



INDIA'S SATCOM POLICY: POTENTIAL AND CHALLENGES

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ABOUT THIS POLICY PAPER

Satellite communication (SATCOM) is vital for connecting remote areas with voice, video, and internet services. India's SATCOM journey, pivotal to its economic growth, began in the 1980s, supporting various sectors like banking, education, and telemedicine. Despite the 1997 SATCOM Policy's aim to foster a strong industry, ISRO's monopoly as operator, regulator, and licensor hindered private sector growth. The Antrix-Devas case highlighted issues of transparency and multiple government stakeholders. Recent reforms, including the 2023 Indian Space Policy (ISP) and the creation of the Indian National Space Promotion and Authorisation Centre (IN-SPACe), seek to level the playing field and boost private participation. However, IN-SPACe's effectiveness is uncertain due to its limited autonomy. To fully implement ISP's objectives, legislative support may be required to ensure regulatory independence and fairness in India's SATCOM sector.

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FOREWORD

The Indian space economy is entering a new era, driven by a significant increase in private industry participation in space activities. Over a hundred space startups offering services ranging from rocket launches to geospatial analytics have emerged in the last five years. In response to these changes, the Union government has boldly reformed the country's regulatory landscape. This aims to foster a vibrant space ecosystem that leverages the core competencies of the private and public sectors, respectively.

Two key initiatives have been instrumental in shaping the transformation of India's space sector. First, the establishment of the Indian National Space Promotion and Authorization Centre (IN-SPACe) in 2020. This entity serves as a single-window agency, regulating all space activities in India and, most importantly, creating a level playing field for the space industry. Second, the Indian Space Policy - 2023 (ISP-23), released in April 2023, and the subsequent Implementation Guidelines published in May 2024, are documents that not only clarify the role of the relevant government agencies but also lay down a predictable policy framework for the private sector, empowering them to thrive in this new era of the Indian space sector.

This policy paper by the Council for Strategic and Defense Research (CSDR) on optimizing the utilization of the space spectrum is part of a series of five policy papers that aim to create a legal knowledge base on India's space policy, existing space laws, and laws and regulatory guidelines that intersect with private sector space activities.

The Telecommunications Act of 2023 permits the assignment of satellite spectrum through the administrative process, marking an essential step in bringing India's regulation of the space sector in line with globally recognized norms. This paper's recommendations for assigning satellite spectrum go one step further by proposing critical measures that the government must take to ensure that satellite spectrum assignment takes place fairly and transparently.

Ananth Technologies is pleased to support CSDR in making these policy-oriented research papers available to the public. I hope these research papers will stimulate a robust discussion among all stakeholders in the Indian space ecosystem, including government policymakers, IN-SPACe, the private space industry, policy experts, and civil society members.

Dr. Subba Rao Pavuluri

President, Satcom Industry Association (SIA-India) and CMD, Ananth Technologies

Introduction

Satellite communication (or SATCOM) refers to the use of satellites deployed in orbit to receive and transmit signals to different points on Earth. These signals can include voice, video, or internet data. Since terrestrial networks often fail to reach rural and remote areas, satellites were initially expected to bring these underserved areas into the network.

The 1990s ushered in a host of new technologies that enabled the instant transmission of news, sports, and entertainment as digital data. The advent of mobile phones, direct broadcast satellite television, and the internet led to the development and deployment of geostationary satellites. In recent years, the focus has shifted to satellite constellations in low-earth orbits (LEOs).

As the world has transitioned into the Age of Digital Networks with billions of mobile devices seeking direct-to-device broadband connectivity, satellite communication has experienced a significant surge.

The need for a sound SATCOM policy

Since the 1990s, the satellite communication revolution has been an integral part of India's economic liberalization and growth story. Today, satellites are being utilized in a host of commercial and non-commercial domains. They can connect hospitals, schools, government offices, universities, and globally linked businesses via efficient and reliable point-to-multipoint networks.

Satellite communication is responsible for connecting banking networks, especially rural networks, with over 100,000 ATMs that account for over six billion transactions annually.[i] The Jan Dhan Yojana—which aims to bring every Indian into the banking network using the biometric-based Aadhar card—would not have been possible without satellite linkages. Financial inclusion has enabled the efficient delivery of direct-benefit transfers to poor and needy sections of the population.[ii] At the commercial enterprise level, India's National Stock Exchange boasts a network of 3000 VSATs across 200 cities, ensuring seamless commerce and trade operations. Even though India has over 800 million internet users, internet penetration is just above 50 percent compared to over 90 percent in Japan. There is immense potential for growth. Rural populations can only be incorporated into the network by expanding the satellite-based network. While television, both DTH and OTT streaming, are the biggest users of growing connectivity, the government is focused on applications like tele-education, tele-medicine, and e-governance to make efficient and optimal use of resources.

In the mid-1970s, the Indian Space Research Organisation (ISRO) initially experimented with satellite communication for distance education. Using both foreign and domestic satellites, ISRO distributed hundreds of community TV sets to Gram Panchayats. However, the service remained underutilized until advancements in internet and



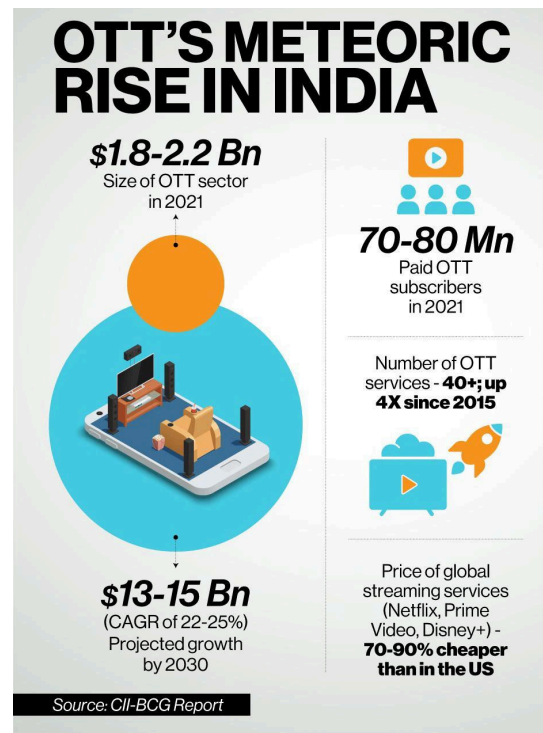
Credit: Dana Schmidt

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digitalization, which made it more cost-effective and technologically accessible.[iii]

COVID-19 boosted the use of remotely delivered services worldwide, including in India. The development of high-throughput satellites enabled service providers to keep pace with the growing demand for satellite backhaul services. Capital expenditure on terrestrial backhaul consists of creating microwave links and laying fiber, whereas satellite backhaul involves installing VSATs and antennas. The more rural the region, the less cost-effective terrestrial backhaul becomes.

Given the fast-growing demand, India needs a robust SATCOM policy that leverages new technological developments that have lowered the entry barriers for newcomers, harnesses the potential of emerging space start-ups, streamlines inter-agency processes to eliminate delays in decision-making, and fosters a conducive environment for growth.



Evolution of India's SATCOM Policy

India joined the satellite communication revolution in 1983 with the successful launch of the INSAT-1B with ISRO providing radio and TV connectivity to rural areas.[iv] However, the government retained a monopoly over broadcasting and satellite services since growth was slow. With the liberalization of the economy in the 1990s, private television channels appeared, and the telecommunication industry was opened to domestic and foreign entities. By 2000, ISRO had eight INSAT satellites in orbit, providing adequate transponder capacity to meet government and private demand. As global transponder demand rose faster than at home, ISRO felt it could be competitive in the global satellite communication market.

In 1997, India introduced its SATCOM Policy to develop a strong satellite communication service industry within the country.[v] The focus areas identified were:

- developing satellite communication, launch vehicle, and ground equipment industry,
- developing, and optimal utilization of the INSAT infrastructure for the economy,
- encouraging domestic and foreign private investment in the sector, and
- licensing (where necessary) the use of foreign satellites for services in India.

It took another three years before norms and guidelines were issued. These guidelines failed to generate a positive response as they did not create a level playing field with ISRO as both the principal domestic operator and licensing authority.

Although the guidelines permitted Indian private entities to procure foreign satellite capacity via the Department of Space (DoS), these licenses were granted only in exceptional cases, with preferential treatment given to those service providers who wished to use INSAT. Further, only

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Indian-registered companies were allowed to establish and operate an Indian Satellite System. The Foreign Direct Investment rules restricted foreign investments in such a company up to 74 percent.

While DoS authorized Indian entities to own and operate an Indian-registered satellite system, other branches of the government were also involved. The Department of Telecommunications (DoT) certified whether operations were following ITU regulations. The Ministry of Information and Broadcasting was the nodal agency approving satellite and terrestrial broadcasting and DoT for terrestrial telecommunication.

The DoS set up the INSAT Coordination Committee (ICC) to coordinate satellite capacity allocation. The ICC's responsibilities were allocating satellite capacity to the private sector, monitoring demand requirements, and adapting policies accordingly. A separate body, the Committee for Authorizing the Establishment and Operation of Indian Satellite Systems (CAISS), was responsible for licensing the launch and operation of private satellite systems.

The guidelines did not specify a timeline for licensing INSAT capacity or launching a private satellite system. This would often mean satellite service providers would have to wait several months or years before receiving a license. Further, the ICC would often deny licenses to private entities who wanted to use foreign satellite capacity instead of INSAT transponders, leading the private service provider to cease operations.[vi]

Meanwhile, India's demand for DTH and SATCOM skyrocketed, far exceeding the estimations of the 1990s. It was apparent that ISRO did not have the required satellite capacity to service the country's needs. For example, in 2012, it was reported that India was short by 300 transponders needed to meet demand, leading ISRO to buy foreign capacity.[vii] There was a growing demand to reform the SATCOM policy.

The DoT's National Digital Communication Policy 2018[viii] echoed the need for reform, especially the need to simplify compliance requirements, expand the scope of permissible services considering 5G and IOT needs, streamline decision-making to enable speedy rollout, and liberalize norms for foreign direct investment in the sector.



Source: Pexels

The partial reforms in 2022 led to some concerns being addressed, such as shortening the timeline to obtain a license to less than three months.[ix] However, the regulation of space-based communications had to await a complete overhaul that began with the release of the Indian Space Policy (ISP) in April 2023.[x]

Identifying loopholes

Two decades of experience implementing the SATCOM policy exposed several shortcomings arising from lack of transparency, uncertainty for the private entity, and the arbitrariness induced by making ISRO the operator, regulator, and licensing authority[xi].

The Antrix-Devas case can be treated as a case study. In 2005, Antrix Corporation (the commercial arm of ISRO) concluded an agreement with Devas Multimedia, a private entity under which ISRO was to lease S-Band transponders to Devas. The DoS unilaterally abrogated the deal in 2011, claiming that the promoters of Devas Multimedia (including former ISRO officials) had used privileged information to obtain a favorable deal.[xii] The matter ended up in international arbitration alongside judicial proceedings in Indian courts that are yet to be resolved. The government took the line that it had decided to annul the agreement in 2010 as the Cabinet Committee on Security concluded that there was “increased demand for allocation of spectrum for national needs, including for the needs of defense, para-military forces, railways, and other public utility services as well as for societal needs, and having regard to the needs of the country’s strategic requirements.”[xiii]

The Antrix-Devas case reflects the basic dilemma; Antrix, ISRO, and DoS are part of the same hierarchy, resulting in a non-level playing field for the private entity. The case also underscores the challenge of involving multiple government stakeholders who must agree before decisions are made and contracts with private entities are signed.

The ISP recognizes the dilemma and points to the need to create an independent regulatory body and a level playing field where all operators (government and non-government) are treated at par. It aims to promote and encourage “greater private sector participation in the entire value chain of the Space Economy” so that “Indian consumers of space technology or services (such as communication, remote sensing, data services, launch services, etc.), shall be free to directly procure them from any source, whether private or public.”

Way forward

ISP elaborates on the role of the Indian National Space Promotion and Authorisation Centre (IN-SPACe), established in October 2021, as a “single window, independent, nodal agency which functions as an autonomous agency in the DoS.”[xiv] It functions as the licensing authority, promoter, and standard setter, balances the interests of government and non-government entities, and has the authority to review and revoke earlier authorization.

In May 2024, a year after the ISP came out, IN-SPACe released Norms, Guidelines, and Procedures for Implementation of ISP 2023 (NGP)[xv], regarding the authorization of space activities. The space activities covered space-based communication, remote sensing operations and dissemination of earth observation data, ground systems, space transportation, use and allocation of Indian orbital resources, and use of non-Indian orbital resources.

It is premature to judge the effectiveness of the NGP and whether IN-SPACe can fulfill its assigned roles. A look at IN-SPACe’s organizational structure indicates that its autonomy is limited as it has three officials from ISRO and two from DoS as ex officio members on its Board.

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The Space Commission is the apex body that formulates the policies and oversees the implementation of the Indian space program. It is chaired by the chairman of ISRO, who is also the Secretary of DoS, making him/her the bureaucratic head in addition to heading the policy and implementing bodies. The chairman of IN-SPACe is a member of the Space Commission. Regulatory bodies like the Reserve Bank of India (1934) or the Telecom Regulatory Authority of India (1997) enjoy autonomy by virtue of having been established by an act of parliament. Eventually, for the ISP to achieve its goal of creating a fair competitive environment, it may be necessary to grant IN-SPACe the legislative authority it needs for full and effective implementation.

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