

COMMERCIALIZATION OF SPACE: EMERGING LEGAL ISSUES

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Introduction

“There are some who question the relevance of space activities in a developing nation. To us, there is no ambiguity of purpose. We must be second to none in the application of advanced technologies to the real problems of man and society.”

—Dr. Vikram Sarabhai

The vision of Sarabhai was the vision of the country when we started the space research and technological developments in space in India, today we have no doubts or questions as such in mind which can be raised on the relevance of space activities rather man is preceding towards commercialization of space and space technology.¹

Inaugurating a two-day national seminar on “Access to Justice”, organised by the Supreme Court Advocates on Record Association in association with the United Nations Development Programme, Dr. Kalam said that we have laws of the sea, air and environment and intellectual property and cyber laws would get a new shape. However, he emphasised that there is a need of law for protection of Indian space above 30 km altitude as the international law on space may not be sufficient. The geo-synchronous orbit has become a competitive business orbit (above 38,000 km.). When we look at the Space Vision 2025 statement given by Prime Minister Manmohan Singh, he said “it should reflect how the country could more effectively harness space technology for development. Exploring new frontiers of space technology aimed at low-cost access to space, development of heavy lift boosters to launch heavier satellites, realising high power and high bandwidth communication satellites and remote sensing satellites with all-weather capacity are some of the challenges.”² As an idea or a concept it sounds fascinating ‘commercialization of space and space activities’ though it has many positive aspects attributed to it, this can also lead to technological disasters with uncertain legal implications as laws and regulations in space are next to none. Unclear without precedents and being a part of international law these laws boil down to moral obligations.

Man has explored space in a very short span of time. But, when it comes to space, it is an area of law where law still lags behind. Space being a common heritage of the mankind needs more cooperation and understanding between

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developed, developing and least developed nations. However the space vogue has not been very old but problems are apparent, and this can also not be refuted that few problems are yet to come up. As developed nations started exploration early, they have an upper hand and an equally bigger contribution to these problems. Problems vary from space debris to rapidly filling orbits, but a major threat is of lack of responsibility of attributing liability to those who are responsible for these threats which result in loss of life, limb and property.

Issues related to launch services, satellite navigational services and intellectual property rights, transfer of technology and national security are apparent as concerns today. This research article highlights the vacuum in legal regime when it comes to space commercialization, and commercialization of services provided for space exploration. This article also highlights the issues and problems of implementation of the space treaties between nations and against corporate entities. Towards the end of this article it is emphasized that with the help of an appropriate national regime and multilateral treaties, India can help the whole world in the development of space law which would also result in encouraging the balanced and sustainable development to tap the potential of space commerce and industry in India.

Developments in space and India

Man started exploring space during mid twentieth century. Within last fifty years, great changes have been brought to world and society due to uses of spacecraft for various purposes like communication, direct broadcast, television, earth resources monitoring, earth observation for peaceful uses as also for self defence. Besides, space exploration has opened a new means to explore the cosmic frontier, as also the Moon, Mars, Black Holes, and life in other planets and cosmic frontiers. There has been tremendous impact on global society due to rapid changes in time factor, as also in integrating knowledge through the internet.³

The entire planning process of global environment has been given a new look by space exploration. Moreover, there is a knowledge revolution flowing from an integrated approach to all disciplines of law and science. The world society is more integrated like one family. The predominant concern is to find out an ecological approach to the use of space science and space law to keep the planet earth in a healthy and steady state.⁴

The Indian space programme started about half a century ago with the explicit mandate to promote the development and application of space technology for the socio-economic benefit of the nation. India launched its first rocket in 1963, under the visionary eye of Dr. Vikram Sarabhai. Over the past four decades, under the successive leadership of Professor Satish Dhawan, Professor U.R. Rao and Dr. Kasturirangan, Sarabhai's original vision has crystallized into a series of missions, with varying success. The Indian Space Research Organization (ISRO) has built communication satellites, remote sensing satellites and launch vehicles. India is now one of the seven nations in the world

to have satellite-launching capability.⁵ Today, it has gone beyond that mandate to the point as India has become one of the major space powers in the world, particularly after the successful launch of Chandrayaan-I lunar mission.⁶ Moreover, the Indian space sector is being opened up for private participation and has begun commercializing certain technologies and services internationally. In India the privatisation and commercialization of space technologies make it imperative for the government to legislate national space law(s).

Indian Space Research Organisation⁷ has picked up the language of business with the increasing global pressure and competition in the space domain. Scientists have been burning the mid night oil to get their (ISROs) teeth into the commercialization of space services. On April 18, 2001 the much-awaited GSLV (Geosynchronous Satellite Launch Vehicle) took off from Sriharikota (Andhra Pradesh), using a Russian cryogenic stage. GSLV marks the end of India's dependence on others for launching its communication satellites. The first launch was an overall success despite the velocity problems that put its cargo GSAT (Global Satellite) into a slightly incorrect orbit. In 1999 ISRO launched PSLV (Polar Satellite Launch Vehicle) C2, which carried an Indian oceanographic satellite but also put South Korean and German satellites into polar orbit. Last year, PSLV C3 placed two foreign satellites (German and Belgian) into orbit.⁸

India's commercial launch program, development goes back to 1982, still has much to prove. India is yet to handle a major commercial payload. The foreign satellites carried on both flights weighed less than one-tenth of the Indian satellite on board. Real commercial success will come when the primary payload is a non-Indian entity, and to this end, ISRO has set up the *Antrix Corporation*.⁹

'*Antrix Corporation*' is the marketing arm of ISRO. *Antrix*, drawing upon the heritage of the Indian Space Programme and ISRO's vast experience and proven scientific talent, markets data from Indian Remote Sensing satellites, undertakes turnkey contracts for building satellites and ground systems to user specifications, offers subsystems and components for satellites, provides launch services & mission support services, leases transponder capacity and provides training and consultancy in space related technologies.¹⁰ Today *Antrix Corporation* offers services like Mission Planning and development, Launch and Early Orbit Phase (LEOP) Support including on orbit operation service, Transfer Orbit Support Services (TOSS) Telemetry, Tracking and Command Support for LEOP in S and C bands and on orbit TTC services in Extended C and Ku band support for GEO missions In Orbit Test (IOT) Service for Bus Systems and Payload Characteristics, Network Operation and Control, Round the clock spacecraft health monitoring.¹¹

India has launched sixteen consecutive successful flight of PSLV most recent being CARTOSAT - 2B launched from Satish Dhawan Space Centre (SDSC) SHAR, Sriharikota. It was launched from one of the India's Polar Satellite Launch Vehicle (PSLV-C15).¹² Developments in the space exploration India have taken place at a rapid rate as can be observed from the above brief given by the

researcher. Thus, in a very small time India has come up with a successful lunar mission plans, not only this but it is also started providing services to other countries. This has given rise to concerns with respect to the developments in law and implementation issues borne out of these changes.

India: Laws of Space

India has space co-operative agreements with countries like USSR on Thumba Equatorial Rocket Launching Station, German Aerospace Centre, National Institute of Aeronautics and Space etc. In India, the matters related to space activities are dealt by the Space Commission which works for the development and application of space technology, along with drafting of policies and guidelines for the research institutes. These agreements enable India in furtherance of better research and facilitate technological advancement and aids. Today India coming at par with the other space agencies around the globe and India constantly learn from their policies and methods of research and development. The ambitions of the Indian space agencies can be realized from its first unmanned scientific mission to moon Chandrayaan-I. Issues related to space till date under the Concurrent List in the VIIth Schedule of the Constitution of India but for fast and bold development we need to put it under direct control of central government under the Union List.¹³

There is no special legislation in India dealing with outer space issues. We are still dependent on our constitution to solve problems related to space industry.¹⁴ As space is common heritage of mankind, it sneaks in the blanket of international Law and under the Constitution of India few Articles are mentioned in the foster respect for International Law such as, Article 51 of the Constitution imposes on the state, the obligation to strive for the promotion of international peace and security, including maintaining just and honourable relations between nations, respect for international law and treaty obligations, and settlement of international disputes by arbitration.¹⁵ Moreover, under Article 73 the executive power of the Union extends (a) to the matters with respect to which Parliament has power to make laws, and (b) to the exercise of such rights, authority and jurisdiction as are exercisable by the government of India by virtue of any treaty or agreement.¹⁶ Lack of law acts as a disability in the path of peaceful and predictable growth of technology for space exploration. It is not only threat to property, and life but also to the faith of the common masses in the well established system of justice. Without these laws there also exists a possibility where there can be conflict of jurisdiction as in US. There exists jurisdictional conflict involving NASA (National Aeronautics and Space Administration), FAA (Federal Aviation Administration) and other agencies within the Department of Transportation, the Dept. of Commerce, the Dept. of Defence, the FCC (Federal Communications Commission) and other federal agencies.¹⁷ Despite the jurisdictional conflicts, the statutes on space activities provide a legal character to the space programs and the guidelines and procedures for licensing ensures equal opportunity and transparency in

operations. India needs to critically and objectively study the provisions contained in the space laws of other countries.¹⁸

India needs a codified space law which shall enable and include provisions for¹⁹:

- (i) Peaceful use of outer space for the benefit of all mankind and aimed at welfare and security of India.
- (ii) Promoting orderly and organized growth of space business by providing recognition and legitimacy to ongoing space programs.
- (iii) Providing opportunity to potential space operators, domestic and international.
- (iv) Procedure for adoption and implementation of space programmes.
- (v) Promoting development of indigenous technology matching international standards.
- (vi) Providing mechanism for enforcement and prevention of misuse of space activities.
- (vii) Providing strict action against violators of law with penalties.
- (viii) The procedures related to licensing and registration etc. must be made stringent.
- (ix) Indian Space laws must be in consonance with the space treaties and space laws of other nations and may adopt their provisions considering the nation's compatibility and adaptability.
- (x) Must imbibe basic international legal principles such as non-appropriation of outer space by any country, arms control, the freedom of exploration, liability for damage caused by space objects, the safety and rescue of spacecraft, astronaut's scientific investigation, contamination issues, the exploration of natural resources in outer space and settlement of disputes etc.
- (xi) Provide for aeronautical and space functions to be controlled by civilian agency.
- (xii) Promote commercial use of space.
- (xiii) Protection of property rights in inventions.
- (xiv) Environment safety and liability.
- (xv) Promoting international cooperation for public safety and space related businesses.
- (xvi) Promotion and management of autonomous educational institutions of international standards for nurturing space professionals.
- (xvii) Providing co-operation with defence machinery.

- (xviii) By adopting few provisions from The Chicago Convention of 1944 such as issues related to national sovereignty over air space can be incorporated.
- (xix) The rules applicable for high seas can be imbibed by the international law and be made applicable to the laws governing outer space.
- (xx) Governing the use of remote sensing .

Concluding Remarks

*“Remember, the space settlement dream was born in you so that you would strive for its fulfilment in this generation, not defer it to the next. It was, and is, a call to you to take some action in this lifetime; and if you are not meant to see it through to completion, then you must at least lay a foundation on which those who will follow can build.”*²⁰

—Steven Wolfe

In India till date, there is no specific legislation or law dealing with space or space related activities in India. However, it is very essential for maintaining the position in the international arena and to become one amongst the leading nations in the space activities to have a clear and comprehensive law on the subject. Every individual and his nation will have to share the domain of space. No one can claim sovereignty over area which lies in the possession of one and all. A well-defined space law shall enable better capitalization and optimization of existing infrastructure and resources.²¹

The specific legislation which we need to enact must be capable of handling the issue of responsibility and liability of state vis-a-vis private entities working in the state it must also include key provisions for peaceful use of outer space for the benefit of all mankind worldwide and aimed at welfare and security of India. It must provide for aeronautical and space activities to be controlled by a civilian agency except those associated for development of weapons systems, military operations, or the defence of India. Most importantly it should provide for licensing norms for space entrepreneurs associated with various commercial activities and applications so that the issues that arise at the time of liability are already settled beforehand.

Participation of non state actors in the development of space technology and space exploration has generated an immediate need for enactment of a legislation for making its activities more focused and resourceful. Space has become a place that is increasingly used by a host of nations, consortia, businesses, and entrepreneurs. The business of space operates beyond the sovereignty of national borders. Efficiently drafted law will help in growth and development of the nation thereby leading to its progress and economic stability.

Endnotes

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