

COMMERCIALIZATION AND PRIVATIZATION OF SPACE INDUSTRY IN INDIA: LEGAL ISSUES AND CHALLENGES

*Dr. V. Balakista Reddy**

Associate Professor of International Law,
NALSAR University of Law,
Hyderabad,
Andhra Pradesh (India)
balakistareddy@yahoo.com

ABSTRACT

This paper seeks to assess the situation arising out of extensive developments in space activities, which demand the legal and regulatory mechanisms to address. To that end the first part of the paper will trace the evolution of space activities for national development during the past four decades. The second part addresses the trend of commercialization and privatization of Space activities from an international perspective in general and in the Indian Context in particular. The third part focuses the need for domestic Space legislation to address the legal issues arising in the wake of developments in space activities.

1. Milestones in Indian Space Arena

Since 4th October 1957, the development and application of space technology has made tremendous global impact in diversified fields including social, economic, cultural and scientific aspects. It has become an indispensable and empowering tool of sustainable development. The use of space technology during the last four and half decades has been adequately proved in many areas of human activity—communications, television broadcasting, meteorology, food production, education, industrial growth, natural resource management, environmental monitoring, forest wealth, minerals, navigation, transportation, medicine, defence and so on. India is one of the few countries, which has realized the immense potential of space technology for national development.* This necessitated the execution of experimental programmes to assess the

potential of building space and ground infrastructure and developing a network. The Indian space venture started with a humble beginning in the early 1960s, to getting familiar with space technologies and developing technical and organizational infrastructure in order to develop satellites and satellite-launch vehicles. During the Seventies the effort was primarily geared towards carrying out research and development in a variety of scientific and engineering disciplines for launch vehicles and satellites.[†] At the same time India formally entered the new space era with the successful launch of its scientific satellite—the Aryabhata in April 1975. Efforts were also directed towards conducting selected large-scale experiments in communications, such as the Satellite Instructional Television Experiment (SITE), the Satellite Communications Experimental Project (STEP), and remote sensing involving the use of both indigenously built

satellites (Aryabhata, Bhaskara and APPLE) as well as those procured from foreign space agencies (ATS-6, Symphony). The SITE has been hailed as one of the pioneering and largest experiments of its kind in the world: it provided a valuable experience in the development, testing and management of satellite-based instructional television system, particularly in rural areas. The STEP ensures a systematic testing of geostationary satellites for domestic telecommunications and also to develop capability in designing and building ground segment facilities. By the end of the decade, the experimental Satellite Launch Vehicle (SLV-3), capable of launching scientific satellites into nearer Earth orbit was also developed.

During the Eighties, the Indian space programme moved closer to realizing the goal of self-reliance in the use of space technology for national development. With the launch of the Bhaskara II, SLV-3, APPLE in the early Eighties, the Indian space programme entered the operational stage to provide space services in communications, meteorology, remote sensing and development of launch vehicles. The INSAT-I series of communication satellites and IRS series of remote-sensing satellites were operationalised for well-defined applications.[‡] Significantly, all operational satellites of the Eighties were indigenously designed. The Indian space programme was conceived with three crucial components: applications, satellites which would make the applications possible, and launch vehicles to put satellites into space orbit.

India entered the Nineties with the launch of more ASLV and PSLV

launchers. With the launch of IRS-IB and INSAT 2A & 2B, the Indian space programme becomes fully operational through its own communication and remote-sensing satellites. The INSAT series satellites, with the capabilities to provide communications, meteorological and disaster management systems, have proved unique, as other countries have separate spacecraft for each of these functions.[§] The IRS satellites have helped in the extensive mapping of natural resources, and the voluminous data generated through these are used in a variety of fields. Even the developed countries – including the US—have started acquiring the IRS data. The success, which India has achieved in the application of remote sensing perhaps, surpasses the efforts of even the most advanced countries. Thus, today India has become a leader in satellite based remote sensing providing services on an end-to-end base with a series of state-of-art satellites, the necessary data reception and processing facilities and the commensurate launch capability through the established PLSV.^{**} In the New Millennium, India successfully launched revolutionary GSLV and EDUSAT projects and also realized its ambition of sending a spaceship to the Moon.

To sum up the significant achievements by the Indian space programme are have been made by the Indian space programme are; (a) building world-class satellites for communications and remote sensing, (b) development of launch vehicles to orbit satellites of mass range of 1000 kg to 2500 kg, (c) launching remote sensing satellites from India with Indian launch vehicles and (d) in reaching the benefits of space technology to improve the quality of life

at grass root levels, thus contributing to several areas of national development.^{††}

With all these developments now India is one of the few countries with homemade satellites in orbit and, which send GSLV satellites. The Indian space programme has an impressive array of achievements in putting to use space technology for vital applications—for telecommunications, TV broadcasting, weather watching, forecasting agricultural crop and forest wealth assessment, water resources management, flood mapping, drought forecasting, identification of marine resources, protection of the environment and rural literacy campaign etc., India has also benefited significantly from international co-operation since the establishment of Thumba Equatorial Launching Station (TERLS) in 1962 to the present GSLV preparations.^{‡‡}

2. Commercialization of Space Activities

Indian is no exception in wave of commercialization of space activities. The Indian space programme, not only achieved considerable self-reliance in space technology for national development but also promoted its commercial utilization. A mutually rewarding partnership between the Indian space programme and industry has been built over the past two decades. In the early Seventies the Government of India set up a space commission to oversee the entire space drive in the country and advise the government on various associated aspects—including the legal framework and operational mechanism. It has also been the policy of the space programme to utilize the capabilities and infrastructure of the

Indian industry for space projects, as also to promote the application of the know-how for products and processes developed by the space programme for larger national benefit. Accordingly, programmes for partnership with the industrial sector are organized under four closely linked fronts. These are: (1) technology transfers from the space programme to industry; (2) technological consultancy to industry; (3) utilization of industry's own technological expertise by the space programme; (4) and services from the industrial sector.^{§§}

In the 1980s the Indian space efforts witnessed a quantum jump in terms of the operational satellite system, development of launch capability, execution of large-scale application projects, and other associated aspects. This transformation has not only brought about a sense of appreciation and confidence from the private sector but also necessitated the national space agency to make all-out efforts to ensure participation of industry, as space activities increased manifold. Besides, the late 1980s also saw the beginning of concerted efforts from the government side towards economic liberalization and globalization. The technological consultancy scheme launched in the early Eighties has evoked excellent response from industry and research organizations in the country. For its part, the Indian industry has played an important role in space projects and infrastructure development. The national space agency established its own wing aimed at technology transfers and industrial consultancy. A number of technologies developed in-house were transferred to the industries. The industries, too, started responding positively through investment in new

facilities, execution of technology up gradation, and active participation in the manufacturing and fabrication of systems and components for the national space efforts. ***

Besides, national accomplishments, India could also get recognition in the international arena as one of the major space faring nations in the world, which in turn opened up global opportunities and demand for Indian services. The Antrix Corporation, the commercial wing of the Indian Space Research Organization (ISRO), was established in 1992 with the objective of marketing space products and services in India and abroad. It deals with the transfer of technology developed under the Indian space programme to the Indian industry and provides consultancy services. It also coordinates in the exchange of space hardware and software between ISRO and private industry involved in the space programme. A significant accomplishment in this regard is the global marketing of Indian Remote Sensing (IRS) data and consequent establishment of associated infrastructure in association with the Indian industry in the private sector. †††

3. Privatization of Space Activities

In furtherance of the developments in the space technology, the private participation in space activities has considerably increased. During the last two decades increasing emphasis on reducing governmental budgets worldwide has forced the world's space faring nations to reassess their civil space programs. Such action requires establishing close working arrangements between government and private industry which facilitate satellite

communications, navigation and position location, remote sensing, data processing, support services, land infrastructure etc. Developing countries like India are hard pressed to allocate funds for these activities. Therefore the need for privatization of space activities deserves the maximum attention in countries like India, which need these activities even more than their richer counterparts for their national development. A mutually rewarding partnership between the Indian space programme and industry has been built over the past two decades, which brought about a sense of appreciation and confidence from the private sector. The space application sector witnessed tremendous developments with the active involvement of the private sector. There is a huge market to be tapped in India in the field of cable and satellite television. Doordarshan, the Central Broadcasting Agency has already started its DTH venture. Technologies like DTH, DTT and Broadband are going to flourish in the near future in the vast Indian market. Recognizing the privatization and commercialization of space activities, many developed nations have drafted National Space Laws for various complex facets of space activities, including a core licensing system for Private Space Activities. Thus, it is abundantly clear that even countries, which are lagging far behind India in technological advancement, have some sort of Space Law for their country, which places them ahead of India in attracting cross border investments. It is therefore imperative for India also to have specialized Space Legislation so as to emerge as a global destination in attracting foreign investment. Just as India has demonstrated its matchless expertise in

software services, so also similar efforts to showcase its in the field of space technology. However it is disheartening to note that because of lack of an adequate legal framework India is losing many opportunities in the field of investment in space technology.

The space application sector witnessed tremendous developments with the active involvement of the private sector. For example, this period witnessed a cable and satellite television revolution, which paved the way for a large number of TV channels, hundreds of cable operators, and multi broadcast companies. Moreover, the private sector entered the telecommunications sector also by participating in mobile communications as well as telecom services. Similarly, a number of private companies made their entry into the remote sensing application services and value-added products.

4. Solution for Legal Issues and Challenges

Based on the technological developments, application of space technology in various fields for sustainable development, which necessitates a regular control on the agencies involved in the space activities. India, like many other countries, has not enacted any space legislation. The issues, which emerged, are whether to have legislation? The problems emerge in absence of legislation? When there are countries without legislation then why India requires legislation? Or whether some lawyer's insist on framing a law?

India is a party to all international space treaties, which form the main body of international space law. India has also

played a significant role in the adoption of five sets of legal principles by the U.N. General Assembly Resolutions, which provide for the application of international law and promotion of international cooperation and understanding in space activities. It is also under an obligation to give effects to the various rules contained in these norms through the medium of appropriate legislation in the domestic field. All the areas which, directly or indirectly, concern space activities under the Indian constitution fall within the domain of the Union by virtue of a series of entries in List 1 of the Seventh Schedule to the Constitution of India. Thus it is for the Parliament of India to take a lead in the direction of enacting a law. The purpose of the proposed legislation should be effective regulation of various aspects of India's space policy. Though India is one of the few nations who have taken vast strides in the area of space exploration and exploitation, still it does not have a law to regulate the various component parts of its space activities.^{†††} The former President of India Dr. A.P.J. Abdul Kalam, who has himself been closely associated with the development of space technology, has expressed the acute need for the enacting the law for the protection of India's space interests, in the wake of commercialization and privatization of India's space activities.

India's contribution to the development of international space law is significant. In many aspects, it has taken a holistic view of space, rather than merely its scientific aspects. Its stand on many issues like miniaturization of outer space, use of Direct Broadcasting Satellites (DBS) and Remote Sensing Principles are noteworthy. On the issue

of the inequitable situation existing with regards to the geostationary orbit, India's stand has been on the equitable access and rational utilization of geostationary orbit. India has also voiced its concern for a comprehensive international action plan to stall the danger posed by space debris.

However, on the domestic front, space proliferation is going in a big way but there is no comprehensive or specific space law in India. Space and space-related matters have not been regulated by a single legislation, but by legal rules belonging to different areas of the domestic law, which is so far responsible for the gap in the effective regulation. However, the time has come now for the preparation of an appropriate legal framework, keeping in view the recent national and global developments—the active involvement of the private sector and commercialization of space activities, and the agreements made nationally and internationally with various agencies, governments, international and inter-governmental organizations. On the domestic front, the public-private sector participation in various space programmes, the cable and satellite, TV revolution and various court judgments all remind us of the need for space legislation in India.^{§§§}

Need of the hour is that India should enact domestic space legislation keeping in view of the growing commercialization, liberalization and privatization in space activities at national and international level. The proposed space law should define the role of the Department of Space (DOS) and its various organs and different governmental and non-governmental agencies in space matters, the procedure

for adoption and implementation of space programmes, and regulation on the safety of launch and space flight, the question of transit of foreign space objects through national airspace, questions of liability and insurance, protection of intellectual property rights, spin-off benefits, and above all, implementation of international obligations under the various treaties. Furthermore, it should also formally incorporate the objectives of India's space policy, reiterating the country's commitment to the peaceful uses of outer space and carrying on all legitimate activities in space.

5. Conclusion

In the space science and technology, India is one among the few countries with its homemade satellites in orbit and first among the developing countries. India also significantly contributed in the development International of Space law and Space policy. To fulfill International commitments and domestic regulations of space activities, every nation state should draft a space legislation that would bring or achieve the necessary coherence between Space law, international agreements, and domestic legislations. As far as India is concerned, until now we do not have any comprehensive or specific law dealing with space activities/conflicts, unlike other countries i.e. USA, Canada, France, Germany and Australia. However, with the rapid development of activities in space and its commercialization, liberalization and privatization, there is a growing need for enacting domestic space legislation. As this area involves huge amounts and high risks of public and private funds, in all probability there would be growing

litigation or conflicts that cannot be solved by the existing system. Therefore, the legal challenges posed by the above developments necessitates for creation of National Space Agency, Licensing, and Certification of space activities, Economic Conditions of Space Activities, A Provision on Space

Infrastructure, Space Safety and Space Liability, Space Insurance, International Cooperation and Protection of Intellectual Property Rights in Outer Space etc could effectively regulate the challenges posed by the commercialization and privatization of space industry in India.

* U.R. Rao, "Space for Sustainable Development", in V.S. Mani, S. Bhatt, V.B. Reddy (eds), *Recent Trends in International Space Law and Policy*, (New Delhi, 1996), pp.27-54.

† V.A. Sarabhai, P.D., Bhavasar, EV Chitnis & P.R. Pisharoty, *The Application of Space Technology to Development*, (United Nations, NY, 1973), pp. 10-11

‡ See *Science and Its Impact on Society-Indian Experience*, Proceedings of the Seminar Organized by the National Science Academy, New Delhi, 22 & 23 Apr 1978, and p.78.

§ K. Kasturirangan, "Indian Space Technology: Poised to go Global", *Indian Aviation –Civil & Military* (Bombay, 1st July, 1994), p.21

** Department of Space, Govt. of India, Annual report, 1994-95, pp/42-43, India

†† See Mohan Sundararajan, *Space Today*, (New Delhi, 1992), p.61

‡‡ See UN-UNESCO Panel Meeting on SITE Experiences, Oct 31-Nov 5, 1997 (Space Application Center, Ahmedabad), pp.1-15

§§ See Generally Kim Elaine Rathman, "Sharing the Harvest of the Skies: Outer Space Commercialization and Third World Development", *PHIL & TECH* 3:4, summer 98.

*** Avinash Singh, "India Needs Space TO Grow", *Hindustan Times* (New Delhi), 16 May, 1994.

††† *Indian Aviation-Civil and Military* (Bombay), 1st July 1994.

‡‡‡ V. Balakista Reddy, "Space4 Law & Space Policy In India", in V.S. Mani, S. Bhatt, V.B. Reddy (eds), *Recent Trends in International Space Law and Policy*, (New Delhi, 1996), pp.132-139.

§§§ Ibid

Xiii , V. Balakista Reddy " Comprehensive and Futuristic Space Legislation: India's Need of the Hour" in Balakista Reddy V., (ed) *Emerging Trends in International Air and Space Law* (New Delhi, 2007) pp. 394 & 395

References

1. Bhatt, S., *Studies in Aerospace Law: From Competition to Cooperation* (New Delhi; 1980)
2. ----- *International Aviation and Outer Space Law and Relations: Reflections on Future Trends* (New Delhi; 1996)
3. Balakista Reddy. V., (ed) *Emerging Trends in International Air and Space Law* (New Delhi, 2007)
4. Christol, Carl Q., *The Modern International Law of Outer Space* (New York; 1982)
5. Diederiks-Verschoor, I.H.Ph., *An Introduction to Space Law* (Deventer; 1993)
6. Goldman, N.C., *Space Commerce: Free Enterprises on the High Frontier* (Cambridge; 1985)
7. Jasentuliyana, Nandasari & Lee R.S.K., (eds) *Manual on Space Law, Vols 1 –IV* (New York; 1981)
8. Mani, V.S., Bhatt, S., & Reddy V.B., (eds) *Recent Trends in International Space Law and Policy*, (New Delhi, 1996)
9. Rao, U.R., *Space Technology for Sustainable Development* (New Delhi; 1996)
10. Vonder Dunk, Frans, G., *Private Enterprise and Public Interest in the European Space* (Leiden; 1988)