



Impact of Space Missions on Indian Economy

For Prelims: [Indian Space Policy 2023](#), [NewSpace India Limited](#), [IN-SPACE](#), [Department of Space](#), [ISRO](#)

For Mains: Indian Space Policy 2023, Significance of Private Sector, Gaps in the Policy, Key Amendments in FDI Policy Related to the Space Sector

[Source: BS](#)

Why in News?

A recent study commissioned by [Indian Space Research Organisation \(ISRO\)](#) and an European Space Consultation agency, Novaspaces has revealed that the economic impact of their space missions was 2.5 times the investment, amounting to billions of dollars.

- Earlier, ISRO launched the [Earth Observation Satellite \(EOS\)-08](#) onboard the [Small Satellite Launch Vehicle \(SSLV\)-D3](#).

How ISRO's Space Programmes and Investments in the Space Sector have Benefited Society?

- **Employment Generation:** ISRO has created numerous jobs, directly employing scientists, engineers, and technicians, and indirectly generating opportunities in related industries, such as satellite manufacturing and data analysis.
- **Other Economic Benefits: As per the ISRO estimates, investing in the space missions have yielded a return of approximately 2.54 times the amount spent.**
 - A report by **Novaspaces** reveals that between 2014 and 2024, the Indian space sector has generated **USD 60 billion for the national economy**, created **4.7 million jobs**, and **contributed USD 24 billion in tax revenues**.
 - ISRO's satellites enhance **communication, weather forecasting, and navigation**, benefiting various sectors and boosting economic productivity.
- **Agricultural Development:** ISRO's Earth Observation Satellites, like Resourcesat and Cartosat, enhance agricultural development by monitoring crop health, soil moisture, and land use, helping farmers make informed decisions and improve productivity.
- **Disaster Management and Resource Planning:** Satellites provide critical data for disaster management, enabling timely response to natural calamities. They also assist in monitoring natural resources, supporting sustainable management and agricultural planning.
 - ISRO has helped around **8 lakh fisher folk daily** and 1.4 billion Indians get the benefit of **satellite-based weather forecasts**.
- **Urban Planning and Infrastructure Development:** High-resolution satellite imagery aids in **urban mapping, traffic management, and infrastructure monitoring**. This data allows cities to optimise land use and improve public services, contributing to sustainable urban development.
- **Inspiring Youth and Education:** ISRO's achievements, like Chandrayaan and Mangalyaan,

inspire students and promote careers in **STEM** fields. Educational initiatives related to space technology further stimulate interest in science and technology.

- **Lunar Exploration and Scientific Advancement:** The Chandrayaan missions have advanced lunar exploration and demonstrated India's capabilities in space science, fostering national pride and contributing to global space exploration efforts.
- **International Collaboration and Soft Power:** ISRO's success in launching over 300 foreign satellites has established it as a global space technology leader, boosting India's international reputation and soft power while fostering global collaborations.
 - ISRO's **low-cost approach to space missions**, such as **Mangalyaan**, makes India an attractive partner for **international collaborations**.
 - The growth of **space-related startups** fosters innovation and contributes to economic development.

What is India's Current Position in the Space Sector?

- As of 2024, the **Indian space economy** is valued at around Rs 6,700 crore (USD 8.4 billion), contributing **2%-3% of the global space economy** which is expected to reach **USD 13 Bn by 2025** at Compound annual growth (**CAGR**) of **6%**.
 - As per the new estimates by ISRO, the **gross value added** by the Indian space sector between 2014 and 2023 was **USD 60 billion**, and in the **next 10 years** it can go up to **USD 89 billion to USD 131 billion**.
 - India aims to **capture a 10% share** of the global economy by the next decade.
- ISRO is the **sixth** largest space agency in the world and has a high success rate of launch missions.
 - US' **NASA**, **China National Space Administration (CNSA)**, **European Space Agency (ESA)**, **Japan Aerospace Exploration Agency (JAXA)** and **Russian Federal Space Agency (Roscosmos)** are among the other five major space agencies.
- India has over 400 private space companies. The number of **startups in India's space sector** has surged from **54** in 2020, coinciding with the establishment of the **Indian National Space Promotion and Authorization Center (IN-SPACe)**, to **over 200** currently.

Amended FDI Policy for the Space Sector

- **About:**
 - Recently, the government has made **amendments in the FDI policy pertaining to the space industry**.
 - It aims to align with the **Indian Space Policy 2023**, which seeks to unlock the nation's potential in the space domain through enhanced private participation.
- **Amendments in FDI Policy for Space Sector:**
 - **100% FDI Allowed:** After the recent amendment, **100% FDI** is permitted in the space sector, aiming to **attract potential investors** to Indian space companies.
 - **Liberalised Entry Routes:** The entry routes for various space activities are as follows:
 - **Up to 74% under Automatic Route:** Satellites-Manufacturing & Operation, Satellite Data Products, Ground Segment & User Segment.
 - Beyond 74%, the government route applies.
 - **Up to 49% under Automatic Route:** Launch Vehicles, associated systems or subsystems, Creation of Spaceports.
 - Beyond 49%, the government route applies.
 - **Up to 100% under Automatic Route:** Manufacturing of components and systems/sub-systems for satellites, ground segment, and user segment.

What is the Indian Space Policy 2023?

- **Transition of ISRO's Role:** The Indian Space Policy 2023 establishes 4 key entities to enhance private sector participation in space activities traditionally managed by ISRO:

- **ISRO:** ISRO is directed to shift its focus from routine tasks to research and innovation, developing advanced space technologies to maintain India's leadership in space infrastructure, transportation, applications, capacity building, and human spaceflight.
 - ISRO has announced its vision to increase India's share in the global space economy from approximately 2% to 10% by 2034.
- **InSPACe (Indian National Space Promotion and Authorisation Centre):** Acts as the single-window agency for authorising space activities and promoting industry-academia collaboration.
- **New Space India Limited (NSIL):** It has been tasked with commercialising space technologies and platforms, manufacturing, leasing, or procuring space components, and servicing space-based needs on commercial principles.
- **Department of Space:** Implements the policy, ensures safe space operations, and coordinates international cooperation.
- **Private Participation Encouragement: Private companies, termed non-governmental entities were allowed to engage in end-to-end space activities, including launching and operating satellites, developing rockets, building spaceports, and offering services like communication, remote sensing, and navigation both domestically and internationally.**

Major Developments in the Space Sector in India

▪ Recent Major Successful Missions:

- [Aditya L1](#)
- [Chandrayaan 3](#)
- [Mars Orbiter Mission \(Mangalyaan\)](#)

▪ Advancements in Launch Vehicles:

- [GSLV Mark III](#)
- [Small Satellite Launch Vehicle \(SSLV\)](#)
- [PSLV](#)

▪ Missions for International Clients:

- **TeLEOS-2 (2023):** Singaporean Earth observation satellite
- **PSLV-C51 (2021):** Launched Brazil's Amazonia-1 satellite and 18 smaller satellites.

▪ Other Key Developments:

- [NavIC](#)
- [Bhuvan](#)

How can India Increase the Share of the Space Sector in the Economy?

- **Skill Development:** Investing in **space-related education and training programs** is essential to build a highly skilled workforce capable of driving innovative space projects.
 - Establishing Space Technology Incubation Centres can help nurturing talent and fostering advanced research.
- **Infrastructure Development:** Upgrading **space launch facilities and research centres** will provide the necessary infrastructure to support more ambitious and large-scale space missions.
 - The development of the **Virtual Launch Control Center (VLCC)** at the Vikram Sarabhai Space Centre is a step in the right direction, enhancing operational capabilities.
- **Government-Industry Collaboration:** Strengthening partnerships between government

agencies and private enterprises can leverage the strengths of both sectors. Collaborative efforts can accelerate advancements in space exploration and technology, driving innovation and expanding capabilities.

- **Promotion of Indigenous Technologies:** Encouraging the development of homegrown technologies will foster self-reliance and reduce dependence on external sources for space hardware. Investing in indigenous research and manufacturing will enhance India's capacity to design and produce advanced space technologies.

Drishti Mains Question:

Discuss the significance of the Private Sector in Space Economy as a major driver of growth in the Indian space sector. How can India leverage its strengths to become a global leader in this field?

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. Consider the following statements: (2016)

1. The Mangalyaan launched by ISRO
2. is also called the Mars Orbiter Mission
3. made India the second country to have a spacecraft orbit the Mars after USA
4. made India the only country to be successful in making its spacecraft orbit the Mars in its very first attempt

Which of the statements given above is/are correct?

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3

Ans: (c)

Mains

Q. What is India's plan to have its own space station and how will it benefit our space programme? (2019)

Q. Discuss India's achievements in the field of Space Science and Technology. How the application of this technology has helped India in its socio-economic development? (2016)