

INDIAN SPACE POLICY 2023: AN APPRAISAL

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(Views expressed in the brief are those of the author, and do not represent those of ISSI)



The Indian Cabinet Committee on Security approved the much-awaited “Indian Space Policy 2023.”¹ In addition to enhancing the role and capacity of the private sector for further augmentation of the Indian space program, this new policy elucidates the roles and responsibilities of key institutions to ensure regulatory certainty and an all-encompassing framework for the implementation of 2020 space reforms.

Role of Non-Governmental Entities (NGEs)

The space domain in India used to be largely centralized and dominated by the government, especially satellite and rocket manufacturing. The private sector was included only for providing manpower, maintaining supply chains, and other “built-to-suit” undertakings as vendors or contractors. The government used to maintain control over intellectual property (IP) related manufacturing while assigning non-IP-related work to the private sector.² However, the current Indian government aims to monetize space technologies and increase its share in the global space economy by expanding the national space infrastructure, which would not be possible without the inclusion of the private sector. Consequently, specifying the role and responsibilities of NGEs is one of the major themes of the new space policy under the 2020 Indian outer space reforms. Currently,

¹ Government of India, Department of Space, *The Indian Space Research Organisation, Indian Space Policy – 2023*, https://www.isro.gov.in/media_isro/pdf/IndianSpacePolicy2023.pdf

² Indian Space Association, and Ernst & Young LLP, “Developing the Space Ecosystem in India: Focusing On Inclusive Growth, October 2022.

the global space economy is witnessing a historical developmental leap in human history in the form of the high number of satellite launches, low-cost manufacturing, innovation, and rapid integration of emerging technologies like cyber, artificial intelligence, and quantum computing in civilian as well as military domains. In 2020, the global space economy was US\$447 billion and is expected to reach US\$600 billion by the year 2025.³ It is expected to cross the mark of US\$1 trillion by 2040. The Internet/Satellite, Ground Equipment, and Government will be the three top sectors, expected to contribute approximately US\$412 billion (39.13 per cent), US\$196 billion (18.61 per cent), and US\$181 billion (17.19 per cent) respectively in the global space economy.⁴

Currently, the Indian share in the global space economy is approximately 2.1 per cent (US\$9.6 billion) and 0.4 per cent of the national Gross Domestic Product (GDP). It is expected to reach US\$12.8 billion by 2025. The market value of the Indian satellite-manufacturing sector in 2020 was US\$2.1 billion and is projected to reach US\$3.5 billion in 2025. On the other hand, the Indian satellite services industry had a market value of US\$3.8 billion in 2020 and is expected to increase to US\$4.6 billion. Unlike the 8.1 per cent Compound Annual Growth Rate (CAGR)⁵ for satellite manufacturing, the CAGR for the satellite services sector is just 4.2 per cent. With a market value of US\$567.4 million in 2020, the launch service sector is expected to reach 1,016.6 million in 2025 with a CAGR of 13 per cent. With a CAGR of 6.9 per cent, the market value of the ground equipment sector is expected to reach US\$ 4.0 billion in 2025 from US\$3.1 billion in 2020. With the figure of 368, India was positioned at 5th place globally, in terms of the highest number of Space Tech companies in 2021.⁶

Under the new space policy, NGEs are not only allowed to conduct research and develop their own space technologies but are also given access to government-owned technologies. NGEs would now commercialize the public sector technologies and applications for remote sensing and satellite navigation. NGEs could make their own ITU filings for the acquisition of space resources. They would be able to manufacture as well as operate the space transportation systems like launch vehicles and shuttles. In addition to the establishment and operation of the remote sensing satellites within and outside India, NGEs could also provide national and international communication services via these satellites (Figure 1).

³ Ibid.,

⁴ "The Space Economy's Next Giant Leap," Morgan Stanley, accessed May 28, 2023, <https://www.morganstanley.com/Themes/global-space-economy>.

⁵ The Compound Annual Growth Rate (CAGR) is defined as the annual average rate of revenue growth of an investment during a period between the two given or defined years. It is assumed that this revenue growth will occur at an exponentially compounded rate. This mathematical formula is used to predict what investor would eventually receive at the end of a particular period of investment.

⁶ Indian Space Association, and Ernst & Young LLP, "Developing The Space Ecosystem In India: Focusing On Inclusive Growth, October 2022.

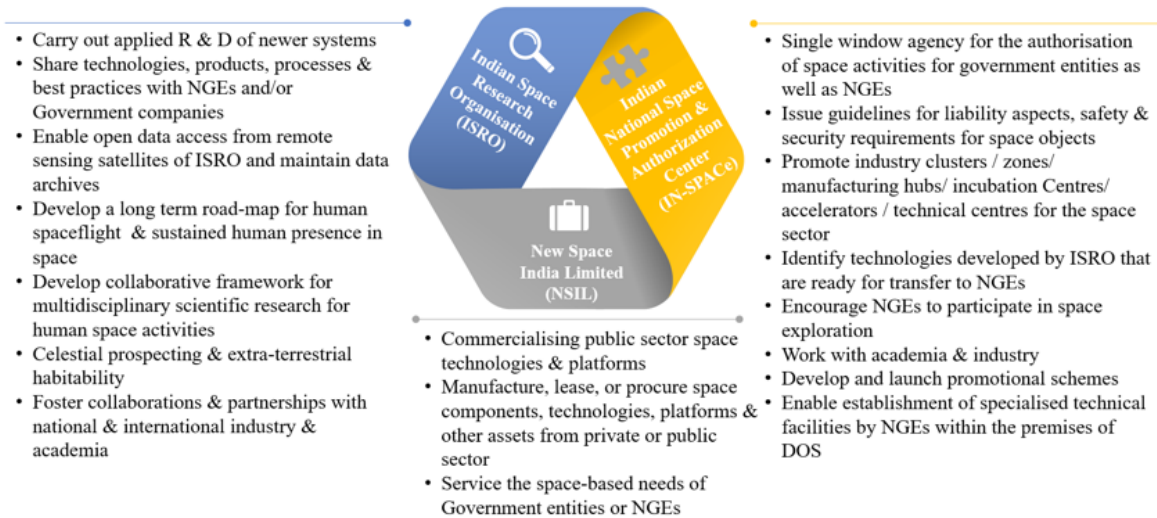
Figure 1: Role of NGEs

Source: Indian Space Policy – 2023

Institutional Delineation

The second major theme of the new space policy is clarifying the ambiguities surrounding the roles and responsibilities among three major space organizations in India: The Indian National Space Promotion and Authorisation Centre (IN-SPACe), the New Space India Limited (NSIL), and the Indian Space Research Organisation (ISRO). Under the new space reforms, the Union Cabinet established the IN-SPACe in June 2020. It is an autonomous agency of the Department of Space (DoS) to regulate as well as facilitate NGEs. It will act as an independent and single-window agency for supervision, authorization, and licensing of NGEs and their space operations to reduce procedural time and fast-track investments. It will also issue guidelines related to liability claims, dispute settlement, safety, and security standards. After the establishment of IN-SPACe, ISRO will only focus on the R & D of new and emerging technologies in the space domain, and develop long-term road maps and frameworks. As a new agency under the DoS, NSIL will focus more on the commercialization and acquisition of public sector space assets and technologies based on the “demand-driven” to the “supply-driven” model by obtaining commitments ⁷(Figure 2).

⁷ Indian Space Policy – 2023, AZB & Partners, “Space-sector reforms: IN-SPACe to mentor startups and private sector; Government of India, Department of Space, the Indian Space Research Organisation (ISRO), “Opening Up Indian Space Sector For Private Sector –Reforms,” accessed on May 30, 2023, <https://www.isro.gov.in/Reforms.html>; IANS, “Space Sector Reforms were a Bold Move by the Modi Govt: former officials of ISRO,” *Economic Times*, May 28, 2023, <https://government.economictimes.indiatimes.com/news/technology/space-sector-reforms-were-a-bold->

Figure 2: Inter-Agency Delineation of Roles and Responsibilities

Source: Indian Space Policy – 2023

Security Implications of Indian Space Policy

First, the space launch vehicle technology required for putting satellites into orbit and the long-range missile technology are like peas in a pod. Despite a few differences in terms of the type of fuel, flight trajectories, and other operational requirements, the majority of dynamics and flight mechanics are similar. In the past, various ballistic missiles were converted into space launch vehicles and vice versa e.g., the U.S. Atlas missiles, the U.S. Jupiter missiles, the USSR SL-8 Kosmos, North Korea Unha satellite launch technology, etc. Therefore, there is a risk that India would divert the space technologies and ground facilities developed by the NGE's for commercial purposes toward the advancement of its long-range missile program.

Second, there is no doubt that the civilian satellite industry is making huge contributions when it comes to the space economy and sustainable development. Advanced communication, remote sensing, navigation, global positioning system, geostationary, and drone satellite are vital for global aviation, agriculture, banking system, weather prediction, and power grids among many others. Keeping in view the dual-use nature, this civilian satellite industry could be militarized by India in case of any conflict or crisis as well as in peace times. Similar satellites would provide vital ISR for military operations, troop mobilization, and weapon deployment on Earth along with cyber and electronic warfare against space-based assets of the other side.

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Third, a whole new ball game hidden in plain sight is legitimizing the collection as well as dissemination of the remote sensing data by NGEs during communication services, raising serious questions on the ethical and security dimensions of this policy. This policy does not provide further specifics about the mechanism, rules, and procedures regarding how this data collection and sharing would work. In this respect, a draft “Space-based Remote Sensing Policy of India, 2020” and a draft of “Norms, Guidelines, and Procedures for Implementation of Policy 2020”⁸ provide crucial insights. According to the draft, all service providers are free to disseminate the remote sensing data to anyone in India. However, it will be the government’s prerogative to determine the “sensitive” and “non-sensitive” categories of data. This draft defines sensitive data as “the very high-resolution data with Ground Sampling Distance (GSD) of less than fifty centimeters (cm).” Any data with a GSD of more than fifty cm is categorized as non-sensitive. Furthermore, the government of India reserves the right to control the collection and dissemination of remote sensing data in the wake of any national security concerns and foreign policy obligations. Keeping in view India’s hostile posture towards its major neighbors, various foundational military agreements with the U.S., and participation in the Quadrilateral Security Dialogue (QUAD), there is a high probability of data weaponization by India in collaboration with a third party/state.

All these developments would give India a false sense of superiority and confidence over its major neighbors, especially Pakistan. Both India and Pakistan started their space program around the same time in the early 1960s. However, the gap in space capabilities between India and Pakistan grew over time just like a gap in the conventional domain. Keeping in view the limited resources and immediate nuclear threat, Pakistan’s space program received lesser attention as compared to the nuclear program. Keeping in view the expected surge in Indian outer space capabilities after the 2020 reforms and 2023 policy, Pakistan must carefully craft a smart strategy with greater emphasis on quality than quantity. Pakistan should adopt asymmetric ways and technologies to bridge this gap, while at the same time avoid getting into an expensive arms race in outer space. First, Pakistan must define national objectives and priorities in outer space. The second step in the right direction would be financial investment. Pakistan should also consider opening its space domain for the private sector or at least exploring the option of public-private partnership. Another important element is building well-trained human resource over time, including by establishing linkages with the academia. It is high time for Pakistan to focus on its outer space capabilities because the credibility of nuclear deterrence on the ground is now highly dependent on deterrence in outer

⁸ Government of India, Department of Space, *Space-based Remote Sensing Policy of India, 2020* and draft Norms, Guidelines and Procedures for implementation of Policy 2020, https://mycoordinates.org/spacers_policy_ngp_2020_draft.pdf

space. However, it must be done within the ambit of accepted norms and legally binding instruments of the global outer space regime.