

INDIA'S DRAFT SPACE LAW: OPENING UP THE FINAL FRONTIER?

By Ran Chakrabarti

1. INTRODUCTION

At the end of November, India's Space Research Organisation (the "ISRO") launched a primary observation satellite and deployed another 30 international co-passengers, commercial satellites belonging to 8 different countries. Clearly, the sky is no longer the limit and the venture into space for technological and economic development, is perhaps *the* cutting-edge question in science at the moment, spawning a number of new industries in the coming decades.

While traditionally, space has always been the exclusive domain of the public sector, the *final frontier* is gradually opening up to the private sector as technology increasingly enables and empowers private companies with the ability to put things into orbit (and perhaps beyond) for the purpose of providing services on a commercial basis. While it is telecommunications and geo-mapping services today, tomorrow, it could be mining or even far more exotic activities, that was once the exclusive realm of science fiction.

In fact, the private sector race into space has long been on, with Elon Musk's *Space X* pioneering reusable launch technology, Richard Branson's vision of putting tourists into space and even Bangalore based *Team Indus* recently taking up the Google challenge of putting a space rover on the moon. It is in this broader context that India's Department of Space (the "DoS") published a draft bill, the Space Activities 2017 Bill (the "**Bill**") for stakeholder comment just over a year ago.¹

With all these developments, questions about how *access* to space will be regulated and will it be done in a manner that facilitates private sector investment are absolutely critical. While government has a legitimate concern in regulating what goes into space, it is equally important that the industry is not overly regulated, which could potentially deter investment, or otherwise, drive investment into other jurisdictions having a more flexible regulatory landscape.

Does the Bill serve to provide a robust framework for the future, meeting these objectives? This article will highlight briefly recent developments in India's space program, summarize the international legal framework governing space before exploring the contents of the Bill and consider to what extent it is likely to encourage investment into this sector on the one hand; while recognizing the legitimate public interest concerns of the state, on the other.

2. INDIA'S SPACE PROGRAM

One of India's great success stories, is perhaps its ability to develop its own satellites, launching systems and ground control technology to put not just Indian satellites into space, but so too, other satellites on a commercial basis. In February 2017, the ISRO reached a record milestone, launching 104 satellites from single payload.² To add to the vision, earlier this year, Indian Prime

¹ http://www.prsindia.org/sites/default/files/bill_files/Draft%20Space%20Activities%20Bill%202017.pdf

² <https://www.bbc.com/news/world-asia-india-38977803>

Minister Narendra Modi announced India's intention to put a man on the moon by 2022.³

The ISRO has been at the forefront of driving this industry, enabling a number of services encompassing navigation and communications to imagery, facilitating a number of social and economic programs over the last 50 years.⁴

It successfully launched a lunar orbiter in 2008 and plans to launch a further unmanned mission to the moon in the first quarter of 2019.⁵ But perhaps the apex of ISRO's achievement to date however, is putting an orbiter around Mars on its very first attempt, back in September 2014, a mission that still continues today, more than four years later.⁶ The cost? Just USD 74 million, a fraction of the cost of its foreign competitors.⁷

3. INDUSTRY ISSUES

There are several ways of looking at the space industry and broadly, we can think of it in the context of the following headings. Firstly, how should we regulate *what* goes up there in the first place? Secondly, *who* should be able to put things into space? Thirdly, *how* do we put things into space, and what regulatory framework should govern it?

Critically, any regulatory framework governing this sector will have to consider what happens if things go wrong; and generally, if things go wrong, it's likely to go fantastically wrong. Who takes the risk on a satellite launch and what happens if the rocket blows up after leaving the launch pad? Alternatively, what happens in the event that objects in space collide and who takes responsibility for objects that could come crashing back down to earth?

But also, there are other pertinent questions in relation to *who* owns the intellectual property in relation to public private partnerships, relating to what goes up into space (or what otherwise might be made in space in the future) and the revenues that derive from operation.

4. INTERNATIONAL LAW

The international system already has quite a lot of space law governing what it can be used for and what happens if things go wrong. The principle of using space in *good faith* for peaceful purposes forms the bedrock of the existing international legal regime.

Following the launch of the first satellite, *Sputnik*, into orbit in 1957, the United Nations established its Committee on the Peaceful Uses of Outer Space ("COPUOS") and COPUOS

³ <https://www.bbc.com/news/world-asia-india-45243908>

⁴ For a brief history of ISRO's operations, see: https://en.wikipedia.org/wiki/Indian_Space_Research_Organisation

⁵ <https://economictimes.indiatimes.com/news/science/indias-2nd-lunar-mission-on-january-3-with-lander-rover/articleshow/65376670.cms>

⁶ <https://economictimes.indiatimes.com/news/science/indias-mars-orbiter-mission-completes-four-years-in-orbit-isro/articleshow/65949237.cms>

⁷ <https://www.bbc.com/news/science-environment-29341850>

created two different sub-committees: a scientific and technical sub-committee; and a legal sub-committee.

COPUOUS has been instrumental in negotiating five international treaties covering space, namely:

- the 1967 Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (the “**Outer Space Treaty**”);
- the 1968 Agreement on the Rescue of Astronauts, the Return of Astronauts and the Return of Objects Launched into Outer Space (the “**Rescue Agreement**”);
- the 1972 Convention on International Liability for Damage Caused by Space Objects (the “**Liability Convention**”);
- the 1975 Convention on Registration of Objects Launched into Outer Space (the “**Registration Convention**”); and
- the 1979 Agreement Governing the Activities of States on the Moon and Other Celestial Bodies (the “**Moon Treaty**”).

The Outer Space Treaty broadly, forms the basis of international space law, with 107 ratifications and 23 other signatories as of October 2018. It basically prevents states from putting weapons of mass destruction into space or installing them on the moon or any other celestial body. It exclusively limits use of the moon for peaceful purposes. Interestingly, it does not prevent the putting of *conventional* weapons into space.

The Outer Space Treaty also prevents states from making territorial claims to the moon or other celestial bodies and maintains that space shall be free and for the use and exploration by all states. Interestingly, the question of *who* owns resources that may one day be mined from the moon (or other celestial bodies) is a separate one.

The Rescue Convention basically requires signatory states to provide all possible assistance to recover space objects and astronauts that may come down within its territory, at the cost of the state that launched it. Some commentators suggest that it needs to be amended when commercial operations putting humans into space commences, extending the definition of *astronaut* to include *passengers*.

The Liability Convention sets out the principle that states bear responsibility for space objects launched from their territory. Regardless of who launches the space object, the state from which it was launched is liable for damage caused by it, though there are exceptions to this principle, where two or more states work together. In such circumstance, they are jointly and severally liable. Note further that claims under the Liability Convention are *inter-state* (and individuals have no separate legal standing). To date, there has been just one claim under the Liability Convention, in relation to the 1978 crash of the Russian satellite, *Kosmos 954* in Canadian territory.

The Registration Convention requires states to provide information about the orbit of each object

put into space, in addition to the general function of the space object.

Interestingly, the Moon Treaty, which attempted to establish a *global commons* regime (similar to the UN Convention on the Law of the Sea), has just 18 signatories, and no country that potentially has the capability to undertake activities on the moon or other celestial bodies, is a signatory.

The UN Office of Outer Space Affairs (“UNOOSA”) is the body responsible for promoting international cooperation for the peaceful use of space. UNOOSA essentially serves as a secretariat for the COPUOS and maintains the register of objects launched into space, amongst other things.

Generally, it’s probably fair to say that the existing international legal framework is a broad brushed statement of principle and it does not really address particular nuanced legal questions related to particular activities. When the mining of celestial bodies becomes a practicality, we are likely to see a *top-down* international convention with a regime not too dissimilar to the UN Convention on the Law of the Sea. Otherwise, we could see a *bottom-up* approach, between private and public sector actors, mapping out a regime of rights and responsibilities and revenue sharing.

5. DOMESTIC LAW

Notwithstanding the international law on the subject, many states have also developed their own municipal law, providing greater clarity in relation to the relationship between the private sector and the public sector in particular. Generally, such legislation governs the launch and operation of objects that go into space, regulations relating to the design and manufacture of the technology that goes into space, the application of space technology, exploration activities and research.

6. THE BILL

Turning back to the Bill and its contents, perhaps the first thing to note about the Bill is that it is quite general and all encompassing, perhaps symptomatic of all initial regulatory attempts to get to grips with technological advancement and the changes in society that it will bring about. To a certain extent, the Bill takes the off-the-shelf model law solution⁸ prepared by the International Law Association, with local customization for the Indian context.

On the one hand, it obviously acknowledges that the private sector will play a crucial role in the future use of space to develop and enhance human communications and other scientific endeavors, having an impact on society. However, on the other hand, it provides a great deal of *discretion* to the state to control access to space. Nevertheless, the Bill clearly anticipates a type of *public-private partnership* in the sector, with government working in tandem with the private sector, to meet its future strategic goals, with the ISRO inviting the private sector to develop as many as 30 future satellites.

⁸ See further, the *Modern Law on National Space Legislation* formulated by the International Law Association and submitted to COPUOS in 2013.

6.1 Definitions

The Bill defines “**space activities**” very broadly to mean:

“the launch of any space object, use of space object, operation, guidance and entry of space object into and from outer space and all functions for performing the said activities including the procurement of the objects for the said purposes.”

Clearly, this definition will capture almost everything in the supply chain and care needs to be taken to prevent an over-draconian limitation on the usage of materials or services rendered in assembling components.

“**space objects**” are defined to mean:

- “(i) any object launched, or intended to be launched on an orbital trajectory, around the earth or to a destination beyond the earth orbit;*
- (ii) any device, the purpose of which is to launch an object on a trajectory under sub clause (i), even when such a device is operated without payload for the purpose of its development and validation phase;*
- (iii) any constituent element of an object referred to in sub-clause (i) and (ii).”*

It’s also interesting to note that “**Commercial Space Activity**” is defined to mean:

“a space activity which generates or is capable of generating revenue or profit.”

The definitions raise a number of interesting questions. Firstly, the definition of *space object* is so broad that it would likely include all of the software and other technological components of it, which raises the question as to whether the use of services, such as GPS, by individuals using mobile phones would be caught by it? Clearly, this would be an irrational over-extension of the ambit of the Bill, though clarity needs to be brought out.

Note that a “**license**” is defined later on in the body of the Bill, as a license in relation to a *commercial space activity*, though the operative drafting leaves open many of the terms and conditions of the license and what it actually might contain in practice. Nevertheless, it’s clear that a license will be required to carry out space activity.

6.2 The regulatory mechanism

Chapter 2 of the Bill sets out a broad obligation on the Central Government to put in place a mechanism through the framing of policies for the use of outer space for peaceful purposes, and in particular Section 3, specifies the duty to:

- (a) develop a space activity plan, with established goals, targets and principles,
- (b) grant, transfer, vary, suspend, ensure compliance and terminate a license;

- (c) to provide technical and professional support and authorization to launch a space object;
- (d) regulate the procedures for conducting and operating space activities;
- (e) create and maintain a register of space objects;
- (f) monitor conformity with international treaty obligations;
- (g) ensure safety;
- (h) supervise the conduct of space activity where India is the launching state for which a license has been granted;
- (i) share access and potential benefits, including the pricing mechanisms for products created by space activity and technology with any person, or any agency in the manner as so prescribed; and
- (j) investigate accidents in connection with any space activity.

While the regulatory, safety and registration of objects launched into space, mirror general international requirements, some of the other proposed regulatory mechanism raises a number of interesting questions. In particular in relation to sub paragraph (i) stated above. To what extent might this prejudice the private sector's investment into any commercial space activity?

6.3 Powers of the government

Section 4 of the Bill grants broad powers to the Central Government to inspect and investigate the space activity proposed by licensee, together with the power to requisition data and information in relation thereto. These are not unreasonable requirements, though the private sector will no doubt want assurances from government that any commercially sensitive information remains confidential.

6.4 Granting of a license

The process for granting a license is yet to be developed, but section 5 of the Bill envisages that there will be eligibility criteria, and a fee to pay, without giving any detail or indication as to what those criteria or fees might be. In particular, it sets out the obligation to provide a financial guarantee or insurance, which essentially addresses the broader liability question and the principles of liability that flow under the international space regime discussed in Section 4 (*International Law*) above.

6.5 The License

The substantive provisions relating to the granting of a *license* are set out in section 7 of the Bill. These provisions are subject to fairly standard conditions relating to public health and safety; and compliance with existing international law is also included. Other conditions, including grounds detrimental to the interests of India, public order, decency and morality are also included. This is likely to be contentious with private parties and in particular, foreign private parties, in relation

to subjective notions of decency and morality.

How might an application for a license to launch satellites beaming entertainment content that is more liberal in its interpretation than the *social mores* prevailing in India be treated? Furthermore, imagine a scenario in the future where space activities might raise fundamental ethical questions? How would experiments carried out in space that relate to controversial biotechnology and genetics be treated? Should and would this be permissible?

Section 8 of the draft Bill sets out further conditions in relation to the contents of any license, requiring it to grant unconditional permission to the Central Government to inspect any space activity, examining and testing the licensee's facilities and equipment and other aspects relating to the proposed space activity, including its intent, purpose, orbit and consent for any deviations.

The license is also required to contain provisions confirming that the licensee's operations are in conformity with applicable law, an obligation to insure the launch and the space object and further, contain termination triggers for any breach of its conditions. Licenses essentially will not be transferable by the licensee, without the prior written approval by the Central Government, which shouldn't come as any surprise.

Section 10 of the draft covers those circumstances where the Central Government may suspend or revoke a license, including non-compliance with the terms of the license, and a more discretionary right to suspend or revoke if it is required in the interests of public health, security, defense, public order and perhaps potentially controversially (as discussed above) for reasons of decency or morality. It should be noted however, that the licensee has the opportunity to be heard by the Central Government before any suspension or revocation of the license.

6.6 **Registration & Liability**

Section 11 of the draft Bill sets out the criteria in relation to registration, and critically, Section 12 sets out an obligation to indemnify the Central Government from any third party claim in connection with damage or loss relating to a space activity or space object. Interestingly, the quantum of the indemnity is to be determined by the Central Government, in a manner to be prescribed and it remains to be seen what the mechanism for determining the quantum of liability will be, though it is unlikely to be capped.

The obligation to indemnify stems from the international regime that governs space law and the general principal that a launching state is liable for damage caused by objects which it launches into space. To the extent that the private sector launches from India, the state will be primarily responsible under international law for liability arising from accidents causing damage to another state.

In this context, it will be interesting to see what type of indemnity mechanism the central government will require from the private sector and whether post launch *bonds* will be required to be deposited, and if so, to what *quantum* will those bonds need to be in order to mitigate risks and whether this will be commercially possible for the private sector to bare.

Indemnities for damage caused by space objects launched by any *joint venture* between the private sector and the public sector will also have to be carefully scrutinized to ensure that the

private sector isn't *wholly* on the hook for such liabilities.

6.7 Offences & Penalties

Section 13 of the Bill specifies the penalties for carrying out space activities without a license, which are both criminal (between one to three years in prison) and civil (a fine of no less than INR 1 Crore (approximately USD 140,000) and for continuing breach, a fine of INR 50 lakhs (approximately USD 70,000 per day). For the offence of providing false information, the penalty is potentially imprisonment for up to a year, and/or a fine of INR 50,000 (approximately USD 700).

Penalties for damage or pollution to the environment (be it on earth, in space, or on a celestial body) through any space activity include a jail term of between one and three years and a civil liability of no less than INR 1 Crore (approximately USD 140,000).

Tucked away in section 20 of the Bill, the penalty for breaching any direction of the Central Government could extend to a fine between INR 1 to 50 Crore (between approximately USD 140,000 to USD 7,000,000).

The draft Bill further goes on to clarify that in the event that a company breaches its obligations, the persons in charge of the Company shall be liable, in addition to the company. This clearly suggests that a director, manager, company secretary, or other officer of the company will be criminally liable for a breach, in addition to potentially receiving a fine. It should however, be noted that a person may demonstrate that he had no knowledge of the act, or that he demonstrated all due diligence to prevent the commission of the offence.

6.8 Intellectual Property Rights

The intellectual property rights section of the draft Bill is curious and is perhaps counter-intuitive to courting the private sector to participate in space activities. Section 25 of the Bill states that:

"Any invention, or other form of intellectual property rights, developed, generated or created during the course of any space activity shall be protected by any law for the time being in force, with the primary objective of safe guarding national security."

The provision goes on to say that: *"Any form of intellectual property right developed, generated or created on board a space object in outer space shall be deemed to be the property of the central government."* This provision will surely deter the potential participation of the private sector, and in particular, in any future mission where an Indian launch puts a *foreign* space object into space; or a joint Indian and foreign mission that creates intellectual property in space.

6.9 Restriction on Disclosure

Interestingly, Section 17 of the draft Bill contains a wide ranging provision for the Central Government to restrict a person from disclosing information relating to space technology, systems, operations, processes and procedures to any other person, and the penalty for breach could potentially be a jail term of between 6 months to 2 years, together with a fine of between INR 50,000 to INR 100,000.

The provision no doubt, aims to take into account a public private partnership, and any *leak* by a private partner of confidential material belonging to the public sector. However, to what extent it relates to confidential information provided by a private sector manufacturer of a space object in relation to any license application (effectively acting as a deterrent for any breach of confidentiality by the public sector) remains to be seen.

6.10 Exclusion

Section 26 of the draft Bill sets out a provision stating that the Central Government shall not be held accountable in relation to anything done in *good faith* in pursuance of any space activity. Broadly, this appears to provide the Central Government immunity from suit on the grounds that *good faith* is extremely subjective, potentially prejudicing private participation and underlining the risk of claims by a private sector partner against the public sector.

6.11 Expropriation

Section 30 of the draft Bill could be misconstrued as a thinly disguised *expropriation provision*, permitting the Central Government to take over the management, control or supervision of any space object or any installation in relation thereto, for whatever duration it deems fit on the grounds of war, external aggression, a natural calamity, or, controversially, *such other eventuality as it may deem necessary*. To what extent will this apply to foreign satellites and other foreign private parties engaging in any joint venture with an Indian party?

7. CONCLUSIONS

The draft Bill is a welcome starting point in the context of building a regulatory framework for a future industry that is yet to reach critical mass. Many of the provisions are perhaps analogous to embryonic regimes governing the introduction of new technology of the time (think the car, the plane and more recently, the drone) and it's inevitable that such regimes will generally set out a requirement to license entities to undertake certain activities, with corresponding obligations to be observed so as to not endanger the public at large.

Parallel domestic legislation in other major economies generally contains provisions which give the state the discretion to refuse a license for space activities if it would violate international law, the health and safety of persons within the state concerned, or otherwise, is a threat to national security.⁹ In this context, many of the analogous provisions in the draft Bill are perhaps no worse than general industry standard.

However, it's quite important that the government doesn't overly regulate the sector to the extent that it will potentially discourage the private sector from participating, or otherwise, prejudice foreign participation (whether it be public or private) in future space endeavors.

Care therefore needs to be taken in getting the *balance* right, in particular in relation to intellectual property rights for new products or services developed in space, or otherwise, the rights to minerals or other substances mined from celestial bodies. Put otherwise, if the private sector isn't

⁹ See for example, section 2(c) of the UK Outer Space Act, 1986.

equitably rewarded for its innovation, the sector is unlikely to attract the investment that it so critically needs.

A final point for reflection: following the coming into force of any space law, the government will need to consider its stance on foreign direct investment in related technologies, whether it be launch technology, satellites or other vehicles that could potentially be launched into space. The more permissive this regime is, the more likely India will be able to attract capital and investment into this sector to develop not just its own space program, but essentially make India a hub for the international space industry in general, developing launch and space vehicles and their components in a potentially more cost effective manner.

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