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FICCI

Unlocking India's Space Economy

Pathways to Growth, Innovation and Global Leadership

March 2025







Foreword

Jyoti Vij
Director General
FICCI

India's space journey exemplifies perseverance, innovation, and collaboration, evolving from a participant to a global leader in the global space economy. From our pioneering missions like Chandrayaan and Mangalyaan to the historic launch of 104 satellites in a single mission, we have demonstrated our growing capabilities on the global stage. With ISRO's 100th rocket launch in February 2025 and our space sector expanding rapidly, we stand at the cusp of a new era of space exploration and commercialization.

At FICCI, we recognize space exploration and space-based services as tools for national development, security, economic growth, and global cooperation. With this report, FICCI and EY aim to provide a comprehensive analysis of India's space economy, offering insights into its current landscape, key growth drivers, and emerging opportunities. By shedding light on investment trends, policy frameworks, and technological advancements, we seek to empower stakeholders, including industry leaders, startups, policymakers, and investors.

This report is a step towards building a roadmap for Indian space & geospatial industry contributing to strengthen India's position in the global space economy, foster innovation, and unlock new frontiers for sustainable growth. In next few months, FICCI would initiate dialogues with stakeholders and create forums to exchange views on the proposed roadmap towards fostering a robust ecosystem that accelerates India's space ambitions.

We look forward to your suggestions and support to make this exercise more inclusive going forward.


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Foreword

India's space sector is at an inflection point. Over the past few years, we have witnessed a paradigm shift in how space is perceived—not just as an arena for scientific exploration but as a powerful driver of economic growth, innovation, and strategic influence. As a nation, we stand on the cusp of an era where space is no longer the domain of a select few but a thriving industry with far-reaching implications for businesses, governance, and society at large.

At EY, we are privileged to partner with FICCI for the Bharat Space Conclave 2025, a timely initiative aimed at fostering discussions that will shape the trajectory of India's space economy. This report reflects our commitment to bringing structured insights, industry perspectives, and global benchmarks to inform India's space policy and commercial strategy.

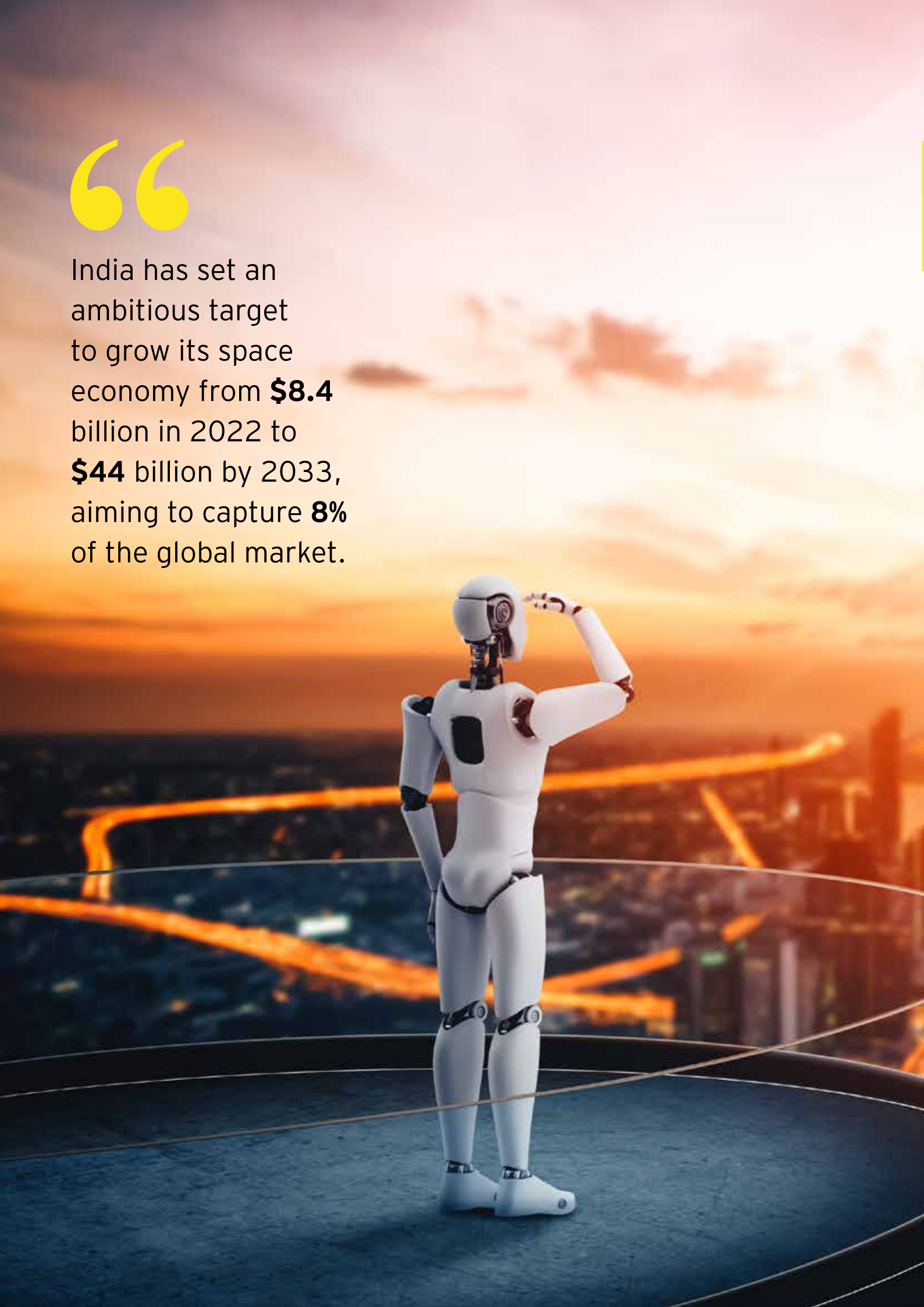
India aims to capture an 8% share of the global space economy, translating into a $44 billion industry by 2033. The momentum is strong, driven by progressive policy shifts such as the Indian Space Policy 2023, the growing role of IN-SPACe, and an increasing influx of private sector players. These developments are opening new frontiers, from satellite communications and Earth observation to deep-space exploration, AI-powered analytics, and commercial space missions. More importantly, they are creating downstream opportunities across sectors like agriculture, logistics, defence, urban planning, and disaster management—sectors where space-based technologies can deliver transformative impact.

But ambition must be matched with action. As we look ahead, addressing regulatory clarity, infrastructure investment, talent development, and access to risk capital will be critical in enabling India to not just participate but lead in the global space economy. A whole-of-nation approach, with academia, startups, industry, and government working in tandem, will define how effectively we capitalize on this opportunity.

India's space journey is no longer a distant dream—it is an unfolding reality. The time is now to shape policies, make strategic bets, and position India as a global leader in space technology and commerce. As a firm that has been deeply engaged in India's economic growth story, EY remains committed to partnering with stakeholders to navigate this exciting trajectory.

We look forward to the discussions at the Bharat Space Conclave 2025 and to working together to accelerate India's ascent in the space economy.

Pankaj Khurana
Partner, Consulting
EY



India has set an ambitious target to grow its space economy from **$8.4** billion in 2022 to **$44** billion by 2033, aiming to capture **8%** of the global market.

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Executive Summary

01

Executive Summary

The global space economy is projected to exceed $1.8 trillion by 2035, with commercial satellite services, deep-space exploration, and space-based infrastructure driving expansion.

This report provides a strategic assessment of India's space economy, highlighting its growth trajectory, emerging opportunities, and key enablers required to position India as a global space leader. The global space economy is projected to exceed $1.8 trillion by 2035, with commercial satellite services, deep-space exploration, and space-based infrastructure driving expansion. India has set an ambitious target to grow its space economy from $8.4 billion in 2022 to $44 billion by 2033, aiming to capture 8% of the global market. This growth is being fuelled by policy reforms, private sector participation, and increased international collaboration, supported by the Indian Space Policy 2023 and institutions such as IN-SPACe and NSIL.

A significant shift is underway, with India's space sector evolving from a government-led model to a commercially driven, innovation-led ecosystem. Satellite communication (SATCOM), projected to reach $14.8 billion by 2033, will play a critical role in expanding digital connectivity, particularly in rural and underserved regions. By leveraging LEO and MEO satellite constellations, India can accelerate broadband penetration, enhance financial inclusion, and strengthen digital infrastructure, supporting flagship initiatives such as Digital India and BharatNet.

The increasing use of Earth Observation (EO) and remote sensing, estimated to contribute $8 billion by 2033, is already transforming agriculture, disaster management, and climate resilience. With agriculture employing 45% of India's workforce, satellite-driven analytics can improve yield forecasts, optimize water usage, and provide real-time insights for precision farming. These capabilities will be instrumental in mitigating climate risks, enhancing food security, and supporting sustainable agricultural practices.

India's navigation sector, projected to reach $9.3 billion by 2033, will have a direct impact on the country's $200+ billion logistics industry. The expansion of NavIC and AI-powered fleet management systems will improve supply chain visibility, optimize freight movement, and enhance security for critical infrastructure. Additionally, investments in Space Situational Awareness (SSA) and debris management will be crucial to safeguarding India's 55+ operational satellites, ensuring uninterrupted access to navigation, communication, and defence capabilities.

With increasing emphasis on self-reliance in strategic technologies, these developments will be key to securing long-term economic and geopolitical advantages in the global space economy.

However, to fully realize this potential, it is important to address regulatory simplification, infrastructure investment, and sustained public-private partnerships (PPP) which will be essential to attract private capital and drive innovation. Establishing dedicated financial mechanisms—such as sovereign space funds, venture capital incentives, and R&D grants—will provide the necessary momentum for startups and industry players to scale operations.

As India positions itself as a leading space economy, this report outlines strategic priorities and actionable recommendations that will enable government agencies, industry stakeholders, and investors to collectively shape the country's space future.




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Introduction



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Introduction

The global space economy is expected to grow to $1.8 trillion by 2035, up from $630 billion in 2023, growing at an average of 9% per annum.

2.1 Global Space economy

The space economy has undergone significant transformations since its inception, evolving through various phases driven by technological advancements, policy changes, and increased private sector involvement. From being niche to ubiquitous, space has created value for multiple industries and provided solutions to varied and critical challenges, presented across the globe.

Historically, space exploration was mainly managed by national space agencies, focusing on scientific research and national security. However, in recent years, the landscape has shifted towards commercialization. Private companies now play crucial roles in satellite communications, space tourism, and resource exploration. Innovations like reusable launch vehicles and miniaturized satellites have significantly reduced costs, making space more accessible to a wider range of stakeholders. The space industry is advancing rapidly, with significant developments happening weekly around the globe, whether it's testing new rocket systems, launching cutting-edge satellites, or landing robotic missions on the moon.

With such advancements, the global space economy is expected to grow to $1.8 trillion[1] by 2035, up from $630 billion in 2023, growing at an average of 9% per annum. This projection includes revenue arising due to development in space hardware such as satellites, launchers, and services like broadcast television and GPS, as well as revenue due to industry specific applications, where space technology plays a significant role. Share of space economy shall primarily be due to impact on non-space industries, due to usage of satellite-based technologies and space derived data.

[1] World Economic Forum report – Space: The $1.8 Trillion Opportunity for Global Economic Growth



In coming times, five sectors—supply chain and transportation, food and beverage, defence, retail, consumer goods and lifestyle, and digital communications—are expected to contribute over 60% of the growth in the space economy by 2035.

Besides driving growth in global revenues, space has a vital role to play in addressing global challenges from disaster management and climate monitoring to enhancing humanitarian response. This would require strong collaboration between public and private sectors.

2.2 Growth drivers

Space based application and space enabled applications are already at a critical point, where industry is meant for significant transformation over the next decade. Every Government has planned investments to advance its space initiatives. Simultaneously, private sector investments are fuelling innovation and enhancing access to technologies

The key factors driving space's growing influence in everyday life are:

Cost reduction

Innovations such as reusable rocket technology has dramatically reduced launch costs, making space more accessible to a broader range of stakeholders.

Diversification of Applications and Services

The scope of space-based applications has expanded significantly, moving beyond traditional areas such as satellite communications and navigation. This diversification not only broadens the market for space-related services but also integrates space technology into the fabric of various terrestrial industries, enhancing their efficiency and capabilities.

Government Policies

National space agencies continue to fund research, development, and exploration missions, often in collaboration with private entities. Policies that promote public-private partnerships, simplify regulatory frameworks, and offer financial incentives have been crucial in creating a supportive environment for industry growth.

International collaboration

Multinational missions, shared research initiatives, and harmonized standards facilitate the pooling of resources and expertise, reducing redundancy and promoting innovation.

Strategic Competition and National Security

The strategic importance of space has led to increased investments by nations aiming to secure their interests and assert their presence in this critical domain.

2.3 Space related developments

A growing number of countries are investing in space capabilities, in-orbit technologies, and research to address current challenges.

India

India's space economy has experienced a surge in activity, highlighted by its ambitious and successful space missions. The Indian Space Research Organisation (ISRO) has made significant advancements in planetary exploration, solar research, and interplanetary missions, positioning India as a key player in the global space economy. Key missions are as follows:

- **Chandrayaan Missions** - India's flagship lunar exploration program has seen multiple successes:

2008

Chandrayaan-1

Impact: India's first lunar mission, which confirmed the presence of water molecules on the Moon's surface using the Moon Impact Probe (MIP).

2019

Chandrayaan-2

Impact: India successfully placed an orbiter around the Moon, providing valuable data on lunar topography, mineralogy, and exosphere, despite a hard landing by the Vikram lander.

2023

Chandrayaan-3

Impact: The Chandrayaan-3 mission was a historic achievement for India, making it the fourth country to successfully land on the moon, after the United States, the former Soviet Union, and China. The mission was also notable for its relatively low cost, with a budget of approximately $73 million.



- **Mangalyaan (Mars Orbiter Mission - MOM)**

  India's Mangalyaan spacecraft successfully reached Mars' orbit on its first attempt, making India the first country to do so and the first Asian nation to reach Mars, collecting valuable data on the Martian atmosphere and surface features at a remarkably low cost of $74 million.

- **Aditya-L1 Mission**

  India's Aditya-L1 mission, launched on September 2, 2023, is the country's first solar observation mission, aiming to study the Sun's outer layers and monitor space weather dynamics, enhancing India's space weather prediction capabilities.

While India has made significant strides, other countries are also investing in policy reforms, infrastructure, and international partnerships to strengthen their space ecosystems. The following section examines key developments in Japan, Saudi Arabia, Thailand, and Peru, showcasing their efforts to expand their footprint in the global space sector.

Japan



- Japan boasts one of the world's most advanced space industries and is making substantial investments in space exploration, highlighted by its Hayabusa asteroid sample missions and the ISS Kibo module for microgravity experiments
- Japan's ecosystem is among the world's most collaborative, leading the way in building public, private, and international partnerships

Saudi Arabia



- In recent years, the country has significantly invested in space technology and exploration, highlighted in 2023 when the first Saudi astronauts visited the International Space Station.
- As part of the Saudi Vision 2030 initiative, the country plans to build a robust space industry and enhance its capabilities through a $2 billion investment over the next decade

Thailand



- In 2022, Thailand initiated a five-year plan to advance satellite design and development research within the country, beginning with its TSC-Pathfinder satellite for Earth observation
- Thailand aims to create a multi-billion-dollar domestic space market and is building a local launch site to meet the growing launch demand in Asia

Peru



- Since 2019, Peru has launched the "Internet para Todos" program, leveraging collaborations between space and non-space operators to improve internet connectivity in rural regions.
- The Peruvian Ministry of Education has launched a rural school connectivity program, leveraging satellite technology to bring investments in internet access and digital educational resources to remote communities




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Tool Box

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India's Space Economy



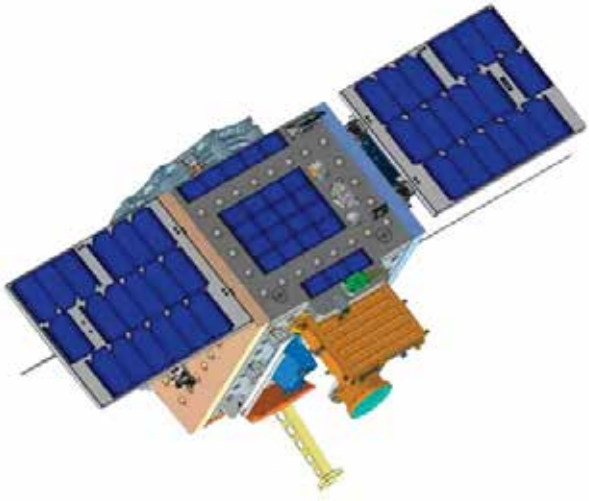
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India's Space Economy

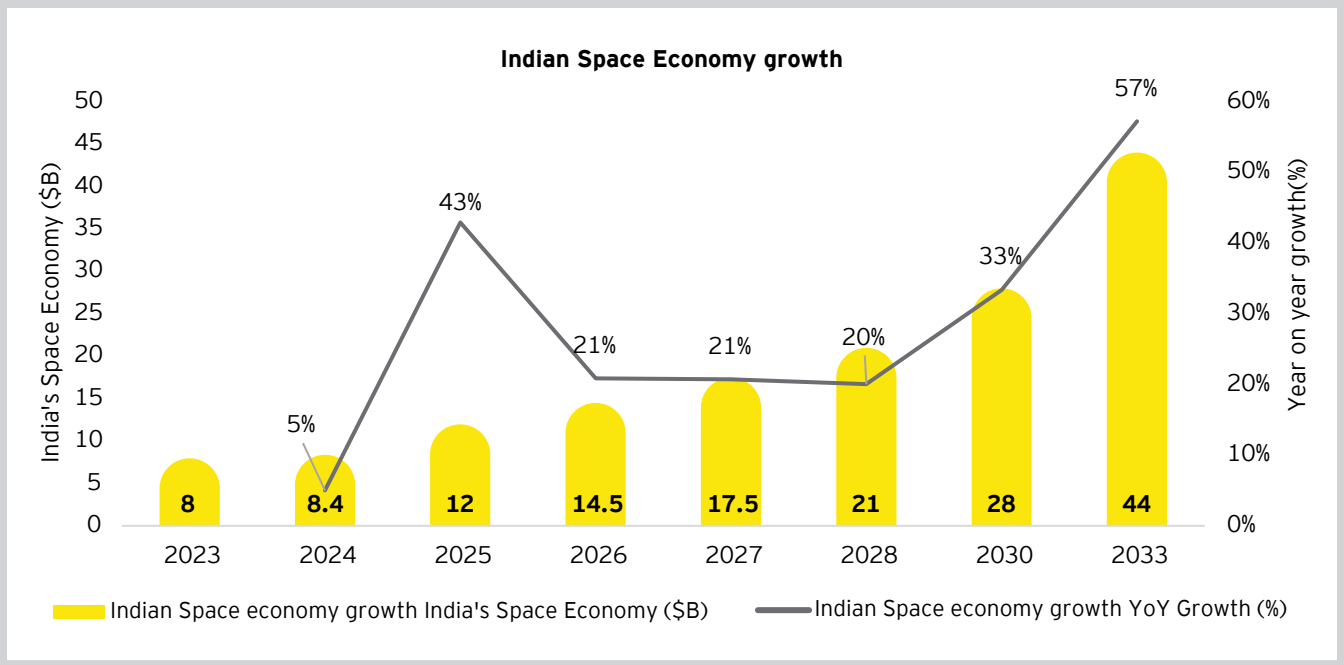
ISRO that focuses on Earth observation, geospatial analytics, and satellite data applications for agriculture, urban planning, disaster management, and climate monitoring.

3.1 Overview and Market Size

India's space economy is poised for transformative growth, fuelled by cutting-edge technological advancements. It has become a key player in the global space economy, utilizing its cost-effective launch capabilities and strong space research program. As of 2023, India's space economy is valued at around $8.4 billion[2], making up about 2% of the global space market. The government aims to boost this to $44 billion[2] by 2033, capturing 7-8% of the global market share. This growth is expected to be fuelled by greater private sector involvement, including a promising pipeline of approximately 250 startups working in various segments of India's space economy. Below graph gives a picture of growth projection of Indian Space Economy:



[2] Press Release: Press Information Bureau



Though India is among one of the fastest growing space economies, it still needs to cover a considerable distance in terms of the market share with some of the largest economies.

India's Position in the Global Market

Country	Space Economy Size (2024, in USD billion)	Global Share
USA	$250B	~40%
China	$80B	~13%
Europe	$70B	~12%
India	**$8.4B**	**~2%**

In order to bolster its position in the global space economy, India is currently focusing on several strategic areas – Private sector engagement, International collaborations, Technology investments and Policy reforms.

3.2 Key Stakeholders

The Indian space economy is a multifaceted ecosystem comprising various stakeholders that contribute to its growth and sustainability.

Government Entities

Government agencies have historically been the pioneers of space exploration and continue to play a pivotal role in the space economy. Their responsibilities include policy formulation, funding, research and development, and international collaboration. Key government entities include:

- **Department of Space**: India's overarching government body responsible for overall governance of the Indian space sector including formulation and implementation of the associated policies.
- **Indian Space Research Organisation (ISRO)**: As India's national space agency, ISRO is responsible for carrying out space missions, launching satellites, and conducting space research. It has accomplished significant milestones, including the Mars Orbiter Mission and the Chandrayaan missions to the Moon.

- **Indian National Space Promotion and Authorization Centre (IN-SPACe)**: Established to encourage and regulate private sector involvement in India's space activities, IN-SPACe serves as a bridge between ISRO and private companies, ensuring adherence to national policies and standards.

- **NewSpace India Limited (NSIL)**: As the commercial arm of ISRO, NSIL focuses on promoting and commercially commercialisation products, services, and technologies developed by ISRO. It aims to enhance industry participation in space programs[3].

Private Sector and Emerging Startups

The Indian space sector has witnessed a significant transformation with the increasing involvement of private sector stakeholders and the entire startup ecosystem. The involvement of these stakeholders is critical for growth and fostering innovation. Some of the key players in this ecosystem are:

- **Larsen & Toubro**: Major engineering and construction company involved in components for ISRO's launch vehicles and satellites.

- **Tata Group**: Nelco, a part of the Tata Group, provides satellite communication services and has been a key player in the Indian space industry.

- **OneWeb**: Backed by Bharti Enterprises, OneWeb is working on deploying a constellation of low Earth orbit (LEO) satellites to provide global internet coverage.

Many private sector entities are actively collaborating with ISRO to advance India's space endeavors. In addition to the above, several emerging startups are shaping the Indian space ecosystem, including Dhruva Space (satellite manufacturing and launch services), Bellatrix Aerospace (propulsion systems for satellites), Skyroot Aerospace (development of launch vehicles), Manastu Space (green propulsion systems for satellites), Pixxel (building a constellation of earth imaging satellites), Agnikul Cosmos (3D-printed rocket engines and small satellite launch vehicles), and MapmyIndia (geospatial solutions and navigation technologies).

Other knowledge sharing bodies

- **National Remote Sensing Centre (NSRC)**: A premier organization under ISRO that focuses on Earth observation, geospatial analytics, and satellite data applications for agriculture, urban planning, disaster management, and climate monitoring.

- **Defence Space agency**: Established to integrate space-based capabilities into national security strategies, DSA oversees military satellite programs, space situational awareness, and strategic collaborations for defence applications.

Academia

The industry and academia collaboration plays a crucial role in driving India's ambitious space agenda. Some of the key academic stakeholders include prominent institutions like the Indian Institute of Science (IISc), Indian Institutes of Technology (IITs), other central and private universities and national laboratories which collaborate with ISRO through incubation centres to offer research and development in the space sector and hence, fostering a strong academia-industry interface.

3.3 Government Policies and Initiatives



The Government of India's space sector reforms, including the establishment of IN-SPACe, paved the way for private sector involvement. This momentum was further strengthened by measures such as the revised Foreign Direct Investment (FDI) policy for the space sector, the Norms, Guidelines, and Procedures (NGP) document for space activity authorization in India, and various supportive initiatives like ISRO's Technology Transfer and a Dedicated Earth Observation constellation to be developed through the private sector.

These progressive initiatives have fostered a favourable environment for India's private space sector to capitalize on its expanding capabilities in satellite deployment, space exploration, and space-enabled services, positioning the country as a potential global leader in the space industry.

[3] IN-SPACe TAF Info - IN-SPACe

Following are the key initiatives, undertaken by Indian Government.

Indian Space Policy 2023

The Indian Space Policy 2023 is the cornerstone of India's recent advancements in space technology. This policy aims to enhance space capabilities, promote a thriving commercial presence in space, and use space as a catalyst for technological development. Key objectives include:

- **Enhancing Space Capabilities**: Improving India's ability to design, develop, and deploy space assets to meet national needs.
- **Encouraging Commercial Participation**: Creating a conducive environment for private entities to engage in space activities, fostering innovation and economic growth.
- **International Collaboration**: Engaging with international partners to share knowledge, resources, and opportunities in space exploration and technology.

The policy aims to create a robust ecosystem that integrates government agencies, private sector players, and academia to drive the nation's space agenda forward.

Establishment of IN-SPACe

To facilitate and regulate private sector participation, the government established the Indian National Space Promotion and Authorization Centre (IN-SPACe) to meet the following objectives

- **Authorize Space Activities**: Grant permissions and ensure compliance with national policies for private space endeavours.
- **Promote Industry Collaboration**: Act as a bridge between ISRO and private companies, encouraging joint missions and technology transfers.
- **Provide Technical Support**: Offer guidance and infrastructure support to emerging space startups.
- **Promote the private sector** participation in the space sector
- **Establish a strong intellectual property (IP)** framework and tapping into and aligning the demand landscape of government departments.

Additionally, IN-SPACe's Decadal Vision and Strategy serves as the foundation for the country's ambitious foray in the global landscape of space innovation. The strategy outlines a blueprint for the next ten years to steer India's space economy and drive global competitiveness.

IN-SPACe has also introduced the Technology Adoption Fund (TAF) with a total funding of $57 million[4] to support early-stage space startups. The fund aims to:

- **Commercialize Innovations**: Assist startups in bringing their technologies to market.
- **Reduce Import Dependency**: Encourage the development of indigenous technologies to replace foreign imports.
- **Financial Support**: Cover up to 60% of project costs for startups and small businesses, with a cap of $250 million per project.

Foreign Direct Investment (FDI) Reforms

Recognizing the importance of global capital and expertise, the government revised its FDI policies for the space sector:

- **Automatic Route**: Allows up to 100% FDI in satellite establishment and operations through the automatic route, simplifying investment procedures.
- **Case-by-Case Basis**: Higher percentages of foreign ownership are considered based on the project's strategic importance.

[4] IN-SPACe TAF Info - IN-SPACe

These reforms aim to attract global players, enhance technological capabilities, and reduce dependency on imports.

SpaceTech Innovation Network (SpIN)

The SpaceTech Innovation Network (SpIN), launched by ISRO and Social Alpha, is India's first dedicated platform for innovation, curation, and venture development in the space entrepreneurial ecosystem. SpIN aims to facilitate collaboration among stakeholders and support space tech entrepreneurs in geospatial technologies, enabling technologies for space and mobility, and aerospace materials, sensors, and avionics.

Other Policy Reforms or Initiatives

Furthermore, the Indian government has introduced several other key reforms to bolster the space sector.

- Unwavering support and encouragement through initiatives like the recently approved $120 million venture capital fund exclusively for the space sector.
- The passing of the National Research Foundation Bill and the release of the Draft National Deep Tech Startup Policy (NDTSP) highlight the government's commitment to fostering innovation and research in the deep tech sector, including space.
- The Indian Telecommunication Act 2023 introduces provisions for the administrative assignment of satellite spectrum, streamlining the process for private players.
- Additionally, the exemption of GST on satellite launch services by both private and public entities aims to enhance the industry's competitiveness, making India a more attractive destination for space-related activities.

3.4 Strategic Role of Geopolitics in India's Space Sector

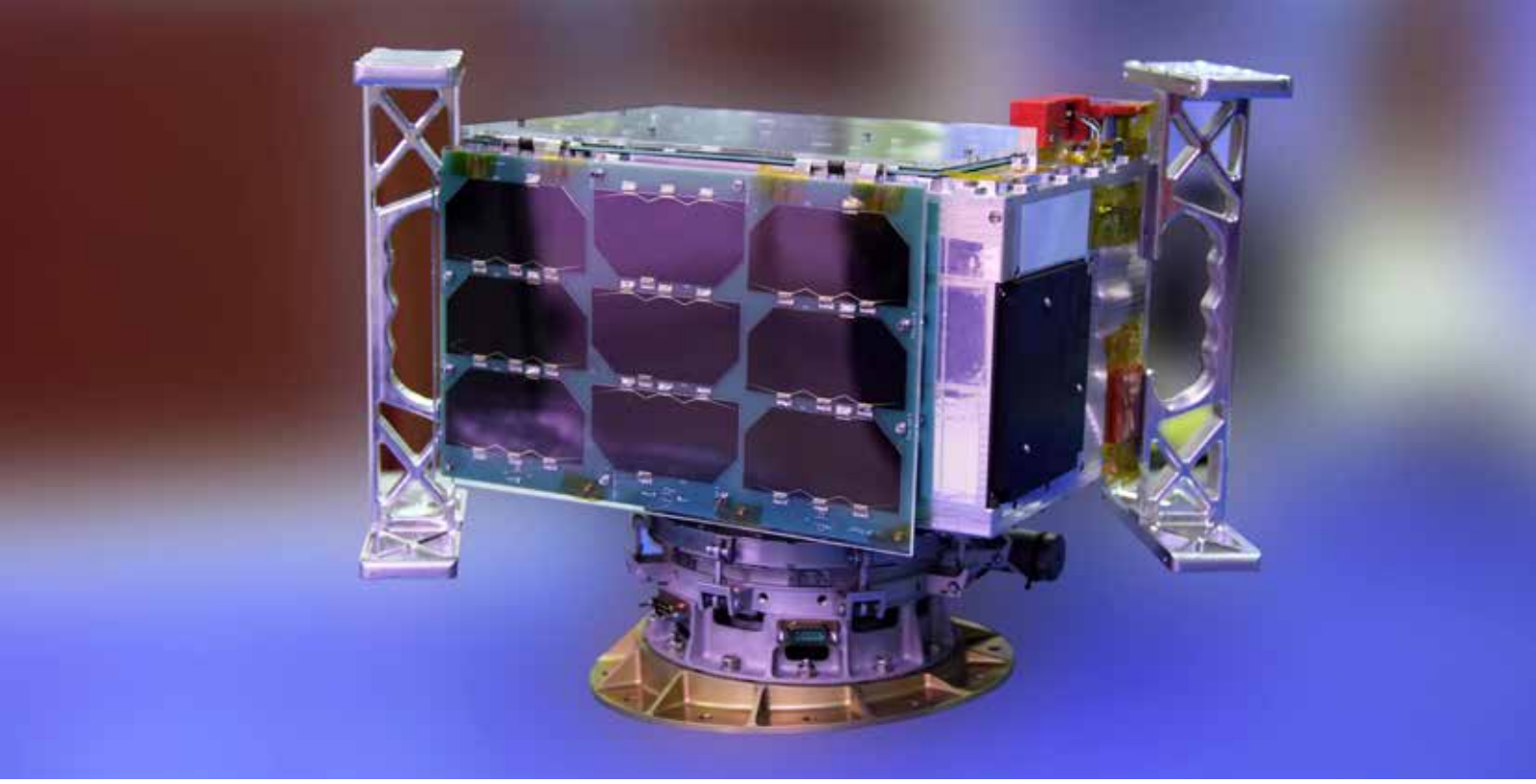


India's space ambitions are increasingly shaped by the intersection of technology, geopolitics, and strategic diplomacy. As global competition intensifies, India has leveraged space diplomacy to secure critical partnerships, unlocking access to advanced technologies, investments, and domain expertise.

Strategic alliances with key nations have strengthened India's position in global space governance while boosting innovation through collaborative research and development. Below are some key collaborations:

Country	Collaboration program
US-India Collaboration	**INDUS-X** Launched in June 2023, INDUS-X bridges India-U.S. defence innovation, fostering partnerships across industry, investors, and academia, including in space technology.[5] **NISAR Mission** NASA and ISRO have collaborated on the NASA-ISRO Synthetic Aperture Radar (NISAR) mission, aiming to enhance global climate and disaster monitoring through advanced radar imaging.
France-India Space and Defence Cooperation	**Joint Satellite Missions** The Indian Space Research Organisation (ISRO) and the French Space Agency (CNES) have jointly developed satellites such as Megha-Tropiques and SARAL for climate monitoring and oceanographic studies.[6] **Space Security Dialogue** In May 2024, India and France agreed to establish a bilateral strategic dialogue on space issues to address contemporary challenges, including maintaining secure access to outer space. **Military Space Cooperation** The Indian Defence Space Agency and France have been negotiating partnerships on space surveillance, reflecting deepening military space cooperation between the two nations.

[5] defense.gov
[6] eoiparis.gov.in



Country	Collaboration program
Emerging collaborations	
Middle Eastern Partnerships	Countries like the UAE and Saudi Arabia have shown interest in collaborating with India on joint satellite manufacturing and data-sharing agreements, enhancing regional space cooperation.
ASEAN Engagements	India is expanding its engagement with Southeast Asian nations, offering satellite services for disaster management and rural connectivity, thereby strengthening its regional influence.

Geopolitical Implications for India's Space Ecosystem

- Strategic collaborations enable Indian companies to integrate into global supply chains, opening export markets and boosting innovation in satellite manufacturing, launch services, and geospatial applications.
- As geopolitical shifts reshape global trade and technology flows, India can position itself as a preferred destination for space investments, benefiting from diversifying supply chains and funding initiatives.
- India's participation in global space security discussions enhances its role in shaping international space policies, ensuring responsible space operations, and preventing the weaponization of space.
- Through partnerships with leading spacefaring nations, India gains access to critical technologies that accelerate indigenization and self-reliance in satellite and propulsion systems.

India's space ambitions must be underpinned by a sophisticated geopolitical strategy that balances influence, security, and commercial leadership. Proactive multilateral engagement will enable India to shape global space governance, while deeper public-private partnerships can unlock advanced technologies through global collaboration. Strengthening space security frameworks, including a robust SSA program, will be vital to safeguarding national assets. Simultaneously, leveraging diplomatic channels to expand space exports will accelerate India's position as a key player in the global space economy.





04

Potential and Opportunities

04

Potential and Opportunities

Space enabled IoT and Positioning and Navigation technologies for smart cities

4.1 Space value chain



India's space economy is undergoing a remarkable growth, primarily driven by government initiatives, technology advancements and participation from private sector. To harness this growth, a well-structured space value chain is required to be formalized that shall encompass a series of activities, contributing to the development, deployment and utilization of space-based assets and services.

Space value chain is broadly segmented into:

Upstream – This segment includes all activities related to design, development and manufacturing of space infrastructure



Midstream – This segment involves operation and management of space infrastructure. It bridges the gap between the deployment of space assets (upstream) and delivery of space-based services (downstream).



Downstream – This segment focuses on transforming data and signals received from space-based assets into valuable products, services and applications for end users / potential sectors.



Upstream	
Components	**Opportunities**
Satellite manufacturing Design, assembly, integration and testing of: » Satellite systems (Communication satellites, Earth Observation satellites, Navigation satellites and scientific research satellites) » Subsystems (payloads, propulsion and communication modules) **Launch vehicle development** » Building of rockets (capable of carrying payloads into space) and guidance systems » Identification of launch sites » Preparation of launch services for actual launch of satellites into designated orbits **Component manufacturing** » Production of sensors, thrusters, solar panels, transponders and advanced materials used in the construction of spacecraft **Ground infrastructure development** » Establishment of ground control stations for monitoring and communicating with satellites » Development of systems for collecting telemetry data » Building facilities for receiving and processing data from satellites **Enabling services** » **Supply chain development** – A robust supply chain is crucial for satellite manufacturing and setting up of ground stations » **Ancillary services (Insurance, Finance, legal, Regulatory)**	» **Smallsats and CubeSats** – Shift towards miniaturized satellites » **Modularity in satellite design** for standardized interfaces and plug-and-play modules (ISRO's PSLV-C55 mission) » **Programs like IN-**SPACe and NewSpace India Limited (NSIL) facilitate technology transfer and enable private companies to build satellites. » **Satellite-as-a-Service –** Leasing satellite services (Companies such as OneWeb and SatSure provide data and communication services) » **Modernization in structure composition for Small Satellite Launch Vehicles (SSLVs)** – Utilizing 3D printing to construct the structure or body of SLV and other systems, such as engines, pumps etc. » Expansion in manufacturing of critical satellite components, supported by schemes like PLI (Production-Linked Incentive) etc. » Opportunity to develop Reusable Launch Vehicles, » Ground Station as a Service (GSaaS) which provides flexibility, cost-effectiveness with satellites. » Usage of software-defined architecture present in satellite radios » Development of green propulsion technologies

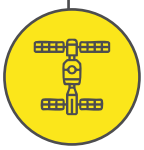


Midstream	
Components	**Opportunities**
Space surveillance and tracking »» Monitoring satellite health and movements »» Telemetry, Tracking, and Command (TT&C) »» Orbital management, which includes maintaining satellite positions, avoiding collisions **Space manufacturing** »» Leveraging microgravity, vacuum conditions, and unique environments to create high-value product »» Production and assembly of goods and structures in outer space **Deep space exploration** »» Study and investigation of celestial objects and phenomena beyond Earth's orbit »» Developing technologies for long-duration human missions to destinations such as Mars and beyond **Space Debris management** »» Monitoring and removal of defunct satellites, spent rocket stages, and fragments from collisions or disintegrations orbiting the Earth **Space tourism** »» Commercial human space travel for recreational, leisure, or adventure purposes »» Suborbital Tourism - short flights that reach the edge of space »» Orbital Tourism - Travelers reach a stable orbit around the Earth, typically at Low Earth Orbit (LEO) »» Lunar and Deep Space Tourism (Future Prospects) - Plans to send tourists around the Moon and potentially to Mars in the future	**Space surveillance** »» Predictive models and solutions for manoeuvre planning »» Dashboards and applications for visualizing space object trajectories »» Leveraging automation for satellite operation tasks, »» Edge Computing for on-orbit data processin **Satellite communication** Quantum technologies for secure satellite communication and data encryption **Debris management** »» Development of ground-based radars, telescopes and optical sensors for tracking debris »» Collaboration with international agencies for global debris catalogues »» Robotic arms and tug satellites for removal of defunct satellites and debris **Space manufacturing** »» Production of high value products for aerospace, electronics and medical applications »» 3D printing and additive manufacturing »» Artificial organs and tissues using biocompatible materials »» High quality ZBLAN fibre production »» Build large structures, satellites and services stations in LEO and beyond **Deep space exploration** »» Research on planetary geology »» Space mining »» Space infrastructure development – Habitats & Space stations »» Development of advanced propulsion systems, electric and ion thrusters **Space tourism** »» Building spaceplanes / high altitude balloons for tourism purposes »» Collaboration with global space tourism companies for service localization in India »» Develop training programs (pre-flight simulations, safety drills and physical conditions) for space tourists »» Create VR experiences as an affordable alternative to actual space travel »» Build space experience centres showcasing space technology and missions, weightlessness experiences

Midstream	
Components	**Opportunities**
Data processing and analysis » Transformation of raw data from satellites into usable formats » Geospatial analysis by processing Earth observation data » Forecasting trends **Service provisioning** » Satellite-based internet, television broadcasting, and mobile connectivity, especially in remote and underserved areas » Navigation and positioning (GPS) services through Global Navigation Satellite Systems (GNSS) **Commercialization** » Monetization of space derived data	» GNSS-enabled applications bolstering precision agriculture field. » India's **National Geospatial Mission** plays a vital role in the downstream space sector » Customized solutions for defence and commercial fleets » Integration of NavIC with smartphone technology and navigation devices » Creation of location-based services » Data analytics, AI/ML integration and geospatial services » Space as a Service » Enable startups and SMEs to leverage space data

4.2 Space for potential sectors - Downstream segment[7]

Space technologies (Space for Earth) provide transformative opportunities across various sectors by seamlessly integrating satellite technologies, remote sensing, navigation and Earth Observation data with machine learning and AI. The table highlights the impact on wide range of "non-space" industries.



Industry	Global Impact	Themes	User applications
Supply chain and transportation 	» **Growth at 14%** during 2023 - 35 » **$410 billion** in revenue by 2035	» **Mobility services** – Leveraging Positioning & Navigation Technologies » **Global supply chain information flow** – Integrate IoT and EO data to revolutionise information flow for route optimization » **Countering risks and mitigations** – Usage of weather services to mitigate risks, ensuring safety of goods and personnel	» Navigation and fleet management » Ride hailing and vehicle sharing applications. » Autonomous driving for supply chains » Weather services for logistics and maritime transport » Monitoring of shipping routes » Air traffic management / aviation safety
Food and Beverage including Agriculture 	» **Growth at 11%** during 2023 - 35 » **$330 billion** in revenue by 2035	» **Time sensitivity delivery** of perishable goods » **Advancements in nutrient development** through zero gravity environment » **Geospatial data** for tracking factors affecting crops, soil etc.	» Precision farming – Use satellite data for crop health monitoring, soil analysis and yield prediction. » Irrigation planning through insights on groundwater levels. » Predict agriculture risks – droughts, floods, infestations etc.

[7] Space: World Economic Forum report - The $1.8 Trillion opportunity for global economic growth

Industry	Global Impact	Themes	User applications
Defence 	**Growth at 9%** during 2023 – 35 **$250 billion** in revenue by 2035	Near real time global **intelligence, surveillance and reconnaissance,** ensuring rapid deployment and operational efficiency. **C3 platforms –** Command, Control and Communication Internet of **Battlefield Things** Growth in **space sensing**	Geo-fencing enabled border management. AI driven analytics for adversarial movement of troops, naval ship construction, geopolitical insights. Quantum based Secure communication channels IoT applications for battlefield support and management Navigation modules for sea, air, ground military equipment Satellite enabled communication for sea, air, ground military equipment
Civil (Disaster management, space sector, urban management, tourism, climate change) 	**Growth at 7%** during 2023 – 35 **$146 billion** in revenue by 2035	**Exploration and research**, fostering advancement in space science. **Observation systems** for weather forecasting, urban planning and disaster response **Space based IoT, Positioning and Navigation technologie**s for sustainable urban and natural resource management	Prediction in climate changes, analyse atmospheric conditions. Pollution monitoring STEM applications IoT app for animal migration, wildlife movements EO analytics application for natural disaster prediction Space enabled IoT and Positioning and Navigation technologies for smart cities
Digital communication 	**Growth at 12%** during 2023 – 35 **$70 billion** in revenue by 2035	**Embracing LEO satellite connectivity,** for underserved areas **Cross sector collaborations**	Enhancing content delivery network using satellite communication Resilient communication infrastructure during disasters

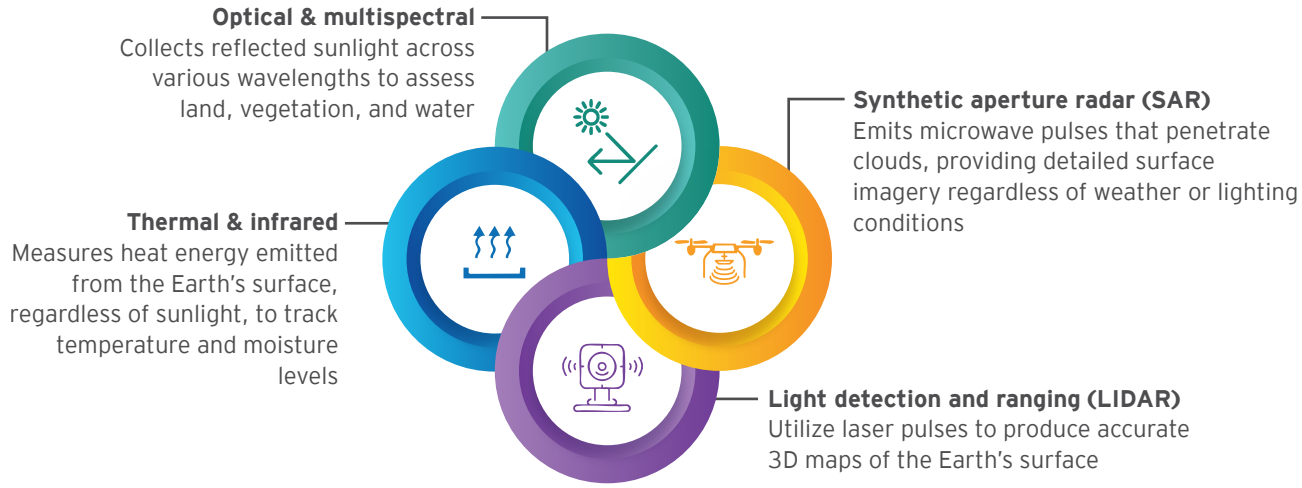
4.3 Space for Geospatial sector – Earth Observation

Overview on Earth Observation

Earth observation (EO) is delivering increasingly precise and comprehensive measurements of the built environment and natural phenomena, covering physical, biological, chemical and anthropogenic systems. Despite the vast and growing potential of this data across thousands of applications, a significant portion of its value remains unrealized, mainly due to low adoption rates, being addressed by growing number of stakeholders in EO ecosystem. Various commercial EO providers are delivering unique, customized data that aligns with the specific needs of individual organizations, while traditional open-source government EO providers are improving the accessibility of their large datasets.

EO data is being gathered through a growing array of sensors, leveraging both remote-sensing technologies (i.e. collecting data through airborne and spaceborne platforms like satellites, manned aircraft, high-altitude platform stations, and drones) and "in-situ" data sources through GPS enabled IoT sensors. These data sources fuel the EO value chain, wherein the "supply side" consists of providers focused on data acquisition, processing, and analytics, with the goal of offering valuable EO insights to end users and the "demand side" includes sectors such as agriculture, disaster management, supply chain, and energy.

Various business models have emerged on the supply side. Some EO providers own and operate their own satellites, selling the data they produce. Others develop proprietary platforms or tools that generate insights using publicly available data or data purchased from other EO providers. Some providers offer fully integrated solutions, delivering everything from data collection to analytical tools and insights. These varied data sources generate different types of data, each tailored to capture specific measurements and support unique applications. Some of the common data type includes



The key to crafting a strong value proposition, using EO data, is to first understand how EO can address the specific challenges that are vital to an organization's success. Following table lists key applications, where EO can play a remarkable role.

Application	Description	Problem being addressed
Early warning & Disaster management	Detect environmental threats – wildfires, floods etc. for better planning, response and recovery	Delay in response to natural disasters, resulting in higher damage
Supply chain monitoring & route optimization	Monitor changes to transport routes by detecting environmental disruptions. Proposing alternative routes	Unanticipated delays due to weather conditions and limited visibility into supply chain
Precision agriculture	Predict agriculture performance and crop yield	Inefficiencies in resource use (fertilizers, water etc.)
Site selection	Identify new sites for large infrastructure	More reliance on predictions than direct measurements for inaccessible sites like mining fields

By understanding the use categories and the typical challenges within them that EO can address, organizations, supported by supply side innovation, can more effectively prioritize potential applications.

India Space Application Centers & Significance for Earth Observation

When it comes to supply-side innovation, India's space application centers are making significant advancements in Earth observation.

India's space application centers, under the Indian Space Research Organisation (ISRO), play a critical role in utilizing space technology for Earth observation. These centers focus on developing satellite payloads, processing satellite data, and creating applications that support environmental monitoring, resource management, and disaster response.

Space Application Center	Focus	Earth Observation Role
Space Applications Centre (SAC), Ahmedabad	Designs and develops payloads for communication, remote sensing, and meteorological satellites	▸▸ Develops sensors and instruments for remote sensing satellites like Cartosat, RISAT, and Oceansat. ▸▸ Supports applications in agriculture, forestry, urban planning, and water resource management
National Remote Sensing Centre (NRSC), Hyderabad	Satellite data reception, processing, and dissemination	▸▸ Operates ground stations for receiving data from Indian and international satellites. ▸▸ Provides processed data for applications in environmental monitoring, land use mapping, and disaster management. ▸▸ Houses the Bhuvan platform, which offers geospatial services and visualization
Development and Educational Communication Unit (DECU), Ahmedabad	Communication applications for education and healthcare	▸▸ Supports outreach and awareness initiatives, enabling communities to utilize satellite data for local development.
Indian National Centre for Ocean Information Services (INCOIS), Hyderabad	Oceanographic studies and early warning systems	▸▸ Uses data from Oceansat and other satellites for ocean state forecasting and tsunami early warnings. ▸▸ Contributes to maritime safety and coastal resource management

Each Space Application Center is playing a vital role in leveraging space technology for diverse applications like Earth observation, communication, and remote sensing. While having dedicated satellites for each SAC might seem advantageous, a centralized approach managed by the Indian Space Research Organisation (ISRO) is more practical and efficient, primarily due to following reasons

- **Cost efficiency -** Centralized satellite missions allow for optimized budgets and avoid redundant expenditures
- **Resource optimization -** Shared satellite resources ensure maximum data utility across different applications like agriculture, disaster management, and ocean studies
- **Data synergy -** Centralized satellites enable integrated data collection, leading to richer datasets for analytics
- **Operational complexity -** A unified satellite management system streamlines operations, from data acquisition to processing and distribution

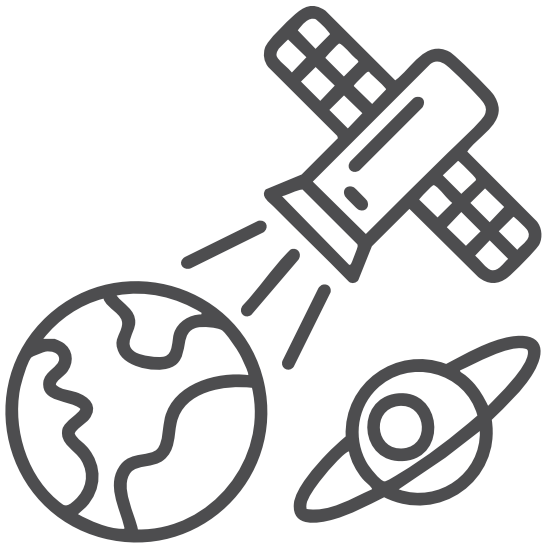
However, there are certain situations, where dedicated satellite might be beneficial

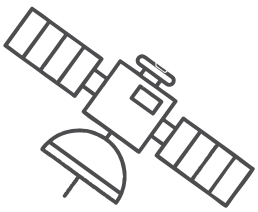
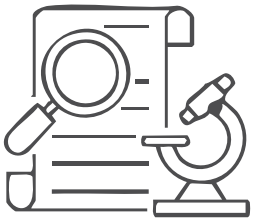
- **Specialized Needs -** Certain SACs with highly specialized requirements (e.g., INCOIS Hyderabad for ocean monitoring) may benefit from dedicated satellites like Oceansat
- **Strategic Missions -** For targeted research or niche applications, such as the Astrosat mission for space science.

4.4 Opportunities across National missions and Global collaborations

The ambitious national space missions present a broad spectrum of opportunities for private sector, startups and academic institutions, fuelled by evolving space ecosystem, comprising of ISRO, IN-SPACe and NSIL initiatives. Indigenous development, collaboration with foreign agencies and space commercialization opens new avenues for innovation, growth and partnership.

Space Mission (Operational / Planned)	Opportunities for Indian companies	Opportunities for Startups	Opportunities for Academia
Exploration missions			
Chandrayaan series (Lunar Missions) Mangalyaan (Mars Orbiter Mission) Shukrayaan-1 (Venus Mission) LUPEX (with JAXA (Lunar polar exploration) Astrosat (Space Observatory)	▸▸ Manufacturing landers, rovers and scientific instruments ▸▸ Sensor and component development for planetary probes ▸▸ Building thermal and atmospheric sensors ▸▸ Partnering with foreign players in rover and payload development	▸▸ Innovation in surface analysis tools and mini rovers ▸▸ Developing AI tools for autonomous operations in deep space ▸▸ Development of surface mobility solutions	▸▸ Research for lunar geology and water ice studies ▸▸ Study atmospheric conditions and support in mission design. ▸▸ Participate in experiments and data analysis.
Earth Observation & Monitoring Missions			
Cartosat Series (High resolution imagery, mapping) Resourcesat Series (Agriculture and resource management) RISAT Series (Radar imaging, surveillance) Oceansat Series (Oceanography, coastal monitoring) INSAT series (Weather forecasting) TRISHNA with CNES (France) (Thermal infrared imaging) Disaster Management Satellite (DMS) (Disaster response and management)	▸▸ Provide imaging hardware and processing software ▸▸ Building sensors for agriculture and resource mapping ▸▸ Development of maritime observation payloads ▸▸ Manufacturing communication and weather monitoring equipment	▸▸ AI based crop monitoring tools. ▸▸ Innovation in ocean data analytics and forecasting ▸▸ Development of weather forecasting applications	▸▸ Research in meteorology and disaster management ▸▸ Research on precision farming and water resources ▸▸ Collaborate on climate change impact studies



Space Mission (Operational / Planned)	Opportunities for Indian companies	Opportunities for Startups	Opportunities for Academia
Earth Observation & Monitoring Missions			
NISAR (NASA-ISRO Collaboration) (Natural hazard monitoring) Megha – Tropiques with CNES (France) (Tropical weather study) SARAL with CNES (France) (Oceanographic studies)	▸▸ Provide imaging hardware and processing software ▸▸ Building sensors for agriculture and resource mapping ▸▸ Development of maritime observation payloads ▸▸ Manufacturing communication and weather monitoring equipment	▸▸ AI based crop monitoring tools. ▸▸ Innovation in ocean data analytics and forecasting ▸▸ Development of weather forecasting applications	▸▸ Research in meteorology and disaster management ▸▸ Research on precision farming and water resources ▸▸ Collaborate on climate change impact studies
Communication & Navigation Missions			
GSAT series (Communication and broadcasting) NavIC (IRNSS) (Regional navigation system) GSAT – 7 series (Defence communication – Navy & Airforce)	▸▸ Development of navigation hardware and software ▸▸ Defence grade communication and technology development. ▸▸ Supply and manufacturing of transponders and communication systems	▸▸ Building location-based services and IoT solutions ▸▸ Innovation in secure communications	▸▸ Research in latest communication and navigation technologies 
Human Spaceflight and Space Habitation			
Gaganyaan (Human Spaceflight Mission) Indian Space Station Vyommitra (Humanoid Robot for Space) Reusable Launch Vehicle (RLV-TD)	▸▸ Manufacturing of crew modules and safety systems ▸▸ Building robotic and AI components for humanoid ▸▸ Developing materials for reusable technology	▸▸ Autonomous landing systems ▸▸ Innovation in robotic support systems ▸▸ Developing life support and habitation technologies	▸▸ Research on human physiology in microgravity ▸▸ Designing experiments for human-space interactions ▸▸ Studies on aerodynamics and re-entry
Space science & research missions			
Aditya-L1 (Solar Mission) XPoSat (Polarimetry mission for cosmic X-rays) SRE-1 (Space capsule recovery experiment) EMISAT (Electronic Intelligence Satellite for defence)	▸▸ Developing instruments for solar observation ▸▸ Detectors for X-ray studies ▸▸ Supply and manufacturing defence and electronic intelligence equipment.	▸▸ Tools for solar data analytics ▸▸ Innovation in satellite-based analytics	▸▸ Research on solar weather and phenomenon 

Space Mission (Operational / Planned)	Opportunities for Indian companies	Opportunities for Startups	Opportunities for Academia
Space Situational Awareness (SSA) & Security			
NETRA (Network for Space Object Tracking and Analysis)	▸▸ Develop tracking radars and optical sensors	▸▸ Create predictive tools for debris movement	▸▸ Research on orbital dynamics and debris management.
Launch Vehicle Development			
PSLV, GSLV, SSLV Launch Vehicles	▸▸ Manufacture components for launch vehicles. ▸▸ Lightweight materials and avionics systems	▸▸ Software for launch simulations ▸▸ Modular and reusable payload technologies	▸▸ Research on propulsion and aerodynamics ▸▸ Collaborate for launch vehicle technology advancements
Education & Student Missions			
Anusat (University Satellite) YUVIKA (Young Scientist Program) KalamSat STUDSAT	▸▸ Supply educational tools and equipment. ▸▸ Partnering for student satellite initiatives	▸▸ Developing training modules for space education ▸▸ Miniaturized satellites	▸▸ Mentoring students on satellite design and operation




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05

Challenges and Bottlenecks

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Challenges and Bottlenecks

The Indian space sector has witnessed remarkable growth over the past decade. However, India's share in the global space economy remains under 2%, significantly lower than that of the United States and China.

The Indian space sector has witnessed remarkable growth over the past decade. However, India's share in the global space economy remains under 2%, significantly lower than that of the United States and China[8]. To achieve the targets, India must overcome key bottlenecks related to regulations, infrastructure, talent, funding, and industry-academia linkages.

5.1 Regulatory challenges



Lack of a Comprehensive Legal Framework

Despite the Indian Space Policy 2023, India still lacks a dedicated Space Activities Act, creating ambiguity in aspects such as liability, licensing, and dispute resolution.

Bureaucratic Complexity and Multi-Agency Overlaps

The space ecosystem involves multiple agencies, including IN-SPACe, ISRO, NSIL, DoS, and DoT, leading to delays in decision-making and redundant approvals. A single-window clearance system could significantly streamline processes.

Limited FDI and Private Sector Participation

While 100% FDI is allowed under government approval for satellite manufacturing, restrictions exist in launch services and remote sensing, limiting foreign capital inflows. In comparison, the US attracts billions in private space investments due to an open-market approach.

[8] https://pib.gov.in/PressReleasePage.aspx?PRID=2068155#:~:text=At%20present%2C%20the%20Indian%20space,8%25%20of%20the%20global%20share.

Spectrum Allocation and Licensing Delays

The Department of Telecommunications (DoT) regulates spectrum, but there is no dedicated mechanism for space-based spectrum allocation, unlike global best practices.

Liability and Insurance Gaps

There is no clear liability framework for private space companies in case of launch failures, satellite collisions, or damage to foreign space assets. India lacks a dedicated space insurance ecosystem, which is crucial to attracting private capital.

5.2 Infrastructure gaps



Limited Launch Facilities and Capacity

India currently operates from a single primary launch site in Sriharikota, which is insufficient to meet growing demand. The lack of multiple launch sites restricts launch frequency, increases turnaround times, and creates bottlenecks. The upcoming Kulasekarapattinam spaceport in Tamil Nadu is expected to alleviate some of these constraints, but further investments in launch infrastructure are necessary.

Underdeveloped Ground Infrastructure

India's ground station network is inadequate to support increasing satellite activity. The Deep Space Network (DSN), critical for interplanetary missions, needs significant expansion to match global counterparts like NASA's DSN.

Dependence on Imported Space Components

India imports over 50% of its space-grade material for satellites[9], including high-grade alloys, semiconductors, and composite materials, leading to higher costs and dependency on foreign suppliers/

Inadequate Infrastructure for Space-Based Services

India's satellite capacity for broadband and remote sensing is lagging behind demand, affecting industries such as agriculture, defence, and urban planning. Space-based solar power (SBSP) and satellite mega-constellations remain largely unexplored, while global players such as Amazon's Project Kuiper and Starlink are already deploying thousands of satellites.

5.3 Talent Development and Workforce Readiness



Brain Drain and Retention Challenges

ISRO and private firms struggle to retain top talent due to lower compensation compared to global tech giants and space agencies.

Limited Specialized Training and Education

While ISRO provides internal training, there is no structured national-level space education program that integrates industry-specific skills

Insufficient Collaboration

There is an absence of a structured approach for transfer of technology from research centres to the industries which hinders innovation. Moreover, a very miniscule percentage of India's patents come from academia-industry collaborations which is far lower than developed nations. Lack of research internships, industry-led projects, and startup incubation programs stifles innovation in space technology.

[9] https://www.isro.gov.in/Indigenisation.html

5.4 Access to Fund



Limited Government Budget Allocation

India spends 0.07%[10] of its GDP on space activities, compared to the US (0.28%), restricting large-scale infrastructure investments. ISRO's 2024-25 budget stands at 13,042 crore (~$1.95 billion)[11] significantly lower than NASA's $25 billion[12].

Lack of Risk Capital for Startups

Private space startups struggle to secure venture funding due to the long gestation periods and high-risk nature of space projects. US-based firms like SpaceX and Rocket Lab receive billions in private and institutional investments due to favourable funding policies, while Indian startups rely primarily on government grants.

Limited Private Sector Investment in R&D

While global private players contribute significantly to space R&D funding, in India, the private sector's share remains low. The absence of tax incentives and dedicated funding mechanisms for space R&D deters innovation.

5.5 Need for Industry-Academia Linkage



Limited Industry-Driven Research and Commercialization

A very miniscule percentage of India's patents originate from industry-academia collaborations, significantly lower than countries like the US, China, and Germany.

Absence of Dedicated Space Technology Incubators

India lags global leaders like the US and Europe, where institutions such as MIT, Stanford, and Caltech actively support space startups through incubation programs.

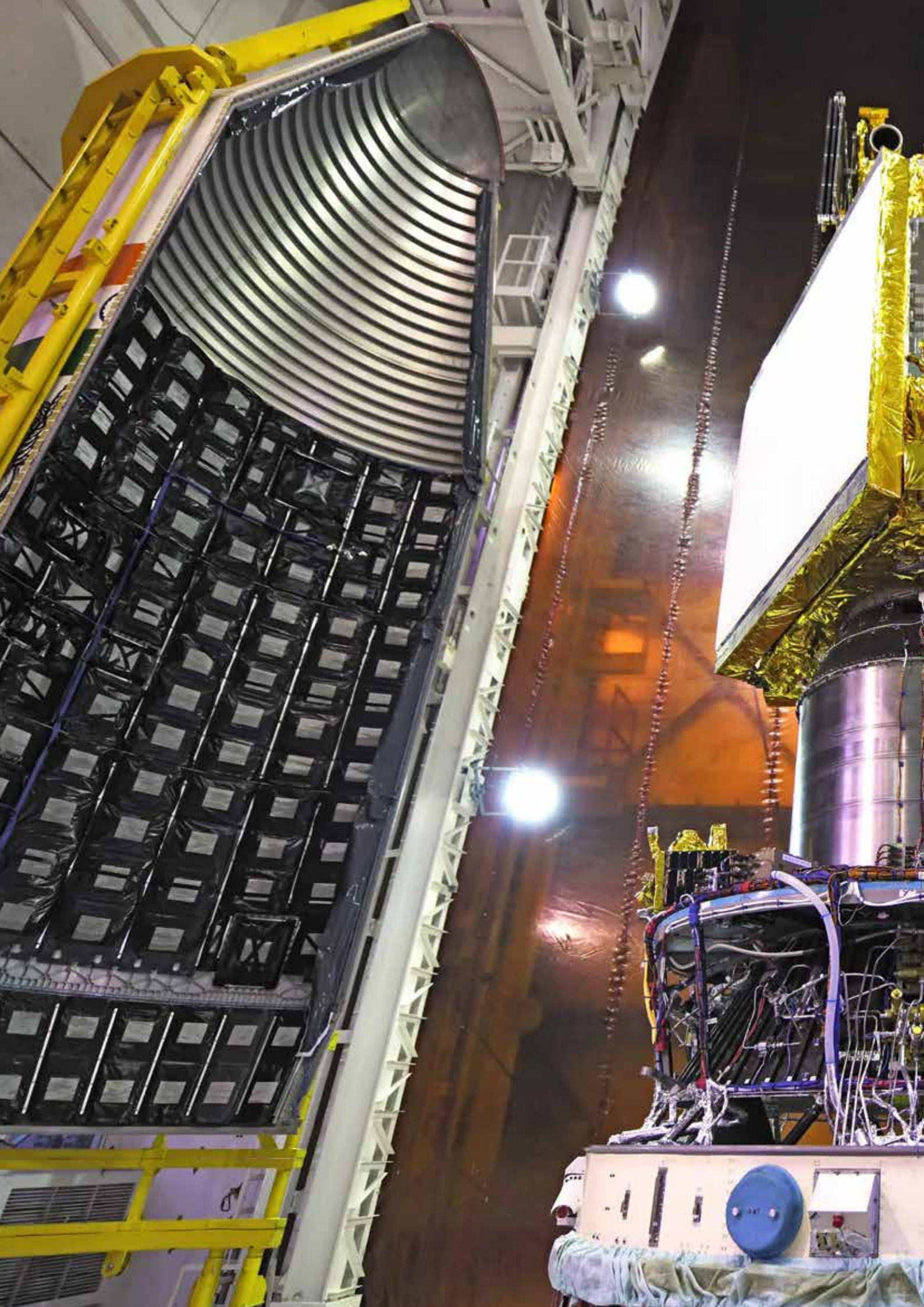
Gaps in Curriculum and Industry Exposure:

Few Indian universities offer specialized degrees in space technology, aerospace engineering, and satellite design, unlike global institutions that offer dedicated programs aligned with industry needs

Lack of Funding for University-Led Space Projects:

Research funding in Indian universities is primarily focused on traditional sectors like IT and pharmaceuticals, with minimal allocation for space sciences

[10] https://www.nasa.gov/wp-content/uploads/2024/06/nac-budget-briefing-fy24-and-fy25-0524.pdf?emrc=699fed
[11] https://pib.gov.in/PressReleasePage.aspx?PRID=2068155#:~:text=At%20present%2C%20the%20Indian%20space,8%25%20of%20the%20global%20share.
[12] https://www.nasa.gov/wp-content/uploads/2024/06/nac-budget-briefing-fy24-and-fy25-0524.pdf?emrc=699fed





06

Way Forward

06

Way Forward

India's space economy is on the cusp of transformation.

India's space economy is on the cusp of transformation. The groundwork has been laid with progressive policies, an expanding private sector, and increasing global engagement. The challenge now is not just growth, but strategic positioning—moving beyond incremental advances to becoming a leader in space innovation, commercialization, and global partnerships.

Strategic Levers for India's Space Economy

Strategic Priority	Key Actions for Acceleration
Deepening Private Sector Participation	Streamline regulatory frameworks, incentivize investments, and establish sovereign space funds to de-risk capital deployment.
Becoming a Global Manufacturing Hub	Develop scalable production capabilities for satellites and launch vehicles, promote technology transfer agreements, and strengthen supplier ecosystems.
Building Next-Generation Capabilities	Expand focus on reusable launch systems, deep-space missions, and advanced propulsion technologies. Foster R&D collaborations with global leaders.
Expanding Space Applications Across Industries	Strengthen the role of space-based analytics in agriculture, logistics, disaster management, and defence to drive cross-sector adoption.
Creating a Future-Ready Workforce	Bridge skill gaps through specialized training in AI-driven space applications, quantum computing, and space cybersecurity. Facilitate academia-industry partnerships for applied research.

To translate India's space economy potential into tangible outcomes, we will undertake a structured approach over the next few months, focusing on industry insights, stakeholder validation, and policy refinements. The aim is to develop actionable, data-backed recommendations that support the government's vision for IP creation, technology indigenization, space manufacturing, exports, and workforce development. A structured roadmap is as follows:

The Execution Roadmap: Key Milestones

Phase	Key Milestones	Impact Areas
Phase 1: Industry-Led Research & Capability Assessment	Engage with leading space enterprises, startups, and academia to assess R&D intensity, IP creation, and production scalability. Identify investment gaps and bottlenecks in domestic manufacturing.	Technology Development, Indigenous Production
Phase 2: Strategic Policy Dialogues & Industry Roundtables	Conduct dialogues with ISRO, IN-SPACe, NSIL, investors, and private sector leaders to refine investment frameworks. Benchmark global financing models for sustainable industry growth.	Regulatory Framework, Investment Mobilization
Phase 3: Global Positioning & Market Expansion	Analyse competitive positioning against global space economies. Leverage technology transfer agreements and alliances to integrate into international supply chains.	Market Leadership, International Collaboration
Phase 4: Workforce & Talent Acceleration Strategy	Develop a national space talent framework with universities and research institutions. Facilitate global academic collaborations to establish India as a space-tech talent hub.	Skill Development, Research & Innovation

A Defining Moment for India's Space Leadership

The next decade will determine whether India emerges as a true leader in the global space economy or remains a peripheral player. The country's ambitions must extend beyond participation—India must actively shape the rules of engagement, define new market opportunities, and position itself as a preferred partner in global space collaborations.

Strategic execution will be the differentiator. India must focus on delivering scalable, market-ready solutions, accelerating R&D commercialization, and deepening its footprint in global space supply chains. The commitment must be relentless, with clear accountability, cross-sectoral cooperation, and a long-term vision that integrates economic, technological, and geopolitical imperatives. For India, this is not just an opportunity—it is an imperative. The actions taken today will define India's position in the new space age, determining whether it leads the conversation or follows others into the future.

[8] https://www.isro.gov.in/Indigenisation.html

Glossary

Acronym	Full Form
AI	Artificial Intelligence
ASAT	Anti-Satellite
CNES	Centre National d'Études Spatiales (French Space Agency)
C3	Command, Control, and Communication
DECU	Development and Educational Communication Unit
DSN	Deep Space Network
DoS	Department of Space
DoT	Department of Telecommunications
DSA	Defence Space Agency
EO	Earth Observation
ESA	European Space Agency
FDI	Foreign Direct Investment
FICCI	Federation of Indian Chambers of Commerce & Industry
GSaaS	Ground Station as a Service
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GST	Goods and Services Tax
IN-SPACe	Indian National Space Promotion and Authorization Centre
INCOIS	Indian National Centre for Ocean Information Services
IISc	Indian Institute of Science
IIT	Indian Institute of Technology
ISRO	Indian Space Research Organisation
IP	Intellectual Property
LEO	Low Earth Orbit
LIDAR	Light Detection and Ranging

Acronym	Full Form
MEO	Medium Earth Orbit
MIT	Massachusetts Institute of Technology
NASA	National Aeronautics and Space Administration
NavIC	Navigation with Indian Constellation
NDTSP	National Deep Tech Startup Policy
NGP	Norms, Guidelines, and Procedures
NISAR	NASA-ISRO Synthetic Aperture Radar
NRSC	National Remote Sensing Centre
NSIL	NewSpace India Limited
PPP	Public-Private Partnership
PSLV	Polar Satellite Launch Vehicle
RLV	Reusable Launch Vehicle
R&D	Research and Development
SAC	Space Application Center
SAR	Synthetic Aperture Radar
SARAL	Satellite with ARgos and ALtiKa
SATCOM	Satellite Communication
SBSP	Space-Based Solar Power
SSA	Space Situational Awareness
SSLV	Small Satellite Launch Vehicle
STEM	Science, Technology, Engineering, and Mathematics
TAF	Technology Adoption Fund
TRISHNA	Thermal Infrared Imaging Satellite for High-Resolution Natural Resource Assessment
USD	United States Dollar
YUVIKA	Young Scientist Program (by ISRO)

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Tel: +91 674 274 4490

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6th Floor, Plot No- 178-178A
Industrial & Business Park, Phase-I
Chandigarh - 160 002
Tel: +91 172 6717800

Chennai

6th & 7th Floor, A Block,
Tidel Park, No.4, Rajiv Gandhi Salai
Taramani, Chennai - 600 113
Tel: +91 44 6654 8100

Delhi NCR

Aikyam
Ground Floor
67, Institutional Area
Sector 44, Gurugram - 122 003
Haryana
Tel: +91 124 443 4000

3rd & 6th Floor, Worldmark-1
IGI Airport Hospitality District
Aerocity, New Delhi - 110 037
Tel: +91 11 4731 8000

4th & 5th Floor, Plot No 2B
Tower 2, Sector 126
Gautam Budh Nagar, U.P.
Noida - 201 304
Tel: +91 120 671 7000

Hyderabad

THE SKYVIEW 10
18th Floor, "SOUTH LOBBY"
Survey No 83/1, Raidurgam
Hyderabad - 500 032
Tel: +91 40 6736 2000

Jaipur

9th floor, Jewel of India
Horizon Tower, JLN Marg
Opp Jaipur Stock Exchange
Jaipur, Rajasthan – 302018

Kochi

9th Floor, ABAD Nucleus
NH-49, Maradu PO
Kochi - 682 304
Tel: +91 484 433 4000

Kolkata

22 Camac Street
3rd Floor, Block 'C'
Kolkata - 700 016
Tel: +91 33 6615 3400

Mumbai

14th Floor, The Ruby
29 Senapati Bapat Marg
Dadar (W), Mumbai - 400 028
Tel: +91 22 6192 0000

5th Floor, Block B-2
Nirlon Knowledge Park
Off. Western Express Highway
Goregaon (E)
Mumbai - 400 063
Tel: +91 22 6192 0000

3rd Floor, Unit No.301
Building No.1, Mindspace-Gigaplex
IT Park, MIDC, Plot No. IT-5
Airoli Knowledge Park
Airoli West, Navi Mumbai - 400 708
Tel: +91 22 6192 0003

Altimus, 18th Floor
Pandurang Budhkar Marg
Worli, Mumbai - 400 018
Tel: +91 22 6192 0503

Pune

C-401, 4th Floor
Panchshil Tech Park, Yerwada
(Near Don Bosco School)
Pune - 411 006
Tel: +91 20 4912 6000

10th Floor, Smartworks
M-Agile, Pan Card Club Road
Baner, Taluka Haveli
Pune - 411 045
Tel: +91 20 4912 6800



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