4. India's Space Economy - Science & Technology

India's space sector is on the cusp of a major transformation, poised for exponential growth. With strong government backing and a burgeoning private ecosystem, the sector is projected to surge from USD 8.4 billion in 2022 to USD 44 billion by 2033. The ambitious goal is to increase India's share of the global space market from the current 2-3% to 8% in the coming years.

India's Share and Private Sector Growth

Global Market Position - Currently, India's space economy accounts for 2-3% of the global total. The government aims to elevate this to 8% by 2030 and a significant 15% by 2047.

Boom in Private Enterprise - With over 400 private space companies, India now ranks fifth globally in this domain. The number of space startups has skyrocketed from just one in 2022 to nearly 200 in 2024. Funding for these startups has shown remarkable growth, increasing from $67.2 million in 2021 to $124.7 million in 2023. A major milestone was achieved by Skyroot Aerospace, which launched Vikram-S, India's first privately built rocket, heralding a new era for commercial satellite launches.

Roles of Key Organizations Under the Indian Space Policy 2023

The 2023 policy clearly demarcates responsibilities to create a synergistic environment for public and private players.

1. **IN-SPACe (Indian National Space Promotion and Authorization Center) -** Acts as an autonomous single-window agency to streamline all space activities.

Responsibilities -

1. Authorize space activities for both government and private entities.
2. Promote the development of industry clusters, incubation centers, and accelerators.
3. Facilitate the seamless transfer of technology from ISRO to private companies.
4. Approve launch manifests and the dissemination of remote sensing data.

2. **ISRO (Indian Space Research Organisation) -** ISRO's role has been strategically refocused towards cutting-edge research and exploration.

New Focus Areas -

1. Conduct R&D in new space technologies and systems.
2. Lead ambitious missions like human spaceflight (Gaganyaan) and deep-space scientific exploration.
3. Transition mature operational space systems to the private industry for manufacturing and maintenance.
4. Enable a long-term human presence in space.

3. **NSIL (NewSpace India Limited) -** Functions as the primary commercial arm of the Department of Space.

Responsibilities -

1. Commercialize technologies and platforms developed by ISRO.
2. Manage the manufacturing and procurement of space assets like satellites and launch vehicles.
3. Serve as an interface for both government and private clients on a commercial basis.

4. DoS (Department of Space) - Serves as the apex body for **policy coordination and implementation**.

Responsibilities -

1. Ensure a clear and smooth distribution of roles among all stakeholders.
2. Oversee the effective implementation of the space policy.
3. Coordinate international cooperation and ensure compliance with global treaties.
4. Guarantee safe space operations and act as an arbiter in case of disputes.

Key Government Initiatives

Space Sector Reforms (2020) - Officially opened the space sector to private participation, setting the stage for the current growth by defining the distinct roles of ISRO, IN-SPACe, and NSIL.

Venture Capital (VC) Fund - The Union Cabinet has approved a Rs. 1,000 crore VC Fund dedicated to

providing crucial early-stage funding for space-tech startups.

Space Vision 2047 - A long-term roadmap with ambitious milestones -

1. **Gaganyaan -** First human spaceflight mission scheduled for the first quarter of **2027**.
2. **Chandrayaan-4 -** A mission to collect lunar samples and demonstrate return technology by **2027**.
3. **Bharatiya Antariksh Station (BAS) -** The first module of India's space station is targeted for **2028**, with the full station to be established by **2035**.
4. **Venus Orbiter Mission (VOM) -** A mission to study Venus, planned for **2028**.
5. **Next Generation Satellite Launch Vehicle (NGLV) -** To be developed by **2032**.
6. **Indian Moon Landing -** Aiming to land an Indian astronaut on the Moon by **2040**.

Foreign Direct Investment (FDI) Policy

The amended policy allows up to 100% FDI in the space sector through different routes -

100% (Automatic Route) - For manufacturing components and sub-systems.

Up to 74% (Automatic Route) - For satellite manufacturing, operations, and data products. FDI beyond 74% requires the government route.

Up to 49% (Automatic Route) - For launch vehicles and the creation of spaceports. FDI beyond 49% requires the government route.

The Way Ahead - Fostering a Self-Reliant Ecosystem

The reforms are designed to create a vibrant ecosystem where private entities are deeply involved in research, manufacturing, and operations. This strategy is expected to -

1. Integrate Indian companies into global space value chains.
2. Encourage domestic manufacturing, boosting the 'Make In India (MII)' and 'Atmanirbhar Bharat' initiatives.