



Rise of India's Private Space Industry

For Prelims: [Indian Space Research Organisation](#), [Indian National Space Promotion and Authorisation Centre](#), [Venture Capital](#), [POEM](#)

For Mains: India's space startups, Space Sector Reforms of 2020 and their impact.

Source: [BS](#)

Why in News?

The rise of **private participation in India's space sector**, driven by the [Space Sector Reforms of 2020](#), has accelerated innovation and investment by opening the industry to private players.

- [Indian Space Research Organisation's \(ISRO\)](#) continued achievements, along with **India's space tech startups**, are driving rapid advancements in space technology, exploration, and commercialization.

How Has India's Private Space Industry Grown?

- **Private Participation:** Over **200 space startups** are now active in India, leveraging ISRO's facilities (ISRO's testing, launch, and ground station facilities).
 - [Indian National Space Promotion and Authorisation Centre \(IN-SPACE\)](#) has provided regulatory and financial support (with a Rs. 1,000 crore [Venture Capital \(VC\) Fund](#)) to accelerate the growth of India's space sector.
 - [Antrix Corporation](#), ISRO's commercial arm, has played a key role in facilitating satellite launches and technology transfers to private players.
 - The [POEM \(PSLV Orbital Experimental Module\) program](#) has carried an increasing number of startup payloads, from **6 in 2022 to 24 in 2024**.
- **Private Investment:** Private funding is gaining momentum and drives the space economy.
 - **MountTech Growth Fund - Kavachh (MGF-Kavachh)** is boosting domestic investments through venture capital funding, with startups securing **Rs 2,500 crore in the past 3 years**.
 - MGF-Kavachh is a [Securities and Exchange Board of India \(SEBI\)](#) registered [Alternative Investment Fund \(AIF\) under Category II](#).
- **Indian Startups Advancements:** **GalaxEye** achieved the **world's first fusion of Synthetic Aperture Radar (SAR) with optical imagery**, enabling rapid data compression.
 - **Pixxel** is developing world's most advanced **hyperspectral satellite constellations (Firefly)**, while InspeCity (IIT Bombay) is working on in-orbit docking for satellite repair and refueling.
 - **Skyroot and Agnikul** are pioneering private launch vehicles for cost-effective satellite deployment.

Space Sector Reforms 2020

- India's **Space Sector Reforms 2020** expanded private participation across all space activities, including satellite design, launch vehicle manufacturing, and ground station services, to enhance India's global space economy share.
- **IN-SPACE** was established as a regulatory body to **facilitate and promote private sector participation** and enables **non-government private entities (NGPEs)** to engage in space-based activities rather than being just vendors for ISRO.
- The reform has also encouraged **technology transfer** from ISRO to private entities through [NewSpace India Limited \(NSIL\)](#).

What are the Challenges Facing India's Space Industry?

- **Funding and Investment Gaps:** While venture capital interest is rising, **early-stage funding remains limited**, making it difficult for startups to scale.
- **Talent Shortage:** The **lack of specialized educational institutions** and courses in space technology hinders talent development.
 - Only one Indian Institute of Space Technology (IIST) exists, creating a need for more institutions and industry-academia collaborations.
- **Global Competition:** Nations like the **US, China, and Russia have advanced space programs**, including reusable spacecraft, space tourism, and extensive satellite constellations.
 - India is catching up, but **longer R&D cycles and limited high-end capabilities** pose hurdles.
- **Foreign Launch Vehicles:** While India has developed launch capabilities, **many startups still rely on foreign rockets like SpaceX's Falcon-9** due to cost and schedule constraints.
 - Developing **more efficient and reusable launch vehicles** is essential for reducing dependence.

Way Forward

- **Boosting R&D and Infrastructure:** Expand domestic manufacturing of satellite components through a [Production Linked Incentive Scheme](#) for space-grade components.
 - Establish more **IISTs and space-focused courses** in IITs to build a skilled workforce.
 - Develop a **dedicated space industrial corridor like Space Coast, Florida** to create a robust ecosystem for satellite and launch vehicle manufacturing.
- **Global Collaboration:** Strengthen **bilateral agreements** with leading space agencies (NASA, ESA, Roscosmos).
 - Promote **rideshare missions** for startups to make satellite launches more affordable.
- **Technology Transfer:** Expand [ISRO's technology transfer initiatives](#) to enable startups to commercialize homegrown innovations.
 - Leverage space startups to develop applications for industries such as agriculture, disaster management, and urban planning, driving commercial growth.

Drishti Mains Question:

Discuss the significance of the Space Sector Reforms of 2020 in fostering private participation in India's space industry.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

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)**

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