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## Space Exploration and the Law: Does India's Investment in Outer Space Deliver Measurable Returns, or Is It Merely Prestige Dressed in Policy?

~ *DHRUV SINGH*

### Introduction

Every time the Indian space research organization set its eyes on launching a rocket from Satish Dhawan space centre and introduces some wonder to the space community, two questions inescapably fall into the query box. The first being: *What did India just accomplish?* The second being a staunch one: *was it worth the resources and the pecuniary investment?*

These questions are not just concerned with the political or economic modus operandi of the country. In the day-to-day framework of Indian space legislation, they do carry undeviating legal value. India's space program sits at the crossroads of multidimensional and international treaty obligations, native regularity patch, sovereign liability exposure, and an evolving privatising commercial sector that promptly needs legislative lucidity. To have a query about whether the space program delivers value or to ask a legal question – about who gains the merit and who bears the onus of failure, and which institute governs either of them.

This article presents a clear argument that space investment does have a reciprocation on investment. It further paints a picture that governance of those returns remains in a fragmentary state – and that this gap is the legitimate crisis that India must confront on a priority basis.

### The International Legal Baseline: Where India stands

India's participation in outer space activity is legislated, at its edifice, by a myriad of international instruments. The treaty on standards regulating the operations of states in the exploration and use of Outer Space, including the Moon and other celestial entities – globally

known as Outer Space Treaty – was brought into operation on October 10, 1967.<sup>1</sup> As of October 2025, 118 countries are members of the treaty, including India.<sup>2</sup>

The OST establishes copious guidelines of enduring legal repercussions. Outer space is announced as the “province of all mankind” independent for exploration and use by all states.<sup>3</sup> No nation can claim a privatised right over any celestial entity.<sup>4</sup> Prominently –and this is where the legal ante for India becomes critical – Article 6 of the OST puts that country holds international obligation for each space pursuits conducted from their own soil, including by non-governmental entities.<sup>5</sup> Article 7 broadens this to absolute liability for injury by space objects.<sup>6</sup>

Supplementing the OST, India is also a member of the Convention on International Liability for Damage Caused by Space Objects (1972) and the Convention on Registration of Objects Launched into Outer Space (1976).<sup>7</sup> Combined, these deeds create a rational regime on paper. The issue is what is behind that paper: India has no rational and all-inclusive legislation to put into practice these duties.

### **The domestic legal vacuum: A Governance Crisis in the Making**

India’s central regulatory apparatus and legislation for outer space expeditions remain patchy and, in staunch reverence, legally void. The major statute – the Indian Space Research Organisation Act, 1969 – formed ISRO as an institutional body but granted upon it no rational regulatory mandate capable of legislating the scale and variety of commercial ventures that now characterise India’s space economy.<sup>8</sup> What came on the way decades later was the Indian space policy of 2023 – a document of rational and legitimate prominence that officialised the entry of private enterprise into the sector and gave new power and being to two new entities: NewSpace India Limited (NSIL) and the Indian National Space Promotion and Authorisation

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<sup>1</sup> 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, 610 U.N.T.S. 205 [hereinafter Outer Space Treaty].

<sup>2</sup> Outer Space Treaty, *supra* note 1; *see also* Outer Space Treaty, Wikipedia,

<sup>3</sup> Outer Space Treaty, *supra* note 1, art. I.

<sup>4</sup> Outer Space Treaty, *supra* note 1, art. II.

<sup>5</sup> Outer Space Treaty, *supra* note 1, art. VI.

<sup>6</sup> Outer Space Treaty, *supra* note 1, art. VII.

<sup>7</sup> Convention on International Liability for Damage Caused by Space Objects, Mar. 29, 1972, 961 U.N.T.S. 187; Convention on Registration of Objects Launched into Outer Space, Jan. 14, 1975, 1023 U.N.T.S.

<sup>8</sup> Indian Space Research Organisation Act, No. 25 of 1969

Centre (IN-SPACe).<sup>9</sup> Yet for all its targets, the 2023 policy stays staunchly the same. It does not carry the force of statute. Courts cannot impose it. Neither can it impose the same on private operators. And gravely, it cannot allocate liability.

The Space Activities Bill, first drafted in 2017, was drafted to assuage precisely these loopholes. It foresees a licensing regime for private entities, liability ceilings and mandatory insurance requirements.<sup>10</sup> It was never approved. A rejigged version has circulated in subsequent years, but as of 2025, it stays unratified – rolling in a byzantine limbo while the industry it was meant to direct continues to mature. India's commercial space industry is modelationally active but legally adrift. A Paradox. IN-SPACe gives authorisations, contracts are running, and rockets are standing in the yard – yet no statute to legislate it. Under the OST, India bears international liability for private activities in space, with no statute enforcing recovery from the accountable entity.<sup>11</sup>

As one observation put it, IN-SPACe contemporarily legislates as “The Judge in its own case” – looking over the appeals of its own authorisation judgment, with no appellate stand, and channelling in power from the Department of space rather than from parliament.<sup>12</sup> This cannot be rational in the view of law, and it wouldn't stand a chance in international arbitration if India is ever held liable for a private actor's conduct in orbit.

### **The ROI Question Through a Legal Lens**

In front of this regulatory backdrop, the monetary reciprocation on investment for India's investment is truly magnificent – and legally impressive. *The Socio-economic Impact Analysis of the Indian Space Programme*, authorised by ISRO in collaboration with the European consultancy Novaspace and introduced on National Space Day 2024, discerned that India's space forte cultivated approximately \$60 billion for the national economy between 2014 and 2024, nurtured 4.7 million jobs, and bestowed \$24 billion in tax revenues.<sup>13</sup> Former ISRO

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<sup>9</sup> Indian Space Policy 2023, Ministry of Space, Government of India (2023); see Lexology, *Space 4.0: India's Need for a Comprehensive Legal Framework to Regulate Space*

<sup>10</sup> Space Activities Bill, 2017 (India) (lapsed); see CSDR, *A New Draft for the Space Activities Bill: Amidst a Sea-Change in India's Space Sector*

<sup>11</sup> Lawvs, *Space Law and India's Private Sector Boom: Time for a New Regulatory Code?*

<sup>12</sup> CSDR, *supra* note 10.

<sup>13</sup> ISRO & Novaspace, *Socio-Economic Impact Analysis of the Indian Space Programme* (2024); see Pratinidin Time, *ISRO Delivers Rs. 2.5 Return for Every Rupee Invested, Reveals Study* (2024)

Chairman S. Somnath has publicly conveyed that for every single rupee invested, there is a reciprocation of 2.54 rupees back to the Indian economy.<sup>14</sup>

India's space economy was retained at approximately \$8.4 billion in 2024 – around 2-3% of the global space economy – with an estimation placing it at \$13 billion by 2025 at an annual growth rate of 6%.<sup>15</sup>

The cost-friendly argument and wonders ISRO have executed as compared to NASA, as in ISRO's Mangalyaan (Mars Orbiter Mission) was accomplished at a cost of around 450 crore – less than \$75 million – while NASA's same expedition with the same content MAVEN Mars orbiter cost \$582 million.<sup>16</sup> On the other hand, ISRO's Chandrayaan-3, which made India the first nation to ever achieve a landing at the south pole, Cost approximately 615 crore, and roughly \$75 million.<sup>17</sup>

These amounts do have a large legal value attached to them because they answer the public interest justification for state disbursement on space. Under the Indian constitutional law, public expenditure must serve a legitimate and rational public purpose.<sup>18</sup> A 2.54x multiplier effect, \$60 billion in GDP accorded, and 4.7 million jobs make a justifiable case that space investment makes up this standard, not as a matter of glory, but as a matter of rational and enriching public welfare.

### **The Prestige Dimension: Soft Power Has Hard Legal Consequences**

It would be Primitive to claim that prestige plays no role in India's space expeditions and decisions. Chandrayaan-3's landing at the moon's south pole was as much a geopolitical accomplishment as a scientific miracle, making the headlines after Russia's Luna-25 crashed in the same spot. India's participation in the Artemis Accords in 2023 was a message and a commitment, and a diplomatic refiguring, signalling India's proclivity toward a US-led rules-based framework for lunar exploration over an antagonistic Chinese-led group and Russian alternatives.<sup>19</sup>

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<sup>14</sup> Organiser, *Indian Space Programme Returns Rs. 2.54 per Rs. 1 Spent: Ex-ISRO Chief*

<sup>15</sup> NewSX, *ISRO's Space Budget Pays Off: Rs. 2.5 Return for Every Rupee, Reveals Chief*

<sup>16</sup> Business Standard, *What Makes India's Space Missions Cost Less Than Hollywood Sci-Fi Movies?*

<sup>17</sup> Dezerv, *Chandrayaan-3 and the Rise of India's Space Prowess*

<sup>18</sup> INDIA CONST. art. 266, 282 (governing expenditure from the Consolidated Fund of India and grants by the Union for public purposes).

<sup>19</sup> Chambers and Partners, *Space Law 2025 — India*

But here is where a legal scrutiny adds nuance that, compared to a pure economic framing, misses: prestige and notoriety have staunch legal repercussions. The Artemis Accords, While not a binding treaty, do commit members to guidelines such as transparency, rational utilisation of space resources that are consistent with the OST.<sup>20</sup> India's participation in OST creates a soft-law onus on itself that will modulate the interpretation of its domestic policy and multi-national actions in upcoming disputes over lunar resources, orbital slots and spectrum dispensation.

At the same hand, ISRO has made a remarkable mark by launching over 300 foreign satellites, extracting commercial revenue and demonstrating India's name as a credible launch service provider in the international space community.<sup>21</sup> These transnational deals are governed by private international law, and any fumble of performance exposes ISRO – or its private entities – to arbitration under UNCITRAL or other frameworks. The legal framework for managing these exposures is currently patchy.

### **The Legislative Imperative: What a Space Activities Act Must Do**

The combined argument and rationale of this article gather at one single conclusion: India's space investment generates authentic, valuable and legal cognisable reciprocation. But those investments are continually at peril because the legislation governing the sector has not kept pace with the sector itself. The Space Activities Bill is not just desirable – it is a necessity at its peak.

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A comprehensive and legally sound Activities Act for India must, at its bare minimum, address the following:

**Licensing and authorisation:** IN-SPACE must be granted the authority to legislate on the authorisation through a formal Act – not just delegated executive authority, but to create a rational and genuine single-window clearance body with actionable licensing standards.<sup>22</sup>

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<sup>20</sup> *Id.*; see also Artemis Accords: Principles for Cooperation in the Civil Exploration and Use of the Moon, Mars, Comets, and Asteroids

<sup>21</sup> *Ibid*

<sup>22</sup> *Ibid*

**Liability and Insurance:** The Act must notify how international liability under Article 7 of OST is shared out between the government and private entities, with obligatory insurance requirements and a government-supported risk pool for MSMEs.<sup>23</sup>

**Debris Mitigation:** India is a member of the UN COPUOS Space Debris Mitigation Guidelines, but these are non-enforceable and non-binding.<sup>24</sup> Domestic law must legislate enforceable end-of-life disposal commitments for all Indian space objects, both as a matter of international obligations and as a precursor for sustainable commercial activity.

**Dispute resolution:** The Indian Space Policy 2023 dictates that the Department of Space create a dispute settlement framework, but no such framework has been established until<sup>25</sup> now.

**Intellectual property:** Technology built using public funding through ISRO must be handled by rational IP assignment rules that create harmony for public access, with the incentive structures needed for private sector commercialisation.<sup>26</sup>

## Conclusion

The question raised at the start – whether India’s space funding delivers measurable and significant returns on investment, or it is just an investment masquerading as prestige in disguise – acknowledges an unclouded answer, at least monetarily. A Rs 2.54 return per rupee spent, \$60 billion in decadal GDP contribution, and 4.7 million jobs generated are not the results of vanity. They are the by-product of rational, patient public investment.

But the legal query is not resolved fully yet. India models in outer space under a strong and well-structured international law and in the domestic sphere under a fragile and brittle framework. Every foreign satellite ISRO launches, every private space shuttle that lifts off under IN-SPACE eyes, and every lunar mission that establishes spatial wonder for resource rights exposes India to legal repercussions – in international arbitration, in diplomatic negotiations, in commercial contracts – for which the country is not in a shape to handle.

The paradox is that India has done the arduous scientific work already. It has imprinted its foot on the moon. It has orbited Mars. It has built a commercial launch industry from scratch. The

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<sup>23</sup> ClearIAS, *supra* note 7; see also PMF IAS, *National Space Law in India: Need, Challenges & Way Ahead*

<sup>24</sup> H.K. Law Offices, *India's Role in Shaping International Space Law*

<sup>25</sup> *ibid*

<sup>26</sup> *ibid*

toughest task – and the more urgent one – is legislative. Without a Space activity legislation that matches the target of the program it governs, India perils building an economic edifice on a legal foundation that is, quite literally, still in process.