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INDIA'S PRIVATE SPACE SECTOR: NAVIGATING THE INSOLVENCY AND LIABILITY VACUUM

*Insolvency, Orbital Intellectual Property and Judicial Review in India's Forthcoming Space
Activities Legislation*

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Abstract

India's space economy has moved, within six years, from a State monopoly to a commercially contested market. The 2020 reforms, the Indian Space Policy 2023, the IN-SPACe Norms, Guidelines and Procedures of 2024 and the liberalised foreign direct investment regime of 2024 have enabled firms such as Skyroot Aerospace and Agnikul Cosmos to design, build and fly their own vehicles, culminating in the first private Indian orbital launch in July 2026. Yet the legal scaffolding beneath this market remains executive rather than statutory, and it has not been tested by commercial failure. This paper asks how India's forthcoming Space Activities Act should respond to three commercial realities that the present framework either ignores or handles inadequately: the insolvency and liquidation of a private space operator; the ownership and enforcement of intellectual property created or used in orbit; and judicial review of decisions by IN-SPACe refusing, suspending or revoking authorisation. Drawing on doctrinal analysis of Indian constitutional, insolvency, intellectual property and administrative law, and on comparative study of the United States, the United Kingdom, France and Japan, the paper argues that each issue is at root a manifestation of a single 'liability vacuum': the gap between India's unlimited and temporally unbounded responsibility as a launching State under international law, and the limited, time-bound and frequently insolvent private actors who generate that responsibility. It proposes an integrated statutory design comprising (i) a dedicated space-asset chapter that coordinates the Insolvency and Bankruptcy Code 2016 with orbital stewardship obligations; (ii) a tiered, insurance-backed liability regime with a sovereign backstop and ring-fenced decommissioning security; (iii) a quasi-territorial extension of Indian patent law to Indian-registered space objects, with private ownership as the default rule; and (iv) a reasoned-decision and specialist appellate mechanism for authorisation disputes that preserves constitutional review.

I. Introduction

On 18 July 2026 Skyroot Aerospace's Vikram-1 lifted off from Sriharikota and placed its upper stage in a 450-kilometre low Earth orbit, making it the first privately built Indian rocket to reach orbit.¹ Two years earlier Agnikul Cosmos had flown its Agnibaan SORTeD demonstrator, powered by a single-piece 3D-printed semi-cryogenic engine, from Dhanush, the first privately established launch pad in the country.² These milestones are the visible face of a structural transformation. From a handful of firms in 2020, the number of Indian space start-ups had grown to 399 by early 2026, and the Government has set a target of a USD 44 billion space economy by 2033.³

The legal architecture for this market has been assembled quickly but incompletely. The Indian National Space Promotion and Authorisation Centre (IN-SPACe) was created in 2020 as a single-window authoriser for non-governmental entities (NGEs). The Indian Space Policy 2023 (ISP 2023) opened the entire space value chain to private actors;⁴ the Norms, Guidelines and Procedures issued by IN-SPACe in 2024 (NGP 2024) operationalised the authorisation process;⁵ and the amended foreign direct investment (FDI) policy of 2024 permitted up to 74 per cent automatic-route foreign investment in satellite manufacture and operation, 49 per cent in launch vehicles and spaceports, and 100 per cent in components and sub-systems.⁶ None of these instruments, however, is an Act of Parliament. The Draft Space Activities Bill 2017 lapsed without introduction,⁷ and a comprehensive redraft, reported to confer statutory status on IN-SPACe, had not been released in final form as of mid-2026.⁸

The existing framework was designed for success; it says comparatively little about failure. Yet failure is the ordinary condition of frontier industries. Iridium (1999), Globalstar (2002), Intelsat (2020) and OneWeb (2020) all passed through Chapter 11 of the United States

¹'Skyroot's Vikram-1 Reaches Orbit, India's First Private Orbital Rocket Launch' (*Circuit Digest*, 18 July 2026) <<https://circuitdigest.com/news/skyroots-vikram-1-reaches-orbit-indias-first-private-orbital-rocket-launch>> accessed 24 September 2026.

²'India's IIT Madras Startup Agnikul Cosmos Launches World's 1st Rocket with Fully 3D-Printed Engine' (*News on AIR*, 30 May 2024) <<https://www.newsonair.gov.in/indias-iit-madras-startup-agnikul-cosmos-makes-history-with-the-worlds-first-3d-printed-engine-rocket-launch>> accessed 24 August 2026.

³Paridhi Adani and others, 'Space Law 2026: India' (Chambers Global Practice Guides, 14 July 2026) <<https://practiceguides.chambers.com/practice-guides/space-law-2026/india>> accessed 20 September 2026, para 2.1.

⁴Department of Space, Government of India, *Indian Space Policy – 2023* (April 2023).

⁵IN-SPACe, *Norms, Guidelines and Procedures for Implementation of Indian Space Policy-2023 in respect of Authorization of Space Activities* (Department of Space 2024) (NGP 2024).

⁶Department for Promotion of Industry and Internal Trade, Press Note No 1 (2024 Series); Foreign Exchange Management (Non-debt Instruments) (Amendment) Rules 2024; Chambers (n 3) para 7.4.

⁷Department of Space, *Draft Space Activities Bill, 2017* (published for comments, November 2017); Press Information Bureau, 'Space Activities Bill' (Department of Space) <<https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1555666>> accessed 24 August 2026.

⁸Chambers (n 3) paras 2.2, 8.3; Council for Strategic and Defense Research, 'A New Draft for the Space Activities Bill: Amidst a Sea-Change in India's Space Sector' (9 June 2025) <<https://csdronline.com/blind-spot/a-new-draft-for-the-space-activities-bill-amidst-a-sea-change-in-indias-space-sector/>> accessed 5 September 2026.

Bankruptcy Code, and Virgin Orbit filed for bankruptcy in 2023, barely two years after its first successful orbital flight.⁹ India's space firms, overwhelmingly venture-funded and in many cases still pre-revenue, will not be immune. When an Indian launch or satellite company fails, three questions will arise at once. First, what becomes of its authorisation, its spectrum and orbital entitlements, and its satellites still in orbit once the Insolvency and Bankruptcy Code 2016 (IBC) is invoked? Secondly, who owns, and who can enforce, the intellectual property (IP) embodied in, generated on or used by its space objects? Thirdly, if IN-SPACe refuses to authorise a successor operator, or revokes an authorisation on grounds of national security, what recourse does the firm, or its creditors, have?

This paper asks how India's upcoming statutory framework should handle these realities. Its central claim is that the three questions share a common root, which the paper terms the 'liability vacuum'. Under Articles VI and VII of the Outer Space Treaty and under the Liability Convention, India bears international responsibility, and potentially unlimited and temporally unbounded liability, for space objects launched by its nationals or from its territory.¹⁰ The private entity that generates that exposure, by contrast, is typically a limited-liability company whose corporate life may end in liquidation long before its satellites cease to orbit. Insolvency law, IP law and administrative law each allocate risk at this interface. At present each does so by default rather than by design. The forthcoming statute should close the vacuum by aligning private incentives with the State's continuing responsibility.

Methodologically, the paper combines doctrinal analysis of the Constitution of India, the IBC, the Patents Act 1970 and Indian administrative law with a functional comparison of mature space-faring jurisdictions, principally the United States, the United Kingdom, France and Japan. It relies on publicly available materials up to September 2026; because the redrafted Space Activities Bill has not been published in final form, the analysis is necessarily prospective. Part II maps the existing architecture and explains why executive instruments cannot resolve the problems identified. Part III addresses insolvency and liquidation. Part IV examines the liability regime that insolvency renders acute. Part V turns to IP in orbit, and Part VI to judicial review of IN-SPACe decisions. Part VII draws the proposals together into an integrated statutory design, and Part VIII concludes.

⁹See eg *In re Intelsat SA* (Bankr ED Va, filed 13 May 2020); *In re OneWeb Global Ltd* (Bankr SDNY, filed 27 March 2020); *In re Virgin Orbit Holdings Inc* (Bankr D Del, filed 4 April 2023).

¹⁰Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (opened for signature 27 January 1967, entered into force 10 October 1967) 610 UNTS 205 (Outer Space Treaty) arts VI, VII.

II. The Legal Architecture and Its Structural Deficit

A. India's International Obligations

International space law places the State, not the private operator, at the centre of accountability. Article VI of the Outer Space Treaty makes States Parties internationally responsible for 'national activities' in outer space, whether carried on by governmental agencies or by non-governmental entities, and requires that the activities of non-governmental entities be subject to 'authorisation and continuing supervision' by the appropriate State.¹¹ Article VII renders each launching State internationally liable for damage caused by its space objects. The Liability Convention elaborates that liability: it is absolute for damage caused on the surface of the Earth or to aircraft in flight, fault-based for damage caused elsewhere to another State's space object, and joint and several where two or more States jointly launch an object.¹² Critically, the Convention imposes neither a monetary ceiling nor a temporal limit on the liability of the launching State; an inert satellite remains a 'space object' for so long as it exists.¹³ Article VIII of the Outer Space Treaty, read with the Registration Convention, vests jurisdiction and control over a registered object in the State of registry, while providing that ownership is not affected by the object's presence in space.¹⁴

The United Nations General Assembly has recommended that national space legislation address precisely the matters with which this paper is concerned: conditions of authorisation and supervision, the transfer of ownership or control of space objects in orbit, and mechanisms, including insurance and indemnification, by which a State may seek recourse from operators.¹⁵ Under Indian constitutional law, obligations of this kind are not self-executing where they affect private rights; Parliament must legislate to give them domestic force.¹⁶

B. The Domestic Instruments

ISP 2023 allocates roles among the Department of Space, ISRO, NewSpace India Limited (NSIL) and IN-SPACe, and permits NGEs to undertake end-to-end space activities, including launch, satellite operation, ground infrastructure and even commercial recovery of space

¹¹Outer Space Treaty (n 10) art VI.

¹²Convention on International Liability for Damage Caused by Space Objects (opened for signature 29 March 1972, entered into force 1 September 1972) 961 UNTS 187 (Liability Convention) arts II, III, V.

¹³Bin Cheng, *Studies in International Space Law* (Clarendon Press 1997) 286–356; Francis Lyall and Paul B Larsen, *Space Law: A Treatise* (2nd edn, Routledge 2018) ch 4.

¹⁴Outer Space Treaty (n 10) art VIII; Convention on Registration of Objects Launched into Outer Space (opened for signature 14 January 1975, entered into force 15 September 1976) 1023 UNTS 15 (Registration Convention) art II.

¹⁵UNGA Res 68/74 'Recommendations on National Legislation Relevant to the Peaceful Exploration and Use of Outer Space' (11 December 2013) UN Doc A/RES/68/74, paras 1–8.

¹⁶Constitution of India, art 253; *Jolly George Varghese v Bank of Cochin* (1980) 2 SCC 360.

resources.¹⁷ NGP 2024 converts that policy into an authorisation regime. It makes authorisations non-transferable without IN-SPACe's prior written approval, which may be conditioned on performance guarantees; it permits suspension or revocation for breach, unauthorised changes of control, or where continued operations are considered contrary to national security; it requires third-party liability insurance naming the Government of India as an insured party; and it requires authorised entities to indemnify the Government against claims arising from their activities, without any cap on the operator's liability.¹⁸ It also contains a tiered mediation-then-arbitration clause for disputes arising under the terms of authorisation.¹⁹ Satellite spectrum is governed separately by the Telecommunications Act 2023, which provides for administrative, rather than auction-based, assignment of spectrum for specified satellite services.²⁰ The Department of Space has also circulated a draft policy framework addressing the State's liability for third-party damage caused by Indian space objects.²¹

C. Why Executive Instruments Are Not Enough

Article 73 of the Constitution extends the Union's executive power to matters on which Parliament may legislate, and the executive may act in fields not yet occupied by legislation.²² But executive action cannot, without the authority of law, impose restrictions that trench upon fundamental rights, including the right under Article 19(1)(g) to carry on a trade or business.²³ Nor can a policy document displace a statute. The IBC contains a sweeping non obstante clause;²⁴ the Patents Act defines the territorial reach of patent rights; and neither yields to guidelines issued by a body with no statutory existence. NGP 2024 therefore cannot determine what happens to an authorisation in insolvency, cannot extend patent protection into orbit, and cannot create a statutory appeal. These are tasks for Parliament, which has ample legislative competence under Entries 13, 14, 31 and 97 of List I, read with Article 253. The deficit is thus not one of policy ambition but of legal form.

¹⁷ISP 2023 (n 4); Chambers (n 3) para 2.4.

¹⁸NGP 2024 (n 5) ch X (Liability Related Aspects); Chambers (n 3) paras 2.4, 2.8, 3.1.

¹⁹Chambers (n 3) para 9.1.

²⁰Telecommunications Act 2023, s 4 and First Schedule.

²¹Chambers (n 3) paras 1.1, 2.8.

²²*Rai Sahib Ram Jawaya Kapur v State of Punjab* AIR 1955 SC 549.

²³*State of Madhya Pradesh v Thakur Bharat Singh* AIR 1967 SC 1170; *Bishambhar Dayal Chandra Mohan v State of Uttar Pradesh* (1982) 1 SCC 39.

²⁴Insolvency and Bankruptcy Code 2016, s 238.

III. Insolvency and Liquidation of a Private Space Entity

A. Failure as a Design Parameter

The Bankruptcy Law Reforms Committee conceived the IBC as a value-maximising, creditor-in-control process that keeps viable enterprises alive as going concerns and liquidates the rest swiftly.²⁵ The Supreme Court has repeatedly affirmed that design, emphasising the commercial wisdom of the committee of creditors (CoC) and the primacy of resolution over liquidation.²⁶ A space company, however, differs from an ordinary corporate debtor in at least four respects. Its principal assets may be physically inaccessible; its most valuable rights may be public-law permissions rather than property; its failure may create hazards that outlive it; and its operation may engage national-security interests that the CoC is neither equipped nor entitled to weigh. Each difference strains the IBC.

B. What Is in the Estate?

1. *Satellites in orbit*

Section 18 of the IBC requires the interim resolution professional to take control and custody of the corporate debtor's assets, and section 20 requires the professional to manage operations as a going concern.²⁷ For a satellite operator, 'custody' of a spacecraft means continuity of telemetry, tracking and command (TT&C), access to ground stations, retention of qualified flight-dynamics personnel and maintenance of in-orbit insurance. None of this is automatic. A satellite that loses command for even a short period may become unrecoverable, turning a financeable asset into debris for which India, as launching State, remains liable. The IBC contains no mechanism to compel a technically competent operator to be appointed, and insolvency professionals are selected for financial, not orbital, expertise.

2. *The authorisation*

The 2020 amendment to the IBC inserted an Explanation to section 14(1), under which a licence, permit, registration, concession or similar grant by a government or authority 'shall not be suspended or terminated on the grounds of insolvency', provided there is no default in payment of current dues arising from its use during the moratorium.²⁸ This protects an IN-SPACe authorisation against termination for insolvency alone. It does not, however, prevent

²⁵Bankruptcy Law Reforms Committee, *The Report of the Bankruptcy Law Reforms Committee, Volume I: Rationale and Design* (Ministry of Finance, November 2015).

²⁶*Swiss Ribbons Pvt Ltd v Union of India* (2019) 4 SCC 17; *Committee of Creditors of Essar Steel India Ltd v Satish Kumar Gupta* (2020) 8 SCC 531.

²⁷Insolvency and Bankruptcy Code 2016, ss 18, 20, 25.

²⁸Insolvency and Bankruptcy Code 2016, s 14(1) Explanation, inserted by the Insolvency and Bankruptcy Code (Amendment) Act 2020.

revocation on other grounds, such as loss of technical capability, and the Supreme Court has held that the National Company Law Tribunal (NCLT) lacks jurisdiction to adjudicate decisions taken by government authorities in the realm of public law.²⁹ A revocation would therefore have to be challenged in a writ court while the insolvency process continues before the NCLT, fragmenting adjudication at the moment speed matters most. Moreover, because NGP 2024 makes the authorisation non-transferable without prior approval, the right cannot simply be sold with the business.

3. Spectrum and orbital resources

The most valuable ‘asset’ of a satellite operator is often its right to use radio frequencies and associated orbital positions. Under the ITU Radio Regulations, no transmitting station may be operated by a private enterprise without a licence from the government of the relevant country,³⁰ and frequency filings are made by the national administration, not the operator. The Supreme Court has characterised spectrum as a scarce natural resource held by the State in trust for the public.³¹ In 2021 the National Company Law Appellate Tribunal (NCLAT) held, in the Aircel insolvency, that the licensee’s right to use spectrum was an intangible asset capable of being dealt with in insolvency, subject to clearance of dues and regulatory approval.³² In February 2026, however, the Supreme Court, reviewing that line of reasoning, observed that the IBC ‘cannot be the guiding principle for restructuring the ownership and control of spectrum’, treating spectrum as a material resource of the community whose disposition is governed by telecommunications law.³³ Although decided in the terrestrial telecommunications context, the reasoning applies with at least equal force to satellite spectrum and orbital slots, which are additionally subject to the non-appropriation principle of Article II of the Outer Space Treaty. The consequence for space insolvency is stark: the rights that give a satellite business most of its value may sit outside the insolvency estate altogether, and a resolution applicant cannot be confident of acquiring them. Without statutory clarification, creditors will either price this uncertainty into the cost of capital or decline to lend at all.

4. Licensed technology and grant conditions

Many Indian space firms depend on technology licensed from ISRO through NSIL, and firms funded under IN-SPACe’s Technology Adoption Fund must obtain IN-SPACe approval before

²⁹*Embassy Property Developments Pvt Ltd v State of Karnataka* (2020) 13 SCC 308.

³⁰ITU Radio Regulations (2024 edn) art 18.

³¹*Centre for Public Interest Litigation v Union of India* (2012) 3 SCC 1; *Natural Resources Allocation, In re, Special Reference No 1 of 2012* (2012) 10 SCC 1.

³²*Union of India v Vijaykumar V Iyer* 2021 SCC OnLine NCLAT 355.

³³*State Bank of India v Union of India* 2026 INSC 153 (SC, 13 February 2026).

licensing grant-funded IP to third parties.³⁴ Such licences are commonly personal and terminable on insolvency, so that the technology on which a resolution plan depends may evaporate on admission. The IBC's protection of 'critical' supplies during the moratorium does not straightforwardly extend to licences of this kind.³⁵

C. Contractual Counterparties and Ipso Facto Clauses

Launch services agreements, ground-segment contracts and insurance policies routinely permit termination on the insolvency of a counterparty. The Supreme Court has held that the NCLT may restrain the termination of a contract where termination is sought solely on the ground of insolvency and the contract is central to the corporate debtor's survival, while cautioning that this jurisdiction is narrow.³⁶ The difficulty in the space context is that the most dangerous termination is that of third-party liability and in-orbit insurance: if cover lapses during the corporate insolvency resolution process (CIRP), the Government's exposure as launching State becomes unhedged. The statute should therefore treat continuation of mandatory insurance and TT&C services as insolvency resolution process costs, ranking ahead of other claims under section 53, and should render ipso facto termination of such contracts ineffective during the moratorium.

D. Orbital Stewardship in Liquidation

Liquidation poses a sharper problem than resolution. A liquidator's function is to realise assets and distribute proceeds; it is not to fly spacecraft. Yet a satellite cannot be 'abandoned' in the way a worthless lease can be disclaimed. Comparative insolvency jurisprudence offers instructive analogies. The United States Supreme Court held in *Midlantic* that a bankruptcy trustee may not abandon property in contravention of laws reasonably designed to protect public health and safety from identified hazards.³⁷ The Supreme Court of Canada held in *Redwater* that end-of-life environmental obligations imposed by a regulator are not provable claims that can be compromised in bankruptcy, and must be satisfied from the estate before distribution to secured creditors.³⁸ An orbital decommissioning obligation is functionally identical to a well-abandonment obligation: it is a regulatory duty to neutralise a continuing hazard.

³⁴Chambers (n 3) paras 8.2, 7.6.

³⁵Insolvency and Bankruptcy Code 2016, s 14(2A).

³⁶*Gujarat Urja Vikas Nigam Ltd v Amit Gupta* (2021) 7 SCC 209.

³⁷*Midlantic National Bank v New Jersey Department of Environmental Protection* 474 US 494 (1986).

³⁸*Orphan Well Association v Grant Thornton Ltd* 2019 SCC 5.

Indian law points in a different direction. The Supreme Court has held that an approved resolution plan binds all stakeholders, including government authorities, and extinguishes claims not included in it.³⁹ In liquidation, government dues rank below secured creditors and workmen.⁴⁰ IN-SPACe's contractual indemnity and its claim for the costs of safe disposal would thus be unsecured and liable to extinction. Unless the statute intervenes, the private estate will be distributed to creditors while the cost of rendering its satellites safe, and the liability if they are not, falls on the public purse. The statute should draw a clear distinction between monetary claims, which may be compromised, and continuing compliance obligations concerning space safety, which should survive any plan or liquidation order and be funded from ring-fenced security posted at the time of authorisation.

E. Control, National Security and Resolution Plans

The IBC already screens resolution applicants through section 29A,⁴¹ and FDI from countries sharing a land border with India requires government approval.⁴² NGP 2024 additionally requires IN-SPACe's approval for changes of control. The danger is sequential rather than substantive: a CoC may approve a plan after months of negotiation, only for IN-SPACe to refuse the change of control, sending the debtor into liquidation. Section 31(4) of the IBC offers a template. It requires a resolution applicant to obtain necessary regulatory approvals within one year of plan approval, but, where a plan involves a combination, requires Competition Commission approval before the CoC approves the plan.⁴³ An analogous proviso requiring IN-SPACe clearance of the resolution applicant's fitness, within a fixed period and on stated grounds, would convert an ex post veto into an ex ante filter.

F. Secured Finance and Cross-Border Dimensions

Asset-based finance of satellites is hampered internationally because the Space Assets Protocol to the Cape Town Convention, adopted in 2012, is not yet in force.⁴⁴ India's own aviation experience shows the cost of leaving the interaction between asset finance and the IBC unresolved. When Go First entered insolvency in 2023, the section 14 moratorium prevented

³⁹*Ghanashyam Mishra and Sons Pvt Ltd v Edelweiss Asset Reconstruction Co Ltd* (2021) 9 SCC 657.

⁴⁰Insolvency and Bankruptcy Code 2016, s 53(1).

⁴¹Insolvency and Bankruptcy Code 2016, s 29A; *ArcelorMittal India Pvt Ltd v Satish Kumar Gupta* (2019) 2 SCC 1.

⁴²Department for Promotion of Industry and Internal Trade, Press Note No 3 (2020 Series).

⁴³Insolvency and Bankruptcy Code 2016, s 31(4) and proviso.

⁴⁴Convention on International Interests in Mobile Equipment (opened for signature 16 November 2001, entered into force 1 March 2006) 2307 UNTS 285; Protocol to the Convention on International Interests in Mobile Equipment on Matters Specific to Space Assets (opened for signature 9 March 2012, not yet in force); Mark J Sundahl, *The Cape Town Convention: Its Application to Space Assets and Relation to the Law of Outer Space* (Martinus Nijhoff 2013).

lessors from repossessing aircraft, provoking extended litigation, an exempting notification by the Ministry of Corporate Affairs and, ultimately, the Protection of Interests in Aircraft Objects Act 2025, which gives the Cape Town Convention and Aircraft Protocol the force of law.⁴⁵ The lesson is that India should decide, in advance and by statute, how secured creditors' rights in space assets interact with the moratorium, rather than improvising after a high-profile failure. The Space Assets Protocol's 'public service' provisions, which allow a State to preserve services of public importance notwithstanding creditor remedies, show that financier certainty and public interest can be reconciled.⁴⁶

Space businesses are also intrinsically cross-border: ground stations, customers, financiers and subsidiaries are frequently located abroad. India has not adopted the UNCITRAL Model Law on Cross-Border Insolvency, despite a detailed recommendation to do so,⁴⁷ and has relied on ad hoc protocols, as in the Jet Airways insolvency.⁴⁸ A failed Indian constellation operator with foreign ground stations would face precisely the coordination problems the Model Law was designed to solve.

G. The Antrix–Devas Warning

India's most significant space-sector insolvency episode is instructive for a different reason. After Antrix Corporation's termination of its 2005 S-band agreement with Devas Multimedia, and adverse commercial and investment-treaty awards, the Supreme Court upheld the winding up of Devas on the ground that its affairs had been conducted fraudulently.⁴⁹ Whatever the merits, the episode associated Indian space regulation internationally with the use of corporate death as a regulatory instrument, and it continues to generate enforcement litigation abroad.⁵⁰ A statutory regime that channels regulatory concerns through transparent, reasoned and reviewable revocation, rather than through winding-up proceedings, would better serve India's reputation as a destination for space capital.

H. Recommendations on Insolvency

The foregoing analysis supports a dedicated chapter in the Space Activities Act on 'Space

⁴⁵Ministry of Corporate Affairs, Notification SO 4321(E) (3 October 2023); *Accipiter Investments Aircraft 2 Ltd v Union of India* (Delhi HC, 26 April 2024); Protection of Interests in Aircraft Objects Act 2025.

⁴⁶Roy Goode, *Convention on International Interests in Mobile Equipment and Protocol thereto on Matters Specific to Space Assets: Official Commentary* (UNIDROIT 2013).

⁴⁷Insolvency Law Committee, *Report of the Insolvency Law Committee on Cross Border Insolvency* (Ministry of Corporate Affairs, October 2018).

⁴⁸*Jet Airways (India) Ltd v State Bank of India Company Appeal (AT) (Insolvency) No 707 of 2019* (NCLAT, 26 September 2019).

⁴⁹*Devas Multimedia Pvt Ltd v Antrix Corporation Ltd* (2023) 1 SCC 216.

⁵⁰Chambers (n 3) paras 9.2–9.3.

Operators in Financial Distress', operating alongside, rather than displacing, the IBC. Its core elements should be as follows. First, the insolvency professional should be required to notify IN-SPACE within a short period of the commencement of any CIRP or liquidation, and IN-SPACE should have a statutory right of audience before the NCLT and observer status in the CoC. Secondly, every authorised operator should file, as a condition of authorisation, a space operations continuity plan identifying a technically qualified back-up operator and the arrangements for TT&C continuity, insurance and end-of-life disposal. Thirdly, IN-SPACE should be empowered, on application by the insolvency professional or of its own motion, to appoint a qualified 'operator of record' to fly the debtor's spacecraft during the CIRP or liquidation, drawing on the model of special administration regimes for essential services in the United Kingdom.⁵¹ Fourthly, the statute should declare which rights are transferable in resolution or liquidation, and on what conditions: the authorisation, the national registration and the right to use assigned spectrum should be transferable to a resolution applicant or liquidation purchaser, subject to IN-SPACE's clearance within a fixed period, failing which clearance should be deemed granted unless a reasoned refusal is issued. This would respond directly to the uncertainty created by the Supreme Court's 2026 spectrum decision without compromising the State's ownership of the underlying resource. Fifthly, a proviso modelled on section 31(4) should require IN-SPACE's fitness clearance before CoC approval. Sixthly, space-safety compliance obligations should survive any resolution plan or liquidation, and the costs of insurance continuity and safe disposal should be insolvency resolution process costs. Seventhly, operators should post decommissioning security, held on statutory trust and excluded from the liquidation estate. Finally, for assets designated as critical to national interests, NSIL should have a statutory right of step-in at fair value, subject to review.

IV. Liability: Closing the Gap between Treaty and Balance Sheet

A. The State Pays First

Under the Liability Convention, claims are presented State to State, and the claimant need not pursue the private operator at all. The only settled claim under the Convention, arising from the crash of the Soviet satellite Cosmos 954 over northern Canada in 1978, was resolved between the two governments.⁵² Whatever the domestic allocation, India will therefore be the first payer when an Indian private space object causes damage abroad, and its recovery from

⁵¹See eg Energy Act 2004, ss 154–171 (energy administration orders).

⁵²Protocol on Settlement of Canada's Claim for Damages Caused by 'Cosmos 954' (signed 2 April 1981) (1981) 20 ILM 689.

the operator depends entirely on domestic law.

B. The Weakness of Uncapped Indemnity

NGP 2024 responds by imposing an uncapped indemnity and mandatory third-party liability insurance of a scope determined case by case.⁵³ The two elements are in tension. An uncapped indemnity looks protective, but its real value is limited by the operator's solvency; in insolvency, as shown in Part III, it becomes an unsecured government claim ranking low in the section 53 waterfall and liable to extinction under an approved plan. Meanwhile, the absence of a cap makes the operator's exposure uninsurable beyond the market's capacity, deters investors whose equity is effectively placed at unlimited risk and puts Indian launch providers at a competitive disadvantage relative to foreign providers whose governments cap operator liability. Domestic tort law compounds the problem. An enterprise engaged in an inherently dangerous activity is subject in India to absolute liability, without the exceptions recognised in *Rylands v Fletcher*.⁵⁴ A launch operator would almost certainly fall within this principle, but victims' recovery would, again, be limited by the operator's balance sheet.

C. Comparative Models

Mature regimes resolve the tension through a three-tier structure. In the United States, a licensee must insure against third-party liability up to the maximum probable loss determined by the regulator, subject to a statutory ceiling, and the Government may pay claims above that level up to a further limit, subject to congressional appropriation.⁵⁵ France's Law on Space Operations channels liability to the operator, caps the operator's liability towards third parties at a level fixed by finance law, and provides a State guarantee above the cap, while preserving recourse where the operator commits a deliberate fault.⁵⁶ The United Kingdom's Space Industry Act 2018 imposes strict liability on operators for injury or damage, with a power to limit liability in the licence; the Space Industry (Indemnities) Act 2025 now requires that licences specify such a limit.⁵⁷ Japan's 2016 Act similarly combines mandatory insurance with government compensation for damage exceeding insured amounts.⁵⁸

India has its own domestic template. The Civil Liability for Nuclear Damage Act 2010 channels

⁵³NGP 2024 (n 5) ch X; Chambers (n 3) para 2.8.

⁵⁴*MC Mehta v Union of India* (1987) 1 SCC 395; *Indian Council for Enviro-Legal Action v Union of India* (1996) 3 SCC 212.

⁵⁵1 USC §§ 50914–50915.

⁵⁶Loi n° 2008-518 du 3 juin 2008 relative aux opérations spatiales, arts 13–17.

⁵⁷Space Industry Act 2018, pt 6; Space Industry (Indemnities) Act 2025.

⁵⁸Act on Launching of Spacecraft, etc and Control of Spacecraft (Act No 76 of 2016) (Japan).

liability to the operator, caps it, requires financial security to cover the cap, makes the Central Government liable beyond it, and grants the operator a right of recourse in defined circumstances.⁵⁹ Its experience also carries a warning: the broad right of recourse against suppliers in section 17(b) deterred foreign suppliers and delayed the very investment the Act was meant to enable. A space statute should confine recourse against component suppliers to what is agreed by contract or to wilful misconduct.

D. Recommendations on Liability

The Space Activities Act should adopt a tiered model. At the first tier, the operator should carry third-party liability insurance, or equivalent financial security, up to a maximum probable loss calculated by IN-SPACe according to published methodology. At the second tier, the operator's liability to the Government and to domestic third parties should be capped at that amount per authorised activity, save in cases of wilful misconduct, gross negligence or material breach of authorisation conditions. At the third tier, the Central Government should assume liability above the cap, financed through a Space Liability Fund built from authorisation levies, so that the sovereign backstop is pre-funded rather than contingent. The insurance proceeds and the decommissioning security should be held on statutory trust for third-party claimants and excluded from any insolvency estate, and claimants should have a direct right of action against the insurer. Reciprocal cross-waivers should be mandatory among participants in a launch. Finally, the statute should expressly reconcile the regime with the *MC Mehta* principle: absolute liability towards victims should be preserved, but channelled to the operator and backed by the tiered financial structure, so that the victim's right does not depend on the operator's solvency.

V. Intellectual Property Rights in Orbit

A. The Territoriality Problem

Patent rights are territorial. Section 48 of the Patents Act confers exclusive rights to make, use, offer for sale, sell or import the patented product or process 'in India'.⁶⁰ Outer space is not Indian territory, and Article II of the Outer Space Treaty forbids national appropriation. The Patents Act is silent on whether an act performed aboard an Indian-registered space object is an act 'in India'. Article VIII of the Treaty supplies a jurisdictional hook, since the State of registry retains jurisdiction and control over the object, but that hook becomes a rule of IP law

⁵⁹Civil Liability for Nuclear Damage Act 2010, ss 4, 6, 7, 8, 17.

⁶⁰Patents Act 1970, s 48.

only if domestic legislation adopts it.⁶¹ Section 49 of the Patents Act, implementing the ‘temporary presence’ exception in Article 5ter of the Paris Convention, exempts patented inventions used on foreign vessels, aircraft and land vehicles temporarily or accidentally in India; whether a foreign spacecraft is a ‘vessel’ or ‘aircraft’ for this purpose has never been decided.⁶²

These gaps matter commercially. In-orbit servicing, manufacturing in microgravity and on-board data processing are among the most promising NewSpace markets. An Indian firm that manufactures a product on an Indian-registered platform using a competitor’s patented process may, on current law, infringe nothing; conversely, an Indian patentee cannot prevent a foreign operator’s use of its invention in orbit. The prospect of the Bharatiya Antariksh Station, targeted for 2035, makes the question more pressing, since research aboard it will involve Indian and foreign participants and commercial users.⁶³

B. Comparative Solutions

Two models address the problem. The United States provides that an invention made, used or sold in outer space on a space object under its jurisdiction or control is deemed made, used or sold within the United States, unless an international agreement provides otherwise.⁶⁴ The Intergovernmental Agreement on the International Space Station provides that an activity occurring in or on a flight element is deemed to have occurred only in the territory of the Partner State that registered that element, while treating European Space Agency elements as occurring in the territory of any European Partner State.⁶⁵ Both adopt a ‘quasi-territorial’ approach that extends domestic IP law to registered objects, which is consistent with Article VIII of the Outer Space Treaty.

C. Ownership: Abandoning the 2017 Approach

The 2017 Draft Bill proposed that IP developed in the course of space activities would vest in the Central Government. That proposal was widely criticised as a disincentive to private

⁶¹Stephan Hobe, Bernhard Schmidt-Tedd and Kai-Uwe Schrogl (eds), *Cologne Commentary on Space Law*, vol 1 (Carl Heymanns 2009) commentary on art VIII.

⁶²Patents Act 1970, s 49; Paris Convention for the Protection of Industrial Property (adopted 20 March 1883, as revised at Stockholm 14 July 1967) 828 UNTS 305, art 5ter; Chambers (n 3) para 8.1.

⁶³Chambers (n 3) para 2.1.

⁶⁴35 USC § 105.

⁶⁵Agreement among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning Cooperation on the Civil International Space Station (signed 29 January 1998, entered into force 27 March 2001) art 21.

investment, and the redraft is reported to abandon it in favour of private ownership.⁶⁶ The criticism is well founded. Venture investors value space firms principally on their IP; a vesting rule would make Indian firms uninvestable and encourage them to incorporate or register their space objects elsewhere. The public interest is adequately protected by existing provisions permitting government use of patented inventions,⁶⁷ supplemented, for inventions developed with public funding, by a narrowly defined licence in favour of the Government and a 'march-in' power exercisable only on stated grounds and subject to review.

D. Data, Trade Secrets and Regulatory Confidentiality

Much of the value in space activities lies not in patents but in data and know-how. Raw Earth-observation data are unlikely to attract copyright protection, which in India requires a minimum degree of creativity,⁶⁸ and India has no sui generis database right. NewSpace firms therefore protect mission-critical software and algorithms as trade secrets through contract and equity, in the absence of dedicated trade-secret legislation, which the Law Commission has recommended.⁶⁹ This creates a specific regulatory problem: NGP 2024 empowers IN-SPACE to require access to TT&C and mission-control data and to inspect operations.⁷⁰ Information of the highest commercial sensitivity is thus routinely disclosed to a regulator without any statutory guarantee of confidentiality beyond the general exemption for commercial confidence in the Right to Information Act 2005.⁷¹ The statute should impose a specific duty of confidentiality on IN-SPACE and its officers, with penalties for breach.

E. Intellectual Property in Insolvency

IP interacts with insolvency in two ways. First, in many space start-ups IP is the only realisable asset; its value depends on whether associated licences, including ISRO and NSIL technology licences, survive the debtor's insolvency and can be assigned to a purchaser. Secondly, public funding conditions restricting onward licensing may, if unqualified, prevent a purchaser from exploiting the technology. The statute should provide that licences of government-origin technology are assignable to a resolution applicant or purchaser cleared by IN-SPACE on the same terms, and that funding conditions attach to the technology rather than terminating on insolvency.

⁶⁶Chambers (n 3) para 8.3; Council for Strategic and Defense Research (n 8).

⁶⁷Patents Act 1970, ss 47, 100, 102.

⁶⁸*Eastern Book Co v DB Modak* (2008) 1 SCC 1.

⁶⁹Law Commission of India, *Trade Secrets and Economic Espionage* (Report No 289, 2024); Chambers (n 3) para 8.2.

⁷⁰Chambers (n 3) paras 2.4, 4.1.

⁷¹Right to Information Act 2005, s 8(1)(d).

F. Recommendations on Intellectual Property

The Act should (i) deem inventions made, used or sold on an Indian space object, defined by reference to Indian registration, to be made, used or sold in India for the purposes of the Patents Act, subject to India's international agreements; (ii) clarify that section 49 applies to foreign-registered space objects only during temporary presence in Indian airspace or territory; (iii) establish private ownership as the default rule for IP generated in space activities, with a limited government-use licence for publicly funded inventions; (iv) impose statutory confidentiality obligations on IN-SPACe in respect of technical data; (v) secure the assignability of government-origin licences in insolvency; and (vi) provide that the choice of foreign registration to avoid Indian law does not defeat Indian jurisdiction where an Indian national retains effective control, thereby limiting 'flags of convenience'.

VI. Judicial Review of IN-SPACe Authorisation Decisions

A. The Present Position

IN-SPACe is an autonomous body within the Department of Space, established by executive decision rather than by statute. Its decisions are attributable to the Union of India, and it is in any event 'State' within Article 12 on the functional tests applied by the Supreme Court.⁷² A refusal, suspension or revocation of authorisation is therefore amenable to writ jurisdiction under Articles 32 and 226. The arbitration clause in NGP 2024 does not alter this: it governs disputes under the terms of an authorisation already granted, whereas a refusal to authorise is a pre-contractual exercise of public power for which arbitration is ill-suited.

B. The Standards of Review

Indian courts review administrative action for illegality, irrationality and procedural impropriety, and have counselled restraint in matters of commercial and technical judgment.⁷³ Since *Maneka Gandhi*, procedure affecting rights must be fair, just and reasonable.⁷⁴ Administrative authorities exercising quasi-judicial functions must give reasons, and an order must stand or fall on the reasons it states, which cannot be supplemented by later affidavit.⁷⁵ Restrictions on the right to carry on business must also satisfy proportionality: they must pursue

⁷²*Ajay Hasia v Khalid Mujib Sehravardi* (1981) 1 SCC 722; *Pradeep Kumar Biswas v Indian Institute of Chemical Biology* (2002) 5 SCC 111.

⁷³*Tata Cellular v Union of India* (1994) 6 SCC 651.

⁷⁴*Maneka Gandhi v Union of India* (1978) 1 SCC 248.

⁷⁵*SN Mukherjee v Union of India* (1990) 4 SCC 594; *Kranti Associates Pvt Ltd v Masood Ahmed Khan* (2010) 9 SCC 496; *Mohinder Singh Gill v Chief Election Commissioner* (1978) 1 SCC 405.

a legitimate aim through suitable means, be necessary in the sense that no less restrictive alternative is equally effective, and strike a proper balance.⁷⁶

C. The National Security Problem

NGP 2024 permits IN-SPACe to take into account national security, foreign relations, geopolitical considerations and ‘such other factors’ as it deems necessary.⁷⁷ The breadth of these grounds is understandable, given the dual-use character of space technology, but it sits uneasily with judicial review. The Supreme Court has at times accepted that reasons for denial of security clearance need not be disclosed.⁷⁸ More recently, however, in *Madhyamam Broadcasting*, which concerned the refusal to renew a broadcaster’s permission on security grounds, the Court held that national security cannot be invoked as a talisman, that the State must establish a genuine nexus between the material and the security concern, and that sealed-cover procedures should yield to less restrictive alternatives such as redaction or the appointment of an amicus curiae.⁷⁹ *Madhyamam* is directly relevant to IN-SPACe: satellite broadcasting and communications authorisations engage identical interests. The August 2025 withdrawal of authorisation for certain foreign satellite capacity, reportedly followed by notices under a bilateral investment treaty, illustrates that security-driven space regulation will be litigated, domestically and internationally.⁸⁰

D. Deficiencies of the Status Quo

Four deficiencies stand out. First, NGP 2024 imposes no statutory duty to give reasons and no binding time limits; authorisations reportedly take between 75 and 120 days, but there is no remedy for delay short of mandamus.⁸¹ Secondly, writ review is not an appeal on the merits: a High Court will ask whether IN-SPACe’s decision was lawful and rational, not whether its assessment of debris risk or frequency interference was correct. Thirdly, technical questions of orbital mechanics and radio interference are ill-suited to generalist courts, which may respond either with excessive deference or with intervention unsupported by expertise. Fourthly, opaque regulatory action carries international costs. In the investment-treaty proceedings arising from the Antrix–Devas termination, tribunals accepted that the reservation of S-band

⁷⁶*Modern Dental College and Research Centre v State of Madhya Pradesh* (2016) 7 SCC 353; *KS Puttaswamy v Union of India* (2017) 10 SCC 1.

⁷⁷Chambers (n 3) paras 2.4, 3.3.

⁷⁸*Ex-Army men’s Protection Services Pvt Ltd v Union of India* (2014) 5 SCC 409.

⁷⁹*Madhyamam Broadcasting Ltd v Union of India* (2023) 13 SCC 401.

⁸⁰Chambers (n 3) para 9.2.

⁸¹Chambers (n 3) para 2.4.

spectrum was in part directed to India's essential security interests, but nonetheless held India liable, because the measure was broader than that justification.⁸² A transparent and reasoned domestic process is the best defence against such claims.

E. Designing the Appellate Mechanism

The constitutional parameters are clear. The power of judicial review vested in the High Courts and the Supreme Court is part of the basic structure and cannot be ousted, although tribunals may act as courts of first instance.⁸³ Any tribunal must also satisfy the requirements of independence concerning appointment, tenure and conditions of service that the Supreme Court has repeatedly enforced.⁸⁴ The United Kingdom offers a practical model: decisions under the Space Industry Act 2018, including refusals, variations, suspensions and revocations of licences, are appealable to independent appeal panels drawn from a standing list, with a permission stage and distinct procedures for standard and complex appeals.⁸⁵ India need not create a new tribunal. The Telecom Disputes Settlement and Appellate Tribunal (TDSAT), which already hears appeals in the adjacent field of telecommunications and whose decisions are appealable to the Supreme Court,⁸⁶ could be reconstituted with technical members drawn from space science and engineering.

F. Recommendations on Judicial Review

The Act should (i) set out exhaustive statutory grounds on which authorisation may be refused, suspended or revoked, with any residual 'public interest' ground confined by guidelines published in advance; (ii) impose a duty to decide within fixed time limits and to give reasons, with a right to an expedited internal review by a panel of IN-SPACe not involved in the original decision; (iii) confer a right of appeal on facts and law to a reconstituted TDSAT with space-technical members; (iv) establish a closed-material procedure for national-security evidence, with security-cleared special counsel to represent the applicant's interests, reflecting the less-restrictive alternatives endorsed in *Madhyamam*; (v) provide for further appeal to the Supreme Court on substantial questions of law; (vi) expressly preserve the constitutional writ jurisdiction; (vii) provide that revocation of an authorisation for an object in orbit does not take effect until safe transfer or disposal has been secured, so that review proceedings cannot

⁸²*CC/Devas (Mauritius) Ltd v Republic of India*, PCA Case No 2013-09, Award on Jurisdiction and Merits (25 July 2016); *Deutsche Telekom AG v Republic of India*, PCA Case No 2014-10, Interim Award (13 December 2017).

⁸³*L Chandra Kumar v Union of India* (1997) 3 SCC 261.

⁸⁴*Madras Bar Association v Union of India* (2021) 7 SCC 369.

⁸⁵Space Industry Act 2018, sch 10; Space Industry (Appeals) Regulations 2021, SI 2021/816.

⁸⁶Telecom Regulatory Authority of India Act 1997, ss 14, 18.

themselves create debris; and (viii) require publication of anonymised decisions so that a body of regulatory jurisprudence can develop.

VII. Towards an Integrated Statutory Design

The proposals above are mutually reinforcing, and their value lies in their integration. Ring-fenced insurance and decommissioning security serve both the liability regime and the insolvency chapter. A transparent fitness-clearance procedure serves both resolution planning and judicial review. Assignable licences serve both IP policy and going-concern sales. Table 1 summarises the recommended provisions.

Table 1: Summary of recommended statutory provisions

Issue	Present position	Recommended statutory provision	Comparative / doctrinal source
Authorisation and spectrum in insolvency	IBC s 14 Explanation bars termination for insolvency alone; authorisation non-transferable; 2026 Supreme Court ruling places spectrum restructuring outside the IBC	Transfer of authorisation, registration and spectrum-use rights to a cleared acquirer; deemed clearance absent reasoned refusal; IN-SPACE standing before NCLT; pre-CoC fitness clearance	IBC s 31(4) proviso; UK special administration regimes
Orbital stewardship	No technical duty on insolvency professional or liquidator; government claims extinguishable under a plan	Operator of record; safety obligations survive plan and liquidation; decommissioning security on statutory trust; insurance and disposal as process costs	Midlantic (US); Redwater (Canada)

Issue	Present position	Recommended statutory provision	Comparative / doctrinal source
Third-party liability	Uncapped indemnity; insurance fixed case by case	Insurance to maximum probable loss; cap save wilful misconduct or gross negligence; pre-funded Space Liability Fund; direct action against insurer; mandatory cross-waivers	51 USC §§ 50914–50915; French LOS 2008; UK Indemnities Act 2025; CLND Act 2010
Secured finance	Space Assets Protocol not in force; moratorium applies in full	Domestic space-asset registry; calibrated moratorium exemption with public-service safeguard	Aircraft Objects Act 2025; Space Assets Protocol 2012
IP in orbit	Patents Act territorial; s 49 untested; 2017 Draft vested IP in the State	Quasi-territorial deeming for Indian space objects; private ownership default; limited government-use licence; statutory confidentiality for IN-SPACE	35 USC § 105; ISS IGA art 21
Review of authorisation decisions	Writ jurisdiction only; no statutory reasons, time limits or merits appeal	Exhaustive grounds; reasons and time limits; internal review; merits appeal to reconstituted TDSAT; closed-material procedure; appeal to Supreme Court on law	UK SIA 2018 sch 10 and SI 2021/816; Madhyamam (2023)

Three cross-cutting principles should guide the drafting. The first is sequencing: regulatory judgments about fitness, security and safety should be made early and on stated grounds, so that commercial actors, creditors and courts can rely on them. The second is ring-fencing: resources required to discharge the State’s continuing international responsibility, namely insurance proceeds, decommissioning security and the Space Liability Fund, should be placed beyond the reach of ordinary creditors. The third is institutional coherence: IN-SPACE should

be a statutory regulator with defined powers and duties, coordinating with the NCLT, the Department of Telecommunications and TDSAT through express statutory channels rather than through ad hoc litigation.

VIII. Conclusion

India's private space sector has passed from aspiration to operation. Private rockets have flown from Sriharikota, private satellites are in orbit, and foreign capital has been invited in on liberal terms. The legal framework that governs this activity, however, remains a structure of policies and guidelines that has not been tested by the commercial failures that every maturing industry experiences. This paper has argued that the most pressing gaps, concerning insolvency, liability, IP in orbit and review of regulatory decisions, are not isolated technical omissions but expressions of a single structural problem: the liability vacuum between a State whose international responsibility is unlimited and perpetual and private entities whose capital and existence are neither.

The forthcoming Space Activities Act should close that vacuum deliberately. It should tell creditors and resolution applicants what they can acquire when a space company fails and on what terms; it should ensure that the cost of rendering spacecraft safe is funded before the estate is distributed; it should replace an uncapped but illusory indemnity with a tiered, insured and pre-funded liability structure; it should extend Indian patent law to Indian space objects while leaving ownership with those who innovate; and it should subject IN-SPACe's considerable discretion to reasoned decision-making, specialist appeal and a security procedure that respects both national interests and the rule of law. The Supreme Court's 2026 insistence that public resources such as spectrum cannot be restructured merely by the logic of insolvency underscores the need for Parliament, not the courts, to strike these balances in advance. A statute designed with failure in mind is not a sign of pessimism about India's space ambitions; it is the condition on which serious capital, and serious operators, will commit to them.