PRIVATE SPACE OPERATIONS AND THE IN-SPACE FRAMEWORK: RECONCILING SOVEREIGN IMMUNITY WITH THIRD-PARTY LIABILITY AND INDIA'S ROLE AND AREAS OF IMPROVEMENT

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ABSTRACT

The commercialisation of outer space has changed almost everything we assumed about space law. For decades, space activities were controlled by governments of different countries, and the international legal framework built around things like the Outer Space Treaty of 1967 and the Liability Convention of 1972 was designed with countries as the only real actors in mind. But things are very different today. Private companies are launching satellites in the hundreds, planning lunar missions, offering commercial launch services to governments of different countries, and even speaking openly about space tourism. This creates a very serious problem: who will be responsible when something goes wrong, and how will the existing law deal with these problems, which it was never designed to regulate? In India, the Indian National Space Promotion and Authorisation Centre, known as IN-SPACe, was established in 2020 as the country's first official regulatory body for space activities. This paper tries to examine how the IN-SPACe framework attempts to balance the principle of independent immunity with the modern need for clear third-party liability in commercial space operations. It also looks at India's position in the global commercial space economy and identifies specific areas where the framework can and must improve India's interests and its obligations under international law.

Keywords: Outer Space, Immunity, Third-Party Liability.

INTRODUCTION

Space, for most of human history, was something people looked at from below and wondered about. When the first rockets went up in the 1950s and 1960s, space became an area of

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competition for two superpower countries that is the United States and the Soviet Union currently known as Russia who used it to show technological and ideological dominance. The idea that a private company might build its own rocket, launch it commercially, and sell launch services like a courier business would have seemed completely unbelievable to the people who created the Outer Space Treaty in 1967.

Yet this is exactly what is happening in today's world. SpaceX has made rocket launches almost normal. Amazon's Project Kuiper and OneWeb are building massive networks of satellites in low-Earth orbit. In India, a startup called Skyroot Aerospace successfully launched the country's first privately developed rocket, the Vikram-S, in November 2022. Agnikul Cosmos is developing its own semi-cryogenic engine. The Indian private space industry, which was in a very bad condition five years ago, is now in a good condition and is growing. With all this, there is a legal question that nobody has fully answered: what happens when these private companies cause damage? And more importantly, who will be responsible?

This question is the centre of conflict between two principles in international law: sovereign immunity and sovereign liability. Sovereign immunity is the principle that a country cannot be sued without its consent. It is one of the oldest principles in international law. But the Outer Space Treaty and the Liability Convention say that countries are responsible for what happens in space under their flag, even when a private company is the one doing the activity. So if an Indian company's satellite crashes into someone else's satellite, India as a country is the one that will face all the legal consequences internationally. But the company is a private entity. It is not entitled to country immunity. So how does the law figure out who pays in the end?

India's answer to this question for now is the IN-SPACe framework. IN-SPACe is to act as the regulator that authorises private space activities, supervises them, and ensures that there is a clear chain of accountability between the private operator and the Indian government. The Indian Space Policy of 2023 further clarified the overall structure of how space activities should be governed.

This paper sets out to do three things. First, it explains the international legal framework and how it creates a dispute between sovereign immunity and third-party liability. Second, it analyses how IN-SPACe tries to manage this dispute and where the current approach fails. Third, it identifies specific areas where India's commercial space law framework needs

improvement. The goal is not to provide a perfect or final answer; space law is evolving too fast for that, but to understand where India is today and where it needs to go.

THE INTERNATIONAL LEGAL FRAMEWORK GOVERNING SPACE ACTIVITIES

Before looking at India's domestic framework, it helps to understand the international rules that India has agreed to follow. There are five major international space law treaties, but the two most important laws are the Outer Space Treaty of 1967 and the Convention on International Liability for Damage Caused by Space Objects of 1972, commonly also the Liability Convention. India is a signatory to both.

The Outer Space Treaty is sometimes called the 'Magna Carta of outer space' because it established the basic principles that govern all space activities. According to Article I, outer space is the 'province of all mankind', meaning no country can have ownership over any part of outer space. But the provision that is most important to our discussion is Article VI. It states that countries that are part of the treaty 'bear international responsibility for national activities in outer space, including the Moon and other celestial bodies, whether such activities can be done by governmental agencies or by non-governmental entities.' It also requires that activities of 'non-governmental entities' in space shall require 'authorisation and continuing supervision' by the government

Article VI means that even if a private Indian company build and launches a satellite, India as a country will be responsible for what that satellite does. The treaty states that private companies will participate in space activities, but it channels accountability through the country. This was a forward-looking provision for that time, but it creates a major challenge today because the scale of private space activity was simply not imagined in 1967.

Article VII of the Outer Space Treaty establishes the concept of state liability for damage caused by space objects. It says that a country that launches, obtains the launching of, or whose territory or facility is used for the launch of a space object is 'internationally liable' for damage caused by that object. The Liability Convention of 1972 expand this. It distinguishes between two types of liability: absolute liability for damage on the Earth's surface or to aircraft in flight, and fault-based liability for damage caused in outer space itself.

The Registration Convention of 1975 requires countries to maintain a national register of space objects and report to the United Nations. This is important because it helps identify which country is the launching state for the purpose of liability; without registration, it would be very difficult to identify responsibility back to a particular country. India maintains its own national registry and submits the information to the UN.

These treaties create a framework that works well for government-to-government space operations. The problem is that they were designed for a world where only governments launched things into space. When private companies are involved, the framework fails. A private company is not a party to these treaties; only countries are part of these treaties. The treaties create no legal relationship between a private operator and a foreign victim. All claims must flow through the country, which must then handle recovery from the private operator through domestic law. This is where a strong domestic legal framework becomes essential.

SOVEREIGN IMMUNITY IN THE CONTEXT OF SPACE OPERATIONS

Sovereign immunity is one of the foundational principles of international law. The basic idea is that countries are equally sovereign and cannot be subjected to the jurisdiction of another country's courts without their consent. The classic Latin maxim is 'par in parem non habet imperium', which means an equal has no authority over an equal. In domestic law, this translates into the idea that a government cannot be sued in its own courts unless it has passed legislation allowing it.

In the context of space activities, sovereign immunity creates a dynamic situation. When a space object belonging to one country causes damage to another country, the normal route for seeking compensation is not a domestic lawsuit; rather, it is a diplomatic claim or a proceeding under the Liability Convention. The Liability Convention itself sets up a Claims Commission that can adjudicate disputes between countries. So the treaty framework works around sovereign immunity by creating its own inter-country claim mechanism. A country cannot use its sovereign immunity as a shield to refuse to deal with a valid space damage claim from another country.

But things get complicated when the organisation causing damage is not the state itself but a private company. Suppose an Indian private company launches a satellite that crashes into a French government satellite in orbit. The damage is significant. France wants compensation. Under international law, France's claim must be brought against India, not against the Indian

private company, because only India is a party to the international treaties. India is internationally responsible under Article VI of the Outer Space Treaty.

Now India has two problems. First, internationally, India must deal with France's claim by paying substantial compensation under the Liability Convention's fault-based liability standard for in-orbit crashes. Second, domestically, India needs to recover that compensation from the private company. But here is the problem: if India has no clear domestic space legislation that proves the private company's obligations, the legal basis for recovery is unclear. India cannot hide behind sovereign immunity in dealing with France, but it might struggle to hold the private company legally accountable.

This is what makes the IN-SPACe authorisation process legally significant. When IN-SPACe authorises a private company to conduct space activities, it can attach conditions to that authorisation, including indemnification obligations, insurance requirements, and safety standards. If the company violates these conditions and causes damage, IN-SPACe can take action against it. The authorisation becomes the legal instrument through which India's international obligations under the Outer Space Treaty are translated into domestic accountability for private operators.

The problem, as we will see, is that this mechanism is only as strong as the legal framework that backs it. If the authorisation conditions are merely administrative rather than statutory, their enforceability is much weaker. This is one of the most important weaknesses in India's current approach.

THIRD-PARTY LIABILITY: WHO PAYS WHEN THINGS GO WRONG?

Third-party liability in space law refers to the legal obligation to compensate people or entities who suffer damage as a result of space activities, people or entities who were not involved in the activity at all and therefore had no way to protect themselves through contract. The term 'third party' distinguishes victims from the two parties directly involved in the activity, such as the launch company and the government that authorised it.

The most straightforward scenario is a launch failure where a rocket crashes and destroys property on the ground. But modern space activities create far more complex liability scenarios. A satellite malfunction could disrupt GPS signals used by commercial shipping, causing vessels to go off course. A piece of space debris could impact and destroy an operational

satellite worth hundreds of millions of dollars. A rocket's second stage, drifting in orbit for years, could re-enter the atmosphere and land in a populated area. All of these scenarios create potential third-party liability.

The Liability Convention handles these scenarios through its two-track liability system. For damage on the Earth's surface or to aircraft in flight, the launching country has absolute liability; it must pay regardless of whether there was any negligence or fault. This reflects the philosophy that operating in space is an inherently dangerous activity, and those who launch objects into space should bear the risk of harm to people who had no say in the matter. For damage that occurs in outer space itself, the standard shifts to fault-based liability compensation, which is owed only if fault is established. This is partly because proving what happened in space is much harder, and because both parties in a space collision are themselves engaged in space activities.

One of the most important real-world examples of the Liability Convention in action is the Cosmos 954 incident of 1978, when a Soviet nuclear-powered reconnaissance satellite broke apart over Canada and scattered radioactive debris across a large area. Canada filed a diplomatic claim and eventually received compensation from the Soviet Union. This was the first time the Liability Convention was formally invoked. It showed that the system could work but also that it was slow, diplomatic, and focused entirely on state-to-state relations.

Today, most developed countries with active space programmes require private launch operators to carry liability insurance before they can receive a launch licence. The United States requires coverage up to the 'maximum probable loss' for third-party damage and government property damage. France's Space Operations Act of 2008 requires operators to carry insurance and specifies when the government can pursue the operator for reimbursement. Australia's Space (Launches and Returns) Act has detailed provisions on third-party liability and insurance.

India currently has no equivalent statutory provision. The IN-SPACe authorisation process can impose insurance requirements as a condition of authorisation, but this is done administratively, not through legislation. The amounts, conditions, and legal consequences of inadequate insurance are not defined in any statute. If an Indian private company causes significant damage and its insurance proves insufficient, the legal path for the Indian government to recover its losses from that company is unclear. This is not a theoretical

problem; it is an actual problem in the regulatory framework that becomes more important with every new private launch.

THE IN-SPACE FRAMEWORK: INDIA'S REGULATORY STRUCTURE

IN-SPACe, the Indian National Space Promotion and Authorisation Centre, was established on 24 June 2020 through a government resolution. It functions under the Department of Space and reports to the Prime Minister's Office through the Space Commission. Its creation was driven by a policy decision to open India's space sector to private companies, which was previously almost excluded from activities that were controlled by ISRO.

The central problem IN-SPACe was created to solve was a conflict of interest that had developed in ISRO. As India's only space agency, ISRO was simultaneously a research organisation, a commercial service provider, and the de facto regulator of space activities. This meant ISRO was competing with the private sector while also being the body that decided whether private companies could operate. IN-SPACe was designed to be the independent body that authorises and supervises non-governmental space activities, separating the regulatory function from the commercial and research functions.

IN-SPACe has several functions. It evaluates applications from private entities that want to conduct space activities, either by building and launching satellites, operating launch vehicles, conducting remote sensing activities, or providing space-based services. It conducts technical and socio-economic assessments of proposed activities to ensure they are safe and consistent with India's national interests and international obligations. It can facilitate private sector access to ISRO's facilities and expertise. It also gives authorisations to private entities to do specific space activities. From a space law point of view, the authorisation function is the most legally significant. Article VI of the Outer Space Treaty requires countries to provide 'authorisation and continuing supervision' of non-governmental space activities. When IN-SPACe give an authorisation to a private Indian company, India is fulfilling this treaty obligation. The authorisation is India's official recognition that the activity meets the necessary standards. Without this authorisation, the private company would be operating in a legal vacuum, technically unrecognised under international space law.

The Indian Space Policy of 2023 provided a clearer picture of the overall structure. It assigned specific roles: ISRO will focus on developing space technology and building launch vehicles, while NSIL will handle commercial launch and satellite services. Private companies can

compete in areas that were previously government monopolies. IN-SPACe will be the single-window authority for authorisations and will also actively promote private sector participation. This separation of roles was a meaningful policy achievement, even if it remains a policy document rather than enacted law.

In terms of third-party liability, the Indian Space Policy 2023 references that private operators are expected to comply with international obligations and take responsibility for any damage they cause. However, the specific mechanisms- exactly how much insurance must be held, how the government will seek indemnification from the private operator if it pays international claims, and what happens if the private operator becomes bankrupt are not defined with the legal precision that a statute would require. This is the most significant structural weakness of IN-SPACe as it currently stands.

It is also worth noting that IN-SPACe currently lacks the statutory independence that effective regulators need. It is an administrative body under the Department of Space, which also has authority over ISRO. A truly independent regulator for private space activities should have its own enabling statute, similar to how SEBI has the Securities and Exchange Board of India Act, or TRAI has the Telecom Regulatory Authority of India Act. Without a dedicated statute, IN-SPACe's decisions and conditions can be challenged because they lack proper legal authority, which undermines its effectiveness as a regulator.

BALANCING SOVEREIGN IMMUNITY WITH THIRD-PARTY LIABILITY UNDER IN-SPACE

The central legal tension this paper wants to show is between two principles: sovereign immunity, which protects countries from certain forms of legal compulsion, and third-party liability, which creates obligations for countries to compensate those harmed by their space activities, including the activities of private entities they have authorised. Understanding how, and how well, IN-SPACe manages this tension is essential to evaluating India's current approach.

At the international level, sovereign immunity is already moderated in the space context by the Liability Convention itself. By becoming a party to the convention, India has accepted a form of liability that operates independently of its general immunity from claims in international forums. If India's space objects, including those of Indian private companies, cause damage, India cannot simply refuse to engage by using sovereign immunity. The treaty framework

provides a mechanism for inter-country claims that exists above the level of domestic immunity doctrines.

However, the domestic dimension of this tension is more complex. When India pays compensation to a foreign country under the Liability Convention because an Indian private company's satellite caused damage, India needs to be able to recover that compensation from the private company. The private company is not entitled to sovereign immunity; it is not a country. But India needs a clear domestic legal pathway to get recovery. This is where IN-SPACe's authorisation conditions become critical. If the authorisation conditions include a clear indemnification obligation requiring the private company to repay India for any international liability payments, then there is at least a contractual basis for recovery.

The problem is that a contractual condition attached to an administrative authorisation is weaker than a statutory obligation. It can be contested in domestic courts. The private company might argue that the condition was not clearly communicated, or that it is unreasonably broad, or that there was no valid legal basis for imposing it in the absence of enabling legislation. In contrast, if a Space Activities Act specifically stated that any private operator authorised to conduct space activities shall indemnify the Government of India for any liability payments made arising from those activities, there would be no room for such ambiguity.

Comparative examples are instructive here. The United States Commercial Space Launch Act has detailed provisions on the allocation of liability between the government and private launch operators. It specifies that operators must carry a maximum probable loss insurance amount, sets a ceiling on operator liability, and establishes a government indemnification mechanism for losses beyond that ceiling. France's Space Operations Act creates a clear right of subrogation for the state — after paying an international claim, the French government can step into the shoes of the victim and pursue the private operator. Australia's Space (Launches and Returns) Act similarly specifies exactly how liability is divided between the government and private operators.

India has not yet achieved this level of legal precision. The IN-SPACe framework as currently constituted does attempt to manage the tension through the authorisation system — but it does so without the firm legal foundation that only a statute can provide. Until India passes comprehensive space legislation, the reconciliation it achieves between sovereign immunity and third-party liability will remain incomplete. This is not a criticism of IN-SPACe as an

institution; it is a recognition that an administrative body cannot do the work that only enacted law can do.

INDIA'S ROLE IN COMMERCIAL SPACE OPERATIONS AND INTERNATIONAL SPACE LAW

India's space journey began on 21 November 1963, when a rocket was launched from the Thumba Equatorial Rocket Launching Station near Thiruvananthapuram, Kerala. The components were so basic that they were reportedly transported on a bicycle to the launch site. Sixty years later, India successfully soft-landed Chandrayaan-3's Vikram lander near the Moon's south pole in August 2023; it is something achieved by only a few countries. The contrast between those two moments captures India's remarkable trajectory.

From a commercial point of view, India has been offering launch services to foreign customers for decades. Antrix Corporation, ISRO's commercial arm, launched satellites for dozens of countries on the PSLV rocket. India's launch costs have been consistently among the lowest in the world, making it an attractive destination for commercial launches. NSIL (New Space India Limited), established in 2019, was created to take commercial activities further and separate them from ISRO's research mission, allowing ISRO to focus on frontier science and technology development.

More recently, India's growing credibility in commercial space was demonstrated when OneWeb, which is a satellite internet company contracted with ISRO for launches after its previous launch partner became unavailable in 2022. ISRO launched OneWeb's satellites on the LVM3 (formerly GSLV Mk III) rocket. This was significant not just commercially but symbolically: it showed that India was a reliable, professional partner for major international space companies at a moment when alternatives were limited.

In international space law forums, India participates in COPUOS, the United Nations Committee on the Peaceful Uses of Outer Space, which is the primary multilateral forum for developing space law and policy. India has generally supported the existing treaty framework and has been a voice for the interests of developing countries in access to space. However, India's participation has tended to be cautious rather than proactive; it has followed rather than led in the development of new international norms on commercial activities and space resource utilisation.

One very important lesson from India's commercial space history is the Antrix-Devas dispute. In 2005, Antrix Corporation agreed with Devas Multimedia to provide S-band satellite spectrum and transponder capacity. The government cancelled the deal in 2011, due to security concerns. Devas filed for international arbitration and won substantial awards against Antrix and India. The dispute dragged on for years through courts in multiple jurisdictions. The case highlighted the various legal risks of commercial space dealings when the regulatory framework is unclear, and the boundary between commercial and sovereign functions is blurred. It is one reason why the creation of IN-SPACe as a body separate from ISRO was so important.

India is currently ranked among the top six space economies in the world. With the Indian space market projected to grow significantly in the coming decade, driven by both government programmes and a flourishing private sector, getting the legal framework right is not just a matter of legal correctness. It is a necessity for sustainable commercial growth and for protecting India's reputation as a reliable partner in the global space economy.

AREAS OF IMPROVEMENT: WHAT INDIA NEEDS TO DO

Having examined the IN-SPACe framework and India's overall approach to commercial space law, it is possible to identify specific areas where improvement is needed. These are not abstract recommendations; they are practical gaps in the current system that, if left unseen, can trap India into serious legal and financial risks as its commercial space sector continues to expand.

Making Comprehensive Space Legislation: The most important step India can take is to pass a comprehensive Space Activities Act. The Indian Space Policy 2023 is a valuable policy document, but a policy is not a law. A statute passed by Parliament would define who can conduct space activities, what authorisation is required, what the obligations of private operators are, including insurance and indemnification requirements, what happens in case of non-compliance, and how the government can seek recovery from private operators who cause damage. Countries like the USA, France, the UK, Australia, Luxembourg, and New Zealand all have dedicated space legislation. But India, which is one of the world's major space powers, does not have a legal framework, and this problem is visible. The Space Activities Bill has been in development for many years; the case for its enforcement grows stronger with every private launch.

Defining Clear Insurance Requirements: India needs a statutory framework specifying minimum insurance requirements for private space operators. Currently, insurance conditions are attached to IN-SPACe authorisations on a case-by-case administrative basis. There is no publicly available statutory standard specifying minimum coverage amounts, required types of coverage, or a method for calculating maximum probable loss. A clear statutory insurance regime, something similar to the US model, will provide legal certainty for operators, protect third parties who might be harmed, and protect the government from having so many losses that should rightfully be borne by private operators.

Addressing Space Debris Liability: Space debris is one of the most important problems faced by the global space community today. The Kessler Syndrome, a potential cascade of collisions creating more and more debris until certain orbital bands become permanently unusable, is not a distant theoretical risk. If an Indian private company's satellite or rocket stage creates a significant debris event that damages another country's satellite, India faces potential international liability. India's current regulatory framework has no specific statutory provisions on debris mitigation requirements or debris-related liability. A Space Activities Act should include mandatory compliance with IADC guidelines, active debris removal obligations where applicable, end-of-life disposal requirements, and specific liability provisions for damage caused by debris attributable to Indian space objects.

Strengthening IN-SPACe's Independence: For IN-SPACe to function as a credible and effective independent regulator, it needs its own enabling statute giving it legal authority independent of the executive government. Currently, IN-SPACe is an administrative body under the Department of Space, which also has authority over ISRO. This structural arrangement does not properly separate the regulator from the commercial and promotional interests of the government. An independent statutory regulator with a fixed-term board, transparent processes, clearly defined powers, and judicial oversight will provide greater legal certainty to private operators and greater credibility in India's international interactions. Models like SEBI and TRAI demonstrate that India knows how to build effective independent regulators; it needs to do the same for space.

Establishing Clear Dispute Resolution Mechanisms: When disputes arise between private space operators, or between operators and the government, there is currently no established domestic mechanism for efficient resolution. India should consider designating specific courts or tribunals to handle space-related commercial disputes, creating a clear arbitration framework

for space commerce, and specifying how domestic processes interact with international claims under the Liability Convention. Clarity in dispute resolution would make India a more attractive jurisdiction for commercial space activities and reduce the risk of costly international arbitrations like the Antrix-Devas case, which caused significant reputational and financial harm to India.

More Proactive Engagement in International Space Law Reform: The existing international space law framework built in the 1960s and 1970s was not designed for a large network of thousands of satellites, on-orbit servicing, asteroid mining, or the commercialisation of lunar resources. These are areas where new international legal norms are urgently needed. India, as a major space power, has both the standing and the interest to play a more proactive role in shaping those norms at COPUOS and other international forums. A stronger domestic legal framework, including a Space Activities Act which will provide India the credibility and practical experience needed to contribute to these discussions. Currently, India's voice in international space law forums is sometimes limited by the fact that it does not have fully developed domestic legislation, which makes it harder to speak with authority on specific legal questions.

CONCLUSION

The commercialisation of space is real; it is happening now, and it is happening very fast. India is not just someone standing far away and watching the process; it is an active participant, with growing technical capabilities, and with a highly advanced private sector, and a well-earned reputation for cost-effective space operations. But the legal infrastructure that should give support to this commercial activity is not that good with the technical achievements.

The IN-SPACe framework is a genuine step forward. It creates, for the first time, a dedicated regulatory body for private space activities in India. It provides a mechanism through which India can fulfil its obligation under Article VI of the Outer Space Treaty to authorise and supervise non-governmental space activities. It separates the regulatory function from the commercial and research functions that ISRO handles. These are meaningful achievements that should not be underestimated.

But IN-SPACe cannot, by itself, completely solve the problem between sovereign immunity and third-party liability. That resolution requires clear statutory authority, that is, a Space Activities Act that specifies the obligations of private operators, the insurance they must carry,

the indemnification they must provide to the government, and the consequences of non-compliance. Without such legislation, IN-SPACe operates in a zone of legal uncertainty, which can lead India to significant financial and reputational risk as private space activities grow in scale and complexity.

The areas of improvement identified in this paper are not impossibly ambitious. They are the standard features of space legislation that many other countries have already enforced. India has the legal talent, the institutional capacity, and the demonstrated political will, which can be seen in the creation of IN-SPACe and the Indian Space Policy 2023, to get this right. What is needed now is the follow-through: a Space Activities Act that transforms policy intentions into binding law, and law into enforceable accountability for all actors in India's growing space ecosystem.

Space, as the Outer Space Treaty says, is the 'province of all mankind.' India has contributed to that province with remarkable achievements, from the Mars Orbiter Mission to Chandrayaan-3. Its private sector is ready to do the same. Making sure that those contributions happen within a clear, fair, and accountable legal framework one that protects third parties, fulfils India's international obligations, and manages the problem between the country's responsibility and the private sector's action. And that work, in India, is still very much in progress. This paper hopes, in a small way, to contribute to the conversation about how to get it done.

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