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Abstract of the national paper of India

A. Current status of the Indian space programme

1. The Indian space programme was born out of a vision of developing and utilizing modern space technology in order to accelerate the socio-economic development of India. From modest beginnings in the 1960s, the national space programme has grown over the period of the last three decades into a full-fledged one. That development followed a step-by- step process involving creating the necessary infrastructure, conducting unique demonstration missions in space applications, building experimental spacecraft and developing launch vehicles.

2. The Indian space programme at present encompasses a wide spectrum of activities, including building state-of-the-art satellites and launch vehicle systems, execution of large-scale application projects in participation with the users and industry and pursuit of activities in the space sciences. Currently, five satellites in the Indian National Satellite System (INSAT) series are providing operational services in telecommunications, television broadcasting, meteorology and disaster management. Further, five satellites in the Indian remote sensing satellite series are providing data for a variety of applications in natural resource survey and monitoring. The polar satellite launch vehicle, which can place satellites of some 1,200 kg in polar sun-synchronous orbit, is now operational. The development of a geosynchronous satellite launch vehicle is being undertaken to assist in launching the INSAT class of spacecraft into geostationary orbit. Since the inception of the programme, India has launched 29 satellites, of which 25 were built in India. Thirteen space launches have been made from Indian soil using Indian launch vehicles.

1. Organization

3. In their early phases, space activities in India were guided by the Indian National Committee for Space Research (INCOSPAR). The Indian Space Research Organization (ISRO) was set up in 1969. In 1972, an independent Department of Space under a Space Commission set up by the Government of India took charge of ISRO and is now responsible for the country's space programme. The Space Commission formulates policy and approves major programmes. In order to ensure effective application of space technology, innovative organizational mechanisms were created that involve users in the planning and application process. Through several centres spread out in various parts of India, the Department of Space and ISRO undertake research and development as well as operational space missions, an applications programme and human resource development activities. About 180,000 persons are working at ISRO, whose current annual budget is of the order of $300 million. Around 90 universities and academic

institutions have participated in the space efforts and more than 500 small, medium- and large-size industries have made valuable contributions. The Department of Space established the Antrix Corporation in order to promote the commercialization of space and to market Indian space capabilities on the global market. Efforts are continuing to encourage greater participation of industries in the public and private sectors in commercial space activities.

2. International cooperation

4. International cooperation has been the hallmark of the Indian space programme, which maintains extensive cooperation with several space agencies around the globe. India has been participating in and contributing actively to all relevant international forums, including the United Nations and its specialized agencies, the International Astronautical Federation, the Committee on Space Research, the Committee on Earth Observation Satellites and others in order to promote international cooperation in this field. Cooperative flight opportunities for instruments developed by other countries, extending the use of research facilities and exchanges of scientists and scientific data were pursued in the past.

5. India has been operating a programme for sharing experience with other developing countries, which provides opportunities for training in space applications for persons from other such countries.

6. The Centre for Space Science and Technology Education in Asia and the Pacific was established in India in November 1995 and is affiliated with the United Nations. The Centre provides high-quality education in the fields of remote sensing and geographic information systems, satellite communications, meteorology and space science. Since the beginning of the programme in 1996, 126 students from 25 countries have benefited from such training. Given that similar centres have evolved at the instigation of the United Nations and that they will constitute important vehicles for capacity-building in developing countries in different regions, international funding assistance for sustaining such centres should be encouraged and provided for.

7. India is also strongly committed to the role of the United Nations in the promotion of international cooperation in space and is party to all the treaties developed by the United Nations. India considers that the United Nations should continue to play its role in the further development of international law to ensure that further exploration and the peaceful use of outer space are implemented in the interest of all countries and that outer space is maintained as a common heritage of all humankind.

3. Future directions

8. The vision that has driven the Indian space programme since its inception will continue to guide its future course. The major directions for the future will be:

(a) To undertake further development of the space sector in space in order to make it a powerful tool for social and economic transformation of the nation, in the context of entry into the next millennium;

(b) To enable national industries and the commercial sector to develop further in order to cater to national needs as well as to compete on the world market;

(c) To develop new applications that take advantage of technological advances and cater to the priority needs of Indian society;

(d) To strengthen delivery systems for large-scale societal applications of space technology;

(e) To strengthen international cooperation in order to maintain space as a common heritage of humankind, to promote global peace and welfare, to profit from the benefits of space in a just and equitable manner, to protect the environment of the Earth and space and to serve broader humanitarian needs;

(f) To strengthen research and development in areas relevant to the overall goals of the programme and to pursue greater efforts towards human resource development.

B. Indian perspectives on UNISPACE III

9. India considers that the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III) is a unique opportunity for the global community to assess and strengthen cooperation in the field of exploration and peaceful uses of outer space, taking into account the significant changes since the Second Conference, held in 1982. Rapid advances in technology, growing awareness of the need to preserve Earth and its environment, the increasing potential offered by space activities for economic and social benefits vis-à-vis the urgent needs of the developing countries and the changes in the global political scene during the post-cold-war era are sound reasons to deliberate on the role of space in the development of humanity in the twenty-first century.

10. Space based remote sensing has been making immense contributions to the solution of various problems relating to the sustainable use of natural resources and has also generated valuable information relevant to the protection of planet Earth. It is essential to ensure continued availability of remotely sensed data, which are now available from many satellites. Equally important is the need to ensure that such data are made available at an affordable price to users. While technological advances are leading to the availability of data of higher resolutions, the necessary mechanisms need to be established to harmonize policies concerning access to data with the national interests of Member States.

11. India considers that the integration of environmental and developmental concerns is essential for the fulfilment of basic needs and ensuring improved living standards for all, better protected and managed ecosystems and a safer and more prosperous future. It is essential to ensure effective coordination of activities among Member States and international organizations so as to enable all countries to use space technology effectively for the purpose of protecting the environment, while at the same time promoting the sustainable exploitation of natural resources.

12. In view of the continuing need to protect humanity from the impact of natural disasters and of the fact that various national and international organizations and agencies have collected enormous amounts of data from space platforms and have successfully completed a number of related studies, it would be appropriate to initiate an integrated global effort as regards disaster management using space systems. The feasibility of setting up an international disaster monitoring satellite system, as a multilateral cooperative effort among various interested nations, should be explored.

13. India recognizes the crucial role of space systems in achieving much-needed human connectivity. In view of the immense potential of space systems to transform societies through distance education and developmental communications, in particular in the developing world, it would be worthwhile to initiate global efforts to create the required awareness among decision makers as well as to ensure effective and synergetic utilization of various space systems in that regard. While promoting commercialization in the field of satellite telecommunications and broadcasting, it is also necessary to ensure that the international policy framework and regulations should ensure equal opportunity and access for all and take into account the interests of countries with different levels of development.

14. India recognizes international cooperation and strategic alliances as integral elements of space efforts. The cardinal principle underlying international cooperation has to be to complement and/or supplement the capabilities and capacities of Member States so as to enable them to take advantage of advances in space technology development and utilization. It would be appropriate to initiate steps to build a global fund, based on contributions from developed countries and major commercial operators, that would provide assistance to the developing countries for the fullest exploitation of peaceful benefits from space. Such a fund could also be used to support research and development activities in the areas of the space environment, removal of space debris and so an.

15. The significant increase in space efforts across the globe has brought with it an associated increase in space debris. It is essential to strengthen the ongoing efforts to ensure that outer space is protected and managed as a common heritage of mankind. A fund could be formed from contributions, proportional to the level of utilization of outer space by the different space agencies and other users, to support and strengthen research and development activities in that regard.

16. The widespread development of peaceful uses of outer space by all countries will be possible only with unhindered access to technology and knowledge on a global basis. Global cooperation in that regard should be further strengthened in order to remove impediments to access to technology, equipment, materials and knowledge for use in peaceful and developmental activities.