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India's Space Policy 2023: Meeting the Tripartite domestic, Global and Defence Demands

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Abstract

There is an inverse relationship between understanding the mysteries and nature of space and verifying it through scientific method. Because understanding space is the result of traditional methods, on the contrary scientific method is the source of factual information. But mastering both the fields is an incredible achievement and in the context of India, both the above qualifications are achieved. Under which India has also achieved a leading position in the list of space faring nations on the strength of its citizen-oriented space program. It is also in view of this that India has for the first time launched India's Space Policy, 2023 in a holistic manner to expand its space program and policy. Which includes the domestic needs of the citizens and the government of the country as well as regional and global demands. Moreover, the importance of the space sector has also become useful in defense needs and military strength on the ground, so the military aspect of space is clearly visible directly and indirectly in this internal policy. Therefore, this article analyzes India's new Space Policy, 2023 as a tripartite of Civilian/domestic, Defence and global demand. Which has ensured cooperation and participation of all for new strategy, institutional structure, research and development, technological creation and operation. Also, the space sector is an advantageous asset in the option of science and technology in fulfilling the objectives of Viksit Bharat @2047.

Keywords: New Space Policy, Civilian Orientation, Domestic demands, Global demands and Defence Demands.

Introduction and evolution of Indian Space Program and Policy

During the last period of British India and after independence, the visionary framework of India's space efforts was laid down by the father of the Indian space program, Dr. Vikram Sarabhai, and the subsequent reins were taken over by Prof. Satish Dhawan. India's space program formally began in 1962 with the establishment of the Indian National Committee for Space Research (INCOSPAR). But since then, in the history of India's space exploration and utilization of space spanning almost sixty years, a comprehensive space policy has not yet been formulated. In which the importance of space in fulfilling national interests has been included in view of the needs of the country and the world, global space competition and regional threats. Although many other such efforts and policies were made, they did not reflect any specific vision, only the space program was expanded. For example, the future roadmap 'Atomic Energy and Space Research: A Framework for the 1970-80s' presented by Dr. Sarabhai in 1970. This was a joint future vision of space and nuclear energy programme, this is because at that time joint leadership of space and

nuclear programme was in the hands of Sarabhai. This roadmap included some important milestones for space like - four stage satellite launch vehicle will be developed which will be capable of placing 30 kg satellite payload in a 400 km interplanetary orbit and after its success more advanced satellite rocket launcher will be developed and expanded, which will be capable of carrying up to 1200 kg payload in 40,000 km synchronous orbit. India's SLV and ASLV vehicles were the result of this. Also, by 1974-75, simultaneous communication satellites would have to be launched through a foreign satellite launch agency and by 1980, ISRO would acquire the capability of launching communication satellites through its own efforts. Encouraging indigenous efforts on remote sensing and communication satellites, etc. At the same time, India's largest communication satellite program, Indian National Satellite System-1 (INSAT-1), was designed, which was formally approved in July 1977 and was expected to become operational in 1982. At the same time, in 1983, a major program called National Natural Resource Management System (NNRMS) was started under the aegis of the Planning Commission to promote the widespread use of remote sensing technology. In which social and economic development in the country can be promoted in a managerial and strategic way by obtaining data related to the above subjects for remote sensing.

In addition, in the 90s, to formalize the commercial activity of the Indian Space Research Organization to attract global attention to the developing space program, a commercial marketing arm called Antrix Corporation Limited was established in September 1992 under the Companies Act, 1956, wholly owned by the Government of India. This was a commercial effort to give global reach to the maturing Indian space program and the vision of self-reliance in space, which included export of Indian space products and technology sharing. Specifically, Antrix Corporation provides remote sensing satellite services, transponder leasing services from communication satellites, more cost-effective launch services, space vehicle testing services, earth ground system services, mission support services and training and consultancy services, etc. The most important part from the commercial point of view was the launch of foreign satellites, for which purpose the project of Polar Satellite Launch Vehicle (PSLV) was started in 1982. PSLV is called the workhorse of ISRO, which gave recognition to the Indian satellite launch actor in the international market. Actually the concept of building PSLV was done to launch a remote sensing satellite weighing up to about 1000 kg into a 900 km sun synchronous polar orbit.

In June 1997, for the first time, another policy was initiated parallel to the space program, which was called India's Satellite Communication (SATCOM) Policy, 1997. It was created by the Department of Space in collaboration with the Indian Department of Telecommunications and the Department of Science and Technology. Its main objective was to develop a healthy and thriving communication satellite and ground equipment industry as well as a satellite communication service industry in India. In 2000, norms, guidelines and procedures were presented for implementation at the ground level.

After focusing on the above peaceful applications of space, in view of the security challenges from the regional level, India also initiated steps for the military use of space, but not as a comprehensive policy but after incidents occurred. For example, discussions after the Kargil armed conflict or war between India and Pakistan (mid-1999) revealed that space capability is needed for defense preparedness and strategies, mainly for integration of armed forces, synergy between military and intelligence agencies and immediate defense modernization. Therefore, the Technology Experiment Satellite was launched by PSLV on October 22, 2001 in a polar sun synchronous orbit. Its special feature was the panchromatic camera, which was capable of providing pictures/images of one meter resolution. One such incident was the 26/11 (November 26, 2008) Mumbai terror attack which brought the need for space facilities as the 26/11 terror attack was carried out through sea route. As a result, ISRO launched the first 300 kg Radar Imaging

Satellite (RISAT) on April 20, 2009. It was capable of monitoring aquatic, terrestrial areas 24 hours a day, under all weather conditions, day and night, to monitor illegal infiltration activity and counter-terrorist operations from high orbit by X-band Synthetic Aperture Radar (SDR) capability.

Apart from this, India also launched satellites like GSAT-7, GSAT-7A and GSAT-7B which helped the army to increase its surveillance in the border areas. But the biggest step in terms of military action so far was the unprecedented success achieved on March 27, 2019 by successfully testing the anti-satellite (A-SAT) missile developed by the Indian Defense Research and Development Organization (DRDO) to ensure the protection of its assets in outer space. Under this 'Mission Shakti', the Ballistic Missile Defense (BMD) interceptor successfully targeted an Indian satellite in low earth orbit (LEO) in a 'hit to kill' manner.

Apart from the above initiatives, India's space program has been characterized by the fact that from the beginning of the 21st century, India's space race reached deep space missions, exemplified by the successful operation of Geosynchronous Satellite Launch Vehicle (GSLV) and successful missions like Chandrayaan and Mangalyaan, which gained world fame. Today, ISRO is considered one of the world's leading space agencies but in its 60-year space history, India had not yet formulated a specific and comprehensive space policy. Therefore, the Space Policy 2023 has certainly gained traction domestically and internationally, which needs to be analyzed in three contexts 'civil, military and global space demand' to clarify its relevance.

Space to meet Domestic demand

The Space Policy 2023 primarily targets the development of new technologies to meet India's growing digital citizen-centric demands. Its focus is on opening up new opportunities by liberalizing the space sector to make it accessible to every citizen of India and to reduce the burden on government machinery, assets, and entities. The goal is to provide greater participation and opportunities to private companies and encourage public-private partnerships for complex technologies and space access. The space sector has played a vital role in India's social and economic needs and progress. Keeping these factors in mind, the Government of India's new Space Policy has allowed private participation, directly and indirectly, through access to all end-to-end space-based activities, including remote sensing, satcom, satellite manufacturing, launch, and control. Furthermore, the establishment of earth stations and satellite operations, monitoring, and control centers, which connect the Earth and the Sky, was also approved. However, the foundation for this policy was laid two to three years before its implementation, as the Indian National Space Promotion and Authorization Center (IN-SPACe), an autonomous nodal agency, aims to act as a conduit between ISRO and India's private space sector. With this in mind, the Government of India presented the 2023 Policy as a dynamic framework that opens the door to increased participation by NGEs (Non-Government Entities) and provides them with equal access to space. The government has also made provision for venture funding of ₹1000 crore to provide financial assistance to space startups. The Government is pursuing a holistic approach, which includes building space-based ground assets and encouraging the private sector to lay the groundwork for a space economy. From a citizen-centric perspective, space has been listed among national priorities since the era of former Prime Minister Indira Gandhi. Even back in 1969—when India, with its limited yet ambitious endeavors, issued its first National Space Policy—the potential of this sector was embraced in alignment with the imperatives of national development. Similarly, the stated objective of the new space policy is to leverage space technology to provide public goods and services. In terms of domestic impact, this policy will foster new avenues for scientific and technological growth, intellectual capital, and employment by boosting the number of startups and

MSMEs within the space sector. Given that the current era is defined by the convergence of space technology and Artificial Intelligence, this growth trajectory will encompass the goal of establishing hubs for space engineering, space data analytics, research and development, and space manufacturing. Simply put, India will cultivate a robust, indigenous space industry of its own. Furthermore, this policy will pave the way for the establishment of new research institutions and centers, particularly at the foundational levels within the technology and education sectors. Ultimately, the impact of these initiatives will manifest in the form of improved good governance, agricultural monitoring, weather forecasting, disaster management, and urban planning—areas where the general public will directly benefit.

Space to meet Global demand

The proposal of a new space policy signifies India's desire to establish itself as a leading global space power. Therefore, under this policy, India has presented itself internationally with new goals by 2033. Currently, India's share of the global space economy is approximately 2–3%, and the goal is to increase it to 8–10% in the coming years. (The target is to expand its space economy from $8.4 billion to $44 billion by 2033). The new policy clarifies that India aims to accelerate its space capabilities, generate new opportunities for a growing commercial presence, develop this sector as an avenue for international relations, and foster an ecosystem to effectively implement space applications among all stakeholders—whether they be other nations or private entities—while simultaneously striving for the peaceful exploration of outer space. Historically, rather than adopting a comprehensive approach, India has implemented policies focused on specific domains within this sector—such as the Remote Sensing Data Policy and the Satellite Communication Policy—which provided a legal framework offering clarity regarding new opportunities, usage, and regulatory control within the country. These have resulted in the global reach of India's space technology, services, and education. This is evident in the fact that India has benefited citizens of other countries in some form or the other through its space assets in many countries across all continents. This responsibility was carried out by Antrix Corporation Limited, established by the Government of India in 1992 as the commercial/marketing arm of the Indian Space Research Organization. As its successor, a new commercial entity, NewSpace India Limited (NSIL), was established in 2019 under the Department of Space with a new mission and vision. This will serve as a rapid "fulfill-operate" model for ISRO to meet the demands of global customers. To encourage this collaboration, the new space policy will position India as a global satellite launch market, a hub for satellite-related data and information sharing, and promote cooperative initiatives in areas such as new space technology and exploration. A step towards this was ISRO's successful 2023 flight of its Small Satellite Launch Vehicle, developed to meet global satellite launch demands. It is designed to launch small satellites into low Earth orbit (LEO) quickly and cost-effectively. The Indian National Space Promotion and Authorization Center (IN-SPACe) has the objective of promoting industry clusters/zones/ manufacturing centers/incubation centers/ accelerators/technology centers etc. for the space sector within the country. When all these are established, private players, which may also be foreign companies, will participate in it and they will get the opportunity to study, experiment, use and train along with technology development, which will directly impact India's space sector by attracting foreign investment and welcoming new technology from outside. Meanwhile, India's Department of Space is actively working on space governance and awareness programs, as well as fulfilling its responsibilities regarding international cooperation.

Space to meet Defence demand

India showcased its space power through an anti-satellite (ASAT) missile test on the occasion of the Republic Day parade to the world. India, which had always idealized itself, was now portraying itself as a realistic power. The reason behind this was that on March 27, 2019, by conducting its first successful anti-satellite (ASAT) missile test named "Mission Shakti," it joined the ranks of the US, Russia, and China. After this incident, there was speculation that India's new Space Policy, 2023, would also include India's strategic and security objectives towards space, but there was no clarity on this in the policy. But we know that space serves two-dimensional purposes: strategic and security dimensions and the use of space related to civilian services. India too has been using its various satellites like GSAT-7, GSAT-7A, EMISAT, Cartosat Series, RISAT Series, etc. from time to time for defense and security purposes like surveillance and reconnaissance, missile tracking, border security, military communication and navigation, etc. However, the new space policy is silent on this issue. India is also working with the US on the Earth Observation Satellite Project NISAR, which uses SAR (Synthetic Aperture Radar) technology for civilian purposes like climate change, agricultural monitoring, and disaster management. However, SAR technology can also be used for defense purposes, so it cannot be clearly stated how any country will use this satellite. Similarly, despite the lack of clarity in the space policy regarding India's space vision, it is not possible to say what India's stance will be in the hard power dimension. Because India has also been working on developing direct energy weapons such as electronic warfare jamming systems and laser weapons for space security since 2019. In addition, IndSpaceEx held in 2019 was India's first space warfare exercise, which aims to keep India afloat in future space warfare.

Conclusion

Currently, India is advancing with the vision of becoming a leading spacefaring nation—a testament to which is the new Space Policy of 2023. This policy marks a historic transformation in itself, designed to cater to the country's domestic service requirements while aligning with global demands. The continuity of private sector participation and global investment within these efforts can facilitate India's access to deep space—bolstered by its self-reliance initiatives—given that the country is currently limited to the research and development phase in areas such as solar missions, space stations, and space tourism. However, this policy is certain to foster innovation in the development of next-generation satellites, launch services, and space applications, thereby contributing significantly to the objectives of the "Make in India" and "Viksit Bharat @2047" visions. On the foreign policy front, the outcomes of this policy will undoubtedly establish space as a distinct dimension of India's 'soft power.' This is because the core ethos of India's space science and technology has historically remained citizen-centric, even though external security challenges have occasionally necessitated the adoption of a strategic perspective.

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