intervention of private players that are changing the space games.<sup>2</sup> The two combined reveals how space has evolved to exist as an "uniquely hostile environment."

The term 'space' is used in many different ways. Each use of the term can have very different legal implications.<sup>3</sup> Neither treaties nor most laws define exactly where the atmosphere ends and space begins. For commercial purposes, there are three areas in space: the Earth's atmosphere, the edge of outer space and achieving orbit. The law regarding the atmosphere is clearly defined - nations have sovereignty over the air above their country. Through treaty agreements, no nation can claim sovereignty in outer space. The area in between remains undefined in law.<sup>4</sup> Additionally, the position of existing international law concerning jurisdiction and sovereignty remains clear. The Outer Space Treaty, 1967 has largely defined that states can be held accountable for only "objects and people" belonging to the state; "*ratione instrumenti and ratione personae*" but cannot have any claim of sovereignty.<sup>5</sup>

The Cold War era gave rise to global space governance, as only two countries, the US and the USSR, had access to launch capability and

spaceflight. Furthermore, the core of the international framework for space governance is formed by the five main UN space treaties and are “products of their respective eras”, particularly dealing with averting militarisation and colonisation of space.<sup>6</sup> In 2015, the US passed the contentious ‘Commercial Space Launch Competitiveness Act’<sup>7</sup> allowing the US Space firms to “own and sell natural resources” and further mine from bodies in space which may include asteroids. The act allows private players to engage in space explorations without any regulation. The act is a full-frontal assault on established concepts of space law, which are predicated on two fundamental ideas: states’ rights to conduct scientific research on space and its celestial bodies and the prohibition of unrestricted, unilateral commercial use of space resources. In January 2007, China showcased its destructive Anti-Satellite Weapons (ASAT) capabilities, followed by India in 2019. Notwithstanding the US unilateral moratorium on ASAT testing, Russia tested ASAT capabilities in 2021.<sup>9 10</sup>

Global Space Governance is becoming a norm. The international space laws are typically categorised into binding normative instruments and non-binding agreements that may be voluntary and non-normative too. These two types of agreements largely work in tandem to make up the global space governance framework that exists today.<sup>11</sup> The International space law is an outcome of numerous multinational treaties, agreements, conventions, legal precedents and in certain cases application of customary international law.

### **THE OUTER SPACE TREATY OF 1967**

According to existing international law, “all states are free to explore and use outer space, including the moon and other celestial bodies, on a basis of equality”. This also includes the right to unrestricted access to all areas of celestial bodies and the freedom to conduct scientific research in space.<sup>12</sup> Further, these are not subject to national appropriation by claim of sovereignty, by means of use of occupation or by any other means.<sup>13</sup> The same is applicable even to the states “who are not a party to this Treaty, because of United Nations General Assembly Resolution, 1962 (XVIII)

entitled 'Declaration of Legal Principles Governing the Activities of States in Exploration and Use of Outer Space', which was adopted unanimously by the United Nations General Assembly in December 1963."

State parties to the treaty are prohibited from orbiting any weaponry including nuclear weapons around the Earth, from installing such weapons on celestial bodies and from stationing any weapons in space.<sup>14</sup> The moon and other celestial bodies are to be used exclusively for peaceful purposes. The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies is forbidden.<sup>15</sup> In the event of any accident, emergency landing or distress call on the territory of another state party or on the high seas, the astronauts must be considered as "mankind's envoys" in space and must be swiftly and safely returned to the state where the spacecraft is registered.<sup>16</sup> State parties to the treaty need to bear international responsibility for national activities in outer space.<sup>17</sup> Each such party that "launches or procures the launching of an object into outer space, including the moon and other celestial bodies and from whose territory or facility an object is launched is internationally liable for damage to another state party or to its natural or juridical persons by such object or its component parts on the earth, in air space, in outer space including the moon and other celestial bodies".<sup>18</sup> The jurisdiction and control over the object launched into outer space and over any personnel thereof, while in outer space or on a celestial body is to be retained by the state party on whose registry the object was launched into outer space.<sup>19</sup>

#### **THE AGREEMENT ON THE RESCUE OF ASTRONAUTS, THE RETURN OF ASTRONAUTS AND THE RETURN OF OBJECTS LAUNCHED INTO OUTER SPACE 1967**

This Agreement entered into force in December 1968 and provides "each contracting party which receives information or discovers that the personnel of a space craft have suffered accident or are experiencing conditions of distress or have made an emergency/unintended landing in territory under

its jurisdiction/on the high seas/in any other place not under the jurisdiction of any state, needs to notify the launching authority or if it cannot identify and immediately communicate with the launching authority, immediately make a public announcement and also notify the Secretary General of the United Nations, who needs to disseminate the information without delay.”<sup>20</sup>

If a spacecraft’s crew members land in a territory under a contracting party’s jurisdiction due to an accident, distress, emergency, or unintentional landing, that party must act quickly to rescue the crew members, provide all required assistance, and notify the UN Secretary General and the launching authority of the actions it is taking.<sup>21</sup> In such situations, if such personnel are found on the high seas or in any other place not under the jurisdiction of any state, they need to be safely and promptly returned to the representative of the launching authority.<sup>22</sup>

#### **THE CONVENTION ON INTERNATIONAL LIABILITY FOR DAMAGE CAUSED BY SPACE OBJECTS, 1971**

This Convention entered into force in September 1972 and makes “a launching state absolutely liable to pay compensation for damage caused by the space object on the surface of the earth or to aircraft in flight.”<sup>23</sup> In the event of damage being caused elsewhere, the liability is only if the damage is due to its fault or the fault of persons to whom it is responsible.<sup>24</sup> The Convention provides for the establishment of a Claims Commission in case there is no settlement between the state, which suffers damage and the launching state.<sup>25</sup>

#### **THE CONVENTION ON REGISTRATION OF OBJECTS LAUNCHED INTO OUTER SPACE, 1974**

This Convention was adopted by the UN General Assembly on 12 November 1974 and provides that when a space object is launched into earth orbit or beyond, the launching state needs to register the space object by an entry in an appropriate registry, which it will maintain and inform the Secretary General of the United Nations of the same.<sup>26</sup> This Convention entered into

force on 15 September 1976 after its ratification by USA, Bulgaria, Canada and Sweden. India acceded to the convention on 18 January 1982.<sup>27</sup>

### **THE AGREEMENT GOVERNING THE ACTIVITIES OF STATES ON THE MOON AND OTHER CELESTIAL BODIES, 1979**

This Agreement entered into force on 11 July 1994 and provides that all activities on the moon, including its exploration and use, is to be carried out in accordance with international law and taking into account the Declaration of Principles of International Law concerning friendly relations and cooperation among states in accordance with the Charter of the United Nations adopted by the General Assembly on 24 October 1970.<sup>28</sup> The moon is to be used exclusively for peaceful purposes<sup>29</sup> and the exploration and use of moon is to be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic or scientific development.<sup>30</sup>

The freedom of scientific investigation on the moon by all states parties need to be without discrimination of any kind on the basis of equality and in accordance with the international law<sup>31</sup> and the moon and its resources are the common heritage of mankind.<sup>32</sup> The moon is not subject to national appropriation by any claim of sovereignty by means of use or occupation or by other means.<sup>33</sup>

States parties to the Agreement need to establish an international regime, including appropriate procedures, to govern the exploitation of the natural resources of the moon.<sup>34</sup> The moon's natural resources must be developed in an orderly and safe manner and their management must be sensible. Additionally, opportunities for resources use must be expanded and all participating states must equally share in the benefits that these resources bring.<sup>35</sup> States parties need to retain jurisdiction and control over their personnel, space, vehicles, equipment, facilities, stations and installations on the moon, which is not to be affected by their presence on the moon<sup>36</sup> and also bear international responsibility for national activities on the moon, (whether by government agencies or by non-government entities) to assure that such activities are in conformity with the provisions of the Agreement.<sup>37</sup>

### **VIENNA CONFERENCE ON THE EXPLORATION AND PEACEFUL USES OF OUTER SPACE (UNISPACE-82 OR UNISPACE II)**

The UNISPACE-82 was held at Vienna in August 1982, with 94 states participants and 45 observers and reviewed the developments in the field of outer space taking place since 1968. The conference appealed to the states, especially to “states with nuclear capability, not to increase arms race beyond Earth.” A report adopted by consensus asked the states to follow Outer Space Treaty 1967, which has “prohibited the use of weapons of mass destruction in outer space”. It also considered the question of monopoly of some industrialised countries in the field of science and technology and recommended increased cooperation between the developed and developing countries in this respect.<sup>38</sup>

### **UNISPACE-III**

The Third UN Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE-III) was held in Vienna, Austria in July 1999, with key objectives to create a blueprint for the peaceful uses of outer space in the 21st Century. It considered future of exploration of planets, use of microwave systems of micro satellites in the exploration of outer space, security of future outer space programmes in respect of debris of outer space, maintenance and supervision of outer space-based environment and use of mobile satellite communication.<sup>39</sup>

### **SPACE LAWS: AN INDIAN PERSPECTIVE**

India’s Space ambitions have remained largely limited to civil use of Outer Space. Activities related to space commenced in India in 1963 when the “Thumba Equatorial Rocket Launching Station” (TERLS) was set up.<sup>40</sup> Since the establishment of the Indian Space Research Organisation (ISRO) in 1969, India’s space explorations have advanced significantly. The Indian Government founded the Space Commission of India and Department of Space in 1972.<sup>41</sup> India has progressively joined a number of international space treaties, conventions and declarations, mostly as a signatory party.

The Indian Space Programme has remained well managed since its inception and primarily consists of three main components; application programmes, the space transportation system and satellites for communication and remote sensing. Missions to the Moon and Mars are strong reflections of India's Space ambitions, which will be followed by *Gaganyaan*, the nation's first human space mission.<sup>42</sup>

Since independence, India identified the development of space capabilities as an impetus for achieving socio-economic goals. The achievements showcased in emerging space technology have elevated India's position amongst global space players. India has made enormous progress in possessing advanced space capabilities since the launch of 'Aryabhata' in 1975. Today, India's Space programme has moved beyond scientific research and exploration to utilisation of "space technology for socio-economic development." The Indian Space programme is largely monitored and functions under the aegis of the government, aimed for an extensive and comprehensive space programme for "peaceful purposes, based on sustained and systematic development of low-cost indigenous space capabilities."

### INDIA'S DOMESTIC SPACE FRAMEWORK

A report released by Ernest & Young stated that India's space economy is expected to grow to USD 13 billion by 2025 at an annual growth rate of 6 percent.<sup>43</sup> Despite the promising estimates, **India lacks a framework to regulate activities in Outer Space**. The creation of Indian National Space Promotion and Authorisation Center (IN-SPACe) as a nodal medium between ISRO and private players in 2020 was a significant step towards consolidation of activities related to space in the country. However, in India, the commercialisation of space technologies at the present nascent level, has yet not attained the desired levels which "demands of the space industry and commerce to make it imperative for the government to enact national space laws."<sup>44</sup>



Presently India has the following provisions in place:

- **Article 51 (c) of the Indian Constitution.** Article 51 (c) states, “respect for International Law and Treaty obligation and to encourage settlement of the International dispute by way of Arbitration.” The article ‘obligates’ the State to work in tandem with other nations and ensure “international peace and security.”<sup>45</sup>
- **Article 253 of the Indian Constitution.** The article gives the parliament the authority to create any laws necessary to carry out any agreement, treaty, or convention with other nations or to implement any decision made by any international organisation of which India is a member.<sup>46</sup>
- **The Indian Space Research Organisation Act, 1969.** This Act establishes ISRO as the nodal and primary organisation responsible for “space research” in the country. The act further outlines ISRO’s goals which includes advancing space research in science and technology and its application for national development. Additionally, the act charts out the roles and responsibilities of ISRO, giving the agency the authority to carry out space technology-related research and other relevant operations.<sup>47</sup>
- **The Satellite Communication Policy, 1997.** The policy provided guidelines for the developing satellite communication, launch vehicles and ground equipment industry in the country, making available and developing further infrastructure built through Indian National Satellite System (INSAT).<sup>48</sup> The policy was re-visited in 2000 and remains the only policy outlining the principles for establishment, operation and regulation of satellite communication in the country.<sup>49</sup> The SatCom Policy is considered a major breakthrough for inviting and regulation Foreign Direct Investments (FDI) in satellite communications.
- **Remote Data Sensing Policy, 2011.** The policy introduced in 2001 was amended in 2011 and governs the operation, acquisition and transmission of “remote sensing data” through the Department of Space (DOS). The power resides with the Antrix Corporation to grant licenses for any acquisition of ‘Indian Remote Sensing Data’ outside India.<sup>50</sup>

- **ISRO's Technology Transfer Policy.** This policy is aimed at ensuring technology transfer from ISRO's 'technical know-how' to external entities. Encouraging Indian private industry engagement in ISRO's space endeavours was the primary objective behind the genesis of this policy.
- **The Indian Space Policy, 2023.** The new policy permits 'Non-government Entities (NGEs) to "offer national and international space-based communication services, through self-owned, procured or leased Geostationary Orbit (GSO) and Non-Geostationary Orbit (NGSO) satellite systems."<sup>51</sup> The policy also opens the Indian space sector to private players allowing possibilities of commercial explorations. The Space Policy 2023, further holds the DOS responsible for implementing and creating pragmatic resolutions for any space disputes. Further, the policy delineates distinct functions for IN-SPACe and NewSpace India Limited (NSIL). IN-SPACe will continue to function as an "autonomous government organisation, mandated to promote, handhold, guide and authorise space activities in India", whereas, NSIL will continue as 'Public Sector Undertaking' under the DOS for activities related to commercialising "space technologies and platforms created through public expenditure."<sup>52</sup>

In addition to domestic legal framework, India has ratified the Outer Space Treaty in 1982, the Rescue Agreement in 1985, the Liability Convention in 1986. India has signed, but not ratified the Moon Agreement of 1979.<sup>53</sup> Nonetheless, India's commitment to cooperative and prudent space exploration is demonstrated by its observance of these mentioned international accords and agreements. These agreements, although archaic, encourage international collaboration in space activities and further aid in the creation of a legal framework for the sustainable and peaceful use of resources in Space. In 2023, during Prime Minister Narendra Modi's visit to the US, India signed the US led Artemis Accord.<sup>54</sup> NASA proposed the Artemis Accords in 2020, providing a set of principles and rules for the "civil

exploration and use of the Moon, Mars and other celestial body." India signing the Artemis Accords appeared contentious in light of present geopolitical trends, however, this Accords are a "non-binding bilateral agreement based on the political understanding of the participating countries." Further, the Accord only highlights the desirability to "implement provisions of the Outer Space Treaty and set out 13 practical guidelines to advance the governance of civil exploration and use of outer space, including among other objectives the extraction of space resources and the Artemis Programme."<sup>55</sup>

### **NEED FOR A COMPREHENSIVE INDIAN NATIONAL SPACE LAW**

India is emerging as a global space power and remains significant as it "strives to advance its space capabilities and contribute to global space exploration and utilisation." Today, the challenges orbiting India's Space programme largely range from technological and operational hurdles to legal and regulatory complexities. However, "with a proactive approach and strategic planning, India can overcome these challenges and shape a promising future for its space programme."

Indian perspective on space exploration have come to prioritise military and security considerations. "Space does not recognise sovereignty" and India's space programme was shaped by morality and sovereignty issues up until the 1990s; nevertheless, pragmatism and national security now dictate India's attitude to space. India's space programme has built credible launch capabilities and a combination of Intelligence, Surveillance and Reconnaissance (ISR) and Earth observation satellites for military reasons, in response to this new motive and the evolving conditions surrounding space security.<sup>56</sup> 'Space Wars' are no longer a possibility inspired from any science fiction movie, but rather a possibility that is shaping present norms centred around geo-politics. The rapid advancement of space technology has allowed countries "to oppress other countries for their advantage." Examples include North Korea jamming communications over the demilitarised zones, China hacking into US weather satellites, and Russia interfering with Ukraine's GPS reception.<sup>57</sup> These developments further consolidate arguments for India to

build a strategy for outer space. Adoption of a comprehensive space law ensuring space security must remain a priority.

The establishment of IN-SPACe was a pivotal move by the Indian government to induct and establish mechanisms for engaging private players in the Space sector. However, the present mechanisms enlisted in the Space Policy 2023, does not clarify any regulatory framework for these private players while undertaking space explorations. Mechanisms for “licensing, authorisation and regulatory oversight including issues of liability, intellectual property rights and cyber security” are loosely defined and this can pose hindrance for a “secure environment for space operations” in the country. The integration of commercial space ventures into the existing framework would require planning and policy development including “regulatory processes, providing incentives for private sector participation and facilitating technology transfer from ISRO to commercial entities.”<sup>58</sup>

Management of Space Debris have become another challenge for global space actors, including India. In 2023, ISRO’s PSLV rocket debris were found on the Australian shores and details were confirmed by both ISRO and the Australian Space Agency.<sup>59</sup> Similarly, in 2019 India shot down one of its satellites, creating 400 pieces of orbital debris of which some fell on a Japanese village. Under the Liability Convention, 1972 any state can be held accountable for such liability but the “quantum of such damages is hard to determine”.<sup>60</sup> Absence of a national space legislation addressing the issue of Space debris could possibly put India in a “a disadvantageous position to negotiate.” The arguments underscore that the legislation of India’s National Space Laws should be a summation of Space security strategy; Military space strategy; cyber-space strategy for outer space and near space; civil space strategy; and commercial space strategy.<sup>61</sup>

## **THE WAY FORWARD**

The upsurge in Space Explorations and tightening geopolitical dynamics, Space laws have further become relevant in the discourse. Additionally, such laws as and when they come into force need to protect the common interests

of human race and ensure the establishment and the maintenance of a viable, cooperative public order of the outer space, the moon and the other celestial bodies. The military and commercial aspects related to future use of space must also bear these things in mind. India has developed as a momentous diplomatic player and contains immense potential to become a “major global space power.”<sup>62</sup> Strategic alliances and collaborations with partners sharing common interests can further intensify the implementation and applicability of the existing treaties and convention. The QUAD’s noteworthy joint statement on outer space activities emphasises “consultations on norms of responsible behaviour and regulations.”

The inclusive exploitation of space resources takes place in a sort of unorganised arena. The inclusive access to and use of outer space resources must provide freedom and equality of access to the outer space resources to all states to take full advantage of opportunities in space, subject to the limitation that activities must be peaceful and unharmful to common interest. The future of the public order of space is heavily dependent upon cooperation among states, both at the multilateral and bilateral level.<sup>63</sup> The United Nations plays a very important role in coordinating the activities of different States in outer space, ensuring a uniform and progressive economic and technological development of the entire world. A global policy for the Space Age is essentially needed to meet the rapid technological evolution in space and meet the increasing pressure for commercial exploitation of space resources. Such policy needs to balance the common destiny and common survival of mankind with these evolving factors. An international body may help in evolution of such a policy.

## CONCLUSION

The evolving space laws need to ensure that the space remains a place that can be accessed by all states and people for their mutual benefit, be used for peaceful purposes and has freedom of scientific investigation and exploration. From an Indian perspective, the void of any legal framework regulating activities of outer space must be addressed in light of global

norms and geopolitical transformations. With legally binding international treaties and conventions in action, the essentiality for any country to “regulate space activities in consonance with the dynamics of global space activities” remains a condition.

“India is going through *Amrit Kaal* and it is time for building a highly capable *Aatmanirbhar* defence space ecosystem”, as stated by Chief of Defence Staff, General Anil Chauhan. However, an *Aatmanirbhar* defence space ecosystem can sustain within a consolidated and robust legal framework. India needs robust space laws and regulations that strike a balance between international cooperation, infrastructure development, private and foreign investment, certification, licensing, liability and even intellectual property rights related to outer space activities. In addition to providing a ‘win-win opportunity’ for all stakeholders in the developing and expanding Indian Space industry, a National Space Legislation would fortify the growing defence sector in anticipation of a ‘Space war strategy’.

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