

# Legal environment for space activities

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**International law in the field of space incorporates some unique features, embodying the principles of freedom of access and use of outer space, as a common resource of all human kind. As the space activities expanded, spreading their impact in various dimensions including commercial, social, security, environmental and cultural dimensions involving both government and private actors, the development of law has become complex and slow, with many outstanding issues yet to be resolved. Against this backdrop, the policy developments in India, which have implemented a vibrant and growing space programme, are traced in this article, bringing out the need and scope for national space legislation.**

**Keywords:** Indian space policy, national space legislation, remote sensing data policy, space law, SATCOM policy.

## Development of international space law

SPACE law is relatively a new branch of International law, which emerged as a consequence of humankind's entry into space era. The first launch of manmade object into space in 1957 by the then Soviet Union and immediate follow-on launches by both the USA and the then USSR, gave birth to rights of freedom of access to space, freedom of exploration and freedom of passage of a rocket over territories of other countries, without prior consent. These established a state practice, which became the basis for customary rule of law. The initial phase of the space race between these super powers, which was dominated by display of their technical and military supremacy, also led to the prospect of space becoming an arena for military activities, resulting in these major powers to come to the negotiating table and formulate a set of fundamental principles and rules for conduct of space activities. Development of such regulations and overall framework of law was taken up in 1958 through an ad-hoc Committee on Peaceful Uses of Outer Space, under the aegis of the United Nations. The ad-hoc committee was subsequently replaced by a permanent body called the UN Committee on Peaceful Uses of Outer Space (UNCOPUOS), with an expanded membership. A legal subcommittee was established by

UNCOPUOS to formulate and draft various treaties, conventions and agreements that essentially became the corpus of International Law on Outer Space. An important milestone in the beginning of the realm of International Space Law was the adoption of the 'UN Declaration of legal principles governing the activities of states in the exploration and use of Outer Space', in 1963. This was later metamorphosed into a fundamental treaty, popularly known as the Outer Space Treaty (OST) in 1967, which established an overall framework of principles, aimed to regulate the activities of states in this field. Provisions of the Outer Space Treaty also formed the basis for subsequent agreements, conventions and treaties that elaborated different aspects of space activities.

## Essential principles and provisions in outer space law

International law in the field of outer space is now embodied in five treaties and five sets of legal principles evolved by the United Nations<sup>1</sup>. These essentially establish the principle of freedom of exploration and use of outer space by all nations, declaring that outer space shall be the province of all mankind. Accordingly, outer space including the moon and other celestial bodies are not allowed to be subject to national appropriation. Placement or use of nuclear weapons and any other kinds of weapons of mass destruction in outer space are prohibited. 'States' have to bear international responsibility for their activities in outer space, whether such activities are carried out by the government entities or non-government entities under their jurisdiction. These treaties *inter-alia*, also deal with aspects like liability for damage caused by space objects, the safety and rescue of spacecraft and astronauts, prevention of harmful interference for the space activities, avoidance of adverse changes in the earth's environment, prevention of harmful contamination of celestial bodies, obligations for notifying/registering objects launched into outer space and procedures for settlements of disputes.

Further, the five declarations and sets of legal principles, adopted by the General Assembly, in the nature of 'soft law' address the aspects related to promotion of international cooperation in space activities, the dissemination and exchange of information through international direct television broadcast via satellite, sharing of data and information from satellite earth observations and guidelines for safe use of nuclear power sources in outer space.

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### Outstanding issues at international level

It is noteworthy that beginning with the 'Moon Agreement', which was opened for signature on 18 December 1979 and entered into force on 11 July 1984, progress in development of space law has been slow. First, the Moon agreement received very limited response by international community with just 13 ratifications and 4 signatures (as of 1st January 2007)<sup>2</sup>. Major space faring nations such as the USA and Russia did not sign this agreement. The principle of 'Common Heritage of Mankind', which was basically derived from the Law of Sea, is the bone of contention, which thwarted wider acceptance of Moon agreement. It is to be noted that major space treaties were made in the then prevailing atmosphere of cold war confrontation between the USA and the erstwhile Soviet Union. The context of actors in space activities has changed considerably in the subsequent periods, with more countries actively engaging themselves in developments and applications related to space technology and also providing greater opportunities for participation of private sector in these activities. The tardy progress in further development of international legal framework left many questions unresolved, even as the space technology and its applications advanced rapidly. Prominent issues such as definition of outerspace and the demarcation of boundary between outerspace and airspace, which are governed by different legal regimes, could not be agreed upon. The definition of the term 'peaceful uses of outer space' itself is subject to varied interpretations. While some argue for totally pacific applications of space, other consider that there is scope for military uses of space including testing or using weapons in space, other than placement or use of nuclear weapons or weapons of mass destruction.

Notwithstanding the fundamental nature of unresolved issues, they did not impede the progress of space activities. However, if space activities rapidly expand further, many issues for law are to be resolved with greater speed. For example, one of the issues of concern is that of space debris. Although debris in space is growing with increasing potential for collisions, there is no agreement for evolving legal measures and the UN Committee on Peaceful Uses of Outer Space could adopt a set of voluntary guidelines after considerable debate. As of today, space agencies have been adopting certain voluntary measures. The other issue is that of ensuring rational and equitable access and use of geostationary orbit (GSO), which is commonly used by communication satellites. Over the years, GSO is crowded with satellites and new entrants find it difficult to get access to orbit/ spectrum resources. There is a high level of private sector activity in this domain and issues relevant to prevention of market dominance, technology transfer, public service objectives and effective enforcement mechanism need further regulatory provisions.

The third issue is relating to private sector participation in commercial exploitation of extraterrestrial resources.

In the past, private industries were actively involved in activities, such as satellite telecommunications, remote sensing and provision of launching equipment and services. Now, there is an interest, albeit limited, by private industry to participate in activities such as space tourism, mining of asteroids and even, waste disposal in outerspace. However, given the emphasis accorded in the international space law to the state responsibilities for all activities in outerspace, private sector finds that the current legal framework is inadequate for growing their activities and role. There are also demands for establishing effective mechanisms for the settlement of disputes, arising in relation to space commercialization.

Turning to another dimension of the International Space Law, in particular the Outerspace Treaty, one can observe at the very outset, a statement under Article-1 that the exploration and use of outerspace including the moon and other celestial bodies, shall be carried out for the benefit and in the interests of all countries, irrespective of their degree of economic and scientific development, and shall be province of all mankind. Even after four decades of existence of the treaty, the capacities and level of access to Outerspace by different countries vary widely, across the globe. Flow of technologies relating to space systems and even some of their applications are considerably restricted and regulated based on national legislations or multilateral export control regimes. This situation partly is triggered by the concerns on the dual use nature of space technology. Achievement of equitable access to space by all countries is still an unfulfilled need, which the current international legal system is unable to redress. A further lacuna is the absence of a common agreement on ethics and an enforcement mechanism.

Notwithstanding the above limitations or slower pace of progress in recent times, it is highly noteworthy that the international space law as it evolved, set a unique trend and standard in establishing the freedom of access and preventing national appropriation of space and enabled a great many contributions, which are considered vital for connecting global community. In addition, space provided unique tools for assessing and monitoring the state of Planet Earth's health itself.

### Space policies and developments in India

India is a party to all space treaties developed by the United Nations. However, in case of Moon agreement, India has signed it, but not ratified. Being party to all international treaties, the policies regarding space activities in India reflected compliance to the principles enshrined in those international treaties. It is noteworthy that objectives driving space endeavours in India are highly focused on her needs for social and economic development. Space is envisaged as a tool to accelerate the process of national development. The strategy is centered on creation of an autonomous capability to develop and to apply this technology to meet

her specific needs. The space policies were given effect through a well-integrated national space programme with public funding support and an organizational system, which was evolved over past four decades, addressing diverse aspects such as R&D, system development and applications. A distinguishing feature of this organizational system as compared to many founded elsewhere is the effective linkage among national space centres, industries, academic institutions and international community.

The setting up of Space Commission and the apex bodies, involving user ministries in the government, such as INSAT Coordination Committee and Planning Committee of National Natural Resources Management reflected an innovative approach to policies that balanced the needs of a high technology multidisciplinary organization with an overall bureaucratic government system. This approach ensured necessary autonomy, quick decision making process, and nurturing of a culture, suitable for mission-oriented space agency that set high standards for its multidimensional contributions<sup>3</sup>. An approach to developing industries involved institution of technology transfer policies, which resulted in participation of national industries owned by both government and private sector – which provided goods and services, expanded and serviced the markets related to space applications, and realized spin-off impacts. Policies for linking academic institutions were given effect through setting up of space technology centres at institutions of higher learning in the field of technology and through sponsorship of research in universities. Another important dimension of policy development was the international cooperation – which manifested in several forms, including contributions to legal and policy developments in international fora [such as the United Nations Committee on Peaceful Uses of Outer Space (UNCOPUOS), International Telecommunications Union (ITU), International Civil Aviation Organisation (ICAO), Committee on Earth Observation Satellite (CEOS), International Astronautical Federation (IAF), International Academy of Astronautics (IAA), Committee On Space Research (COSPAR), Space Frequency Coordination Group (SFCG), Inter Agency Department Coordination Committee (IADC), International Institute of Space Law (IISL) and so on] and bilateral agreements with other space agencies for joint missions, data sharing and exchange of scientists. An institution of excellence was established for capacity building in space science and technology education for the benefit of countries in Asia and the Pacific under affiliation with the United Nations.

While, initially government was the major user of space systems meant for telecommunications, broadcasting and remote sensing, prior to liberalization measures in Indian economy, the early 1990s have seen an increasing role of private sector in the use of space systems and in the provision of downstream services. Telecommunication and broadcasting are the twin services, where the private sector has been playing an active role in their growth. A

number of new policies and regulations were initiated and brought to implementation by the ministries in charge of these services, namely, the Ministries of Communications and Information and Broadcasting under Government of India. Beginning with National Telecom Policy 1994 (NTP 1994), progressive developments are seen through subsequent initiatives such as New Telecom Policy 1999 (NTP 1999) and Addendum 2003 to NTP 1999. SATCOM Policy, which is addressed later in the paper, finds a mention in NTP 1999. The Prasar Bharathi Act 1990 attempted to separate broadcasting functions hitherto directly provided by the government under an autonomous Broadcasting Corporation, to perform public sector broadcasting role. The Telecom Regulatory Authority of India (TRAI) was established to regulate both the services relating to the telecommunications and broadcasting as per the policies/guidelines of the respective ministries responsible for the services. The Cable Television Network (Regulation) Act passed by Parliament in 1995 and amended in 2002 provided the framework for television services by private sector using cable networks fed by satellites.

Satellites find applications in both these services. While the service aspects for both these services are governed by the regulations of the above ministries, the policies relating to development of satellite infrastructure and its access for the services are implemented through Department of Space and through mechanisms participated by ministries responsible for services. Another major initiative taken up by the Government in this era was the establishment of Antrix Corporation, which marketed capacity from Indian satellites and launch vehicles in the overseas markets and also started working with Indian industry to expand commercial markets for space products and services.

### **Satellite communication policy and implementation guidelines**

The Union Cabinet on 12 January 2000, approved the implementation details for SatCom policy in India. The policy recognized the steep growth in the satellite-based communication services, as well as newly emerging services in this field, which require substantial private sector participation. This was consistent with the liberalization in telecom sector, as well as the global trends. Based on the overall framework for the satellite communication policy approved by the Union Cabinet in June 1997, the detailed procedures for implementation<sup>4</sup> have been worked out with the involvement of other Ministries/Departments concerned. The norms, guidelines and procedures essentially enabled (i) provision of capacity from INSAT satellites to non-governmental users by the Department of Space (DOS) on a commercial basis; (ii) provisions for establishment and operation of Indian satellites by private sector, wherein Indian registered companies with a foreign investment not exceeding 74% were allowed to establish and operate satellite systems. Those who have got the operating

licence for specific services from respective Ministries/Departments were eligible to apply. Applications were to be processed for approval by an inter-ministerial committee chaired by Secretary of Department of Space. Wireless Planning Committee (WPC), under the Ministry of Communications, was mandated to allocate the orbit-spectrum requirements of the private Indian satellites in international fora; (iii) the norms also included provisions on the use of foreign satellites by Indian users. In the interest of early introduction/expansion of services, use of foreign satellites was allowed in special cases, until Indian satellites could provide such capacity. The concerned administrative departments were required to consult DOS before authorizing operations through foreign satellites.

### **The Indian remote sensing data policy**

The Government has approved and adopted a comprehensive Remote Sensing Data Policy (RSDP) for the acquisition and distribution of satellite remote sensing data – from Indian and foreign satellites for civilian users in India. The policy<sup>5</sup> comprehensively covers guidelines for satellite data acquisition and distribution in the country and also for licensing the IRS capacities to other countries. The Department of Space is the nodal agency for implementing the policy. In particular, the policy streamlines the distribution of high-resolution data to Government users; private users involved in developmental activities with government and other private/academic/foreign users. The RSDP is envisaged to be a step towards making transparent the procedures of satellite data distribution, including those from high resolution imaging systems, and, without being restrictive, would help regulate the process of image distribution, so that Indian users are not denied access to this valuable tool – which has become a mainstay in the developmental and natural resources management activities of the country.

### **National spatial data infrastructure policy**

This policy aims to bring harmonious and early development of a national spatial data infrastructure. The nation has, over the past years, produced a rich 'base' of information through systematic topographic surveys, geological surveys, soil surveys, cadastral surveys and by use of remotely sensed images in a variety of thematic maps. With the availability of precision, high-resolution satellite images, use of tools and resources like GIS and GPS, the accuracy and information content will be considerably enhanced for a variety of uses. Access and availability of such information to the citizens, society, private enterprises and government are important. As a part of this vision, a National Spatial Data Infrastructure (NSDI) is being evolved through a partnership approach among various agencies, who maintain databases in the field of their speciality

adopting specified standards and protocols to facilitate access, integration and networking of databases. The NSDI has been conceived as national system that synergistically combines the resources and infrastructure of various players, with the power of information technology and enabling information support for decision making in government, industry, academia and other organizations besides serving the public needs.

### **Mitigation of orbital debris**

ISRO is a member of Interagency Space Debris Coordination Committee (IADC) participated by major space agencies, and has been contributing to the international efforts in this area. India has undertaken a series of mitigation measures<sup>6</sup>, meeting with broad consensus of space faring nations and members of UNCOUOS. Space debris mitigation measures are voluntarily adopted and information and techniques related to mitigation measures are shared with other space faring countries in the framework of IADC. The design of Indian launch vehicle systems such as PSLV and GSLV incorporate measures to minimize operational debris. The last stage of GSLV is passivated. Passivation technique has also implemented for the PSLV from the last flight. The communications spacecraft have provisions in the design for re-orbiting into higher orbit at the end of operational life.

### **Regulations addressing non-proliferation/dual use concerns**

India has an exemplary track record on non-proliferation of dual use technologies through appropriate export control measures that were evolved over the years. The principles of export control, in the absence of a unified export control law, are embodied in various legal instruments that are in force, as given below:

- The Foreign Trade (Development and Regulation) Act of 1992 [*replacing the Imports and Exports (Control) Act 1947*].
- The Foreign Trade Policy 2004–2009 document establishes the rationale for overall policy and export orientation.
- The EXIM policy explicates procedures for regulating exports and imports.
- The Atomic Energy Act of 1962 (No. 33 of 1962) and the various public orders issued pursuant to the Act.
- The Chemical Weapons Convention Act of 2000.
- The Environment (Protection) Act of 1986.
- The Customs Act of 1962.
- The Arms Act of 1959 and the Arms Rules of 1962.
- The Weapons of Mass Destruction and Their Delivery Systems (Prohibition of Unlawful Activities) Act of 2005.

A comprehensive list of controlled items called SCOMET (special chemicals, organisms, materials, equipments and technologies) list, which is similar to the multilateral export control lists, codifies the conditions under which export licenses will be granted for these items. The SCOMET list, which consolidates earlier lists under different laws mentioned above, came into effect since 1 April 2000, through a notification issued by the Directorate General of Foreign Trade (DGFT).

The Weapons of Mass Destruction and their Delivery Systems (Prohibition of Unlawful Activities) Act of 2005 (WMD Act) brings India into compliance with UN Security Council resolution 1540. This act<sup>7</sup>

- Criminalizes the unauthorized possession, export, re-export, transit, trans-shipment, and brokering of materials and technologies related to nuclear, biological, and chemical weapons, as well as to missile delivery systems
- Criminalizes intangible transfers of technology
- Forbids Indian citizens wherever they might be located from taking part in a programme or project if they know or have reason to believe that their efforts will be contributing to the development of weapons of mass destruction (WMD)
- Broadens legal liability so that not only individual offenders, but all owners and managers of a firm found to be in breach of the law may be held liable.

Within a few months from the enactment of the WMD Act, GOI has instituted procedures for implementing its provisions.

In November 2006, the rules of the WMD act were enacted, which enabled the formation of the Five Advisory Committees concerning to each area, namely Weapons of mass destruction and their delivery systems, Nuclear and nuclear-related items, Chemical weapons and related items, Biological weapons and related items, and Export control on dual use items. The powers and duties of these committees were also codified in these rules.

### National space legislation – need and scope

It is borne out by experience that national legislations in the areas of growing importance to economic and social sectors of the nation can lead to an orderly development that enhances benefits. Several countries such as USA, Russia, Australia, Canada, UK, Sweden and Israel have enacted national space legislations to regulate and guide their space activities. A need, which is being debated currently in case of India too, is the development of national space legislation. ISRO initiated a study of this subject through reputed academic institutions, like National Law School University of India, Bangalore, a few years ago. Subsequently, at the Space Law Conference organized<sup>8</sup> in June 2005 at Bangalore by International Institute of Space Law,

a session was devoted to this important topic. The need for national space legislation has been examined from the viewpoint of harmonizing the domestic legal environment with the specific obligations arising from international treaties related to space, for which India is a party. The national space legislation, in particular, should address the specific interests and needs of Indian society. Such legislation should also be broadly in harmony with the laws applicable for other related fields such as trade, IPR, internal and international security and public safety. The government's supervisory role as obligated through the principle of state responsibility in International Space Law is to be addressed through regulatory/licencing requirements of certain industrial and commercial activities related to space. The legislation should thus address the provisions for ownership by private sector of remote sensing or communication satellites under Indian registry. Further, the domestic law needs to consider the government's support and incentives for private sector to grow their activities in this high risk/investment intensive field. The extent of liability to be borne by private sector, obligatory requirements for insurance, the principles for liability to be borne by the state for damage caused to third parties need to be stipulated. Above all, the legislation should create an enabling environment to further the goals of national space programme and its commercial space ventures, rather than create a restrictive legal regime.

Changing international environment in the field of space and also the expansion of activities in domestic sector with participation of both government and non-government entities require serious consideration for establishing national space legislation soon. With its vast experience and also ambitious forays into initiatives such as planetary exploration, India should play an important role in creating a conducive legal environment in the field of space, for balancing both public and private interests and for responding to evolving international environment.

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