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# SECTOR SPECIFIC REPORT SPACE

- India Celebrates its First National Space Day at 1st Anniversary of Chandrayaan-3 Landing
- Mission RUHMI 2024 Launch Accelerated India's Space Exploration Efforts
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- Contribution of the Space Sector to India's Dynamically Growing GDP
- India's FDI Policy on the Space Sector
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NATIONAL SPACE DAY

# Chandrayaan-3 landing anniversary



## INDIA CELEBRATES ITS FIRST NATIONAL SPACE DAY AT 1ST ANNIVERSARY OF CHANDRAYAAN-3 LANDING

India tasted great success on August 23, 2023, with the historic landing of Chandrayaan-3 on the Moon's South Pole. This huge achievement led India to become the first country to land in this region and the fourth country to accomplish a successful lunar landing. To commemorate this lifetime event, India celebrated its first National Space Day on 23<sup>rd</sup> August 2024.

The declaration itself highlighted India's growing influence in space exploration and innovation, led by the Indian Space Research Organisation (ISRO). This nationwide celebration has been done with the theme of **"Touching Lives While Touching the Moon: India's**

A graphic for the Inaugural National Space Day 2024. The background is a dark space scene with the Earth in the distance and the Chandrayaan-3 lander on the Moon's surface. The text is white and orange.

**INAUGURAL  
NATIONAL SPACE DAY 2024**  
A Month-Long Celebration  
August 23, 2024

**Theme:** "Touching Lives while Touching the Moon: India's Space Saga"  
**Purpose:** Highlight India's space mission achievements and inspire the nation's youth  
**Focus:** Emphasize the impact of space exploration on society and technology

Source: <https://pib.gov.in/PressNoteDetails.aspx?NotelId=151986&ModuleId=3>

**Space Saga.”** On this historic day, the focus was on highlighting the expanding impact of space explorations on our society as well as technology beyond others. It will inspire India's future generations to pursue careers in space science and contribute to the nation's space ambitions in the unexplored universe.



Source: <https://www.isro.gov.in/NSPD2024/assets/pdf/NSpDProgrammeSchedule.pdf>



Source: <https://pib.gov.in/PressNoteDetails.aspx?NotelId=151986&ModuleId=3>

The decision to observe National Space Day annually on August 23 was made to honour this milestone with the primary objective of boosting the interest of India's young minds in STEM fields. Organizations, specifically, ISRO aimed to involve

young people in space science and technology through a series of nationwide events such as seminars, educational workshops, and exhibitions showcasing India's technological advancements.

The **“Space on Wheels”** exhibition on mobile buses has attracted students' attention by distinctively showcasing the various space missions and activities of ISRO in recent years. **The collaborative effort between ISRO and the Department of Fisheries has also been celebrated and highlighted the use of space technologies in the fisheries sector.** Satellite-based data Earth observation systems, are used to improve marine resources management and contribute to sustainable practices in India's extensive fisheries sector.



Source: <https://pib.gov.in/PressNoteDetails.aspx?Noteld=151986&ModuleId=3>

The success of Chandrayaan-3 has been internationally recognized, positioning India as a significant player in global space research. It has strengthened India's long-term space exploration ambitions, laying the foundation for future missions, including human spaceflight and potential collaborations with international space agencies.



Source: <https://pib.gov.in/PressNoteDetails.aspx?Noteld=151986&ModuleId=3>

Beyond national pride, the mission has brought far-reaching implications for human understanding of the Moon, particularly its unexplored South Pole. It also holds major clues to the presence of water and other resources critical for sustained lunar exploration and life beyond planet Earth. As National Space Day becomes an annual tradition. It will serve as a reminder of India's pioneering efforts in space exploration while inspiring future generations to push the boundaries of science and technology to achieve new milestones in the unknown universe.



# MISSION RHUMI 2024

INDIA'S FIRST REUSABLE HYBRID ROCKET  
ON A MOBILE LAUNCHPAD

## MISSION RHUMI 2024 LAUNCH ACCELERATED INDIA'S SPACE EXPLORATION EFFORTS

India's space exploration efforts have leaped forward with the successful launch of its first reusable hybrid rocket, RHUMI 1, on August 24, 2024. The event took place at 7 a.m. in Thiruvudandhai, Chennai, marking a new milestone in India's space technology development.

The launch came just a day after the celebration of the first National Space Day, underlining the nation's growing presence in the global space race. RHUMI 1 has been developed by a Tamil Nadu -based start-up, Space Zone India, in collaboration with the Martin Group. It will be a trailblazer in hybrid rocket technology in India.



Source: <https://ddnews.gov.in/en/india-launches-its-1st-reusable-hybrid-rocket-rhumi-1/>

This mission is led by Anand Megalingam, founder of Space Zone India, under the guidance of former Director of ISRO Satellite Centre, Dr. Myswamy Annadurai. A mobile launcher was used to carry three Cube Satellites and 50 PICO Satellites into a suborbital trajectory. This hybrid rocket uses a combination of solid and liquid propulsion, ensuring both performance and minimal environmental impact.



Source: <https://www.india.com/science/mission-rhumi-2024-india-to-launch-its-1st-reusable-hybrid-rocket-today-all-you-need-to-know-isro-national-space-day-chandrayaan-7189739/>

## MULTI-FACETED HIGHLIGHTS OF RHUMI 1 LAUNCH

### First Reusable Hybrid Rocket

Combines solid and liquid propulsion for enhanced performance and reusability.



### Eco-Friendly

Uses a CO2 descent mechanism for safe recovery of rocket components, minimizing environmental impact.



### Successful Deployment

Carried 3 Cube Satellites and 50 PICO Satellites into a suborbital trajectory



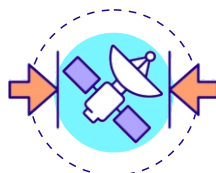
### Multi-Industry Applications

Supports agriculture, environmental monitoring, and disaster management.



### Adjustable Launch Angle

Capable of adjusting between 0 and 120 degrees.



### Cost-Effective Solution

Offers a more sustainable and affordable approach to satellite launches.



The RHUMI series (includes RHUMI-1, RHUMI-2, and RHUMI-3) is designed to reach altitudes from 1 km to 500 km. The versatility and reusability of this technology offer a sustainable and cost-effective approach to satellite launches. The rocket's launch angle can be adjusted between 0 and 120 degrees, providing precise trajectory control during launch.



Source: [https://www.business-standard.com/india-news/first-reusable-hybrid-rocket-rhumi-launched-by-tamil-nadu-space-startup-124082400285\\_1.html](https://www.business-standard.com/india-news/first-reusable-hybrid-rocket-rhumi-launched-by-tamil-nadu-space-startup-124082400285_1.html)

Beyond the aerospace domain, the mission has applications in agriculture, environmental monitoring, and disaster management. The Cube Satellites carried by RHUMI 1 are designed to monitor atmospheric features like cosmic and UV radiation, while the PICO Satellites will track environmental factors such as ozone levels and air quality.



Source: <https://www.apnnews.com/space-zone-india-martin-group-unveils-mission-rhumi-2024-sets-to-launch-indias-first-reusable-hybrid-rocket-on-a-mobile-launch-pad/>

After successfully collaborating in 2023 and 2021, Space Zone India and the Martin Group have again showcased their continuous commitment to fostering student involvement in space technology. Now with the success of RHUMI 1, India has further demonstrated its capacity for innovation in the sector, paving the way for more sustainable and environmentally friendly space missions in the future.

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# FUTURISTIC VISION FOR SPACE SECTOR UNDER UNION BUDGET 2024-25

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India's space sector is set for a major leap forward with the Union Budget 2024-25. The government has made significant strides in transforming the space sector by breaking past historical barriers and liberating it from decades of secrecy.



Source: <https://www.thehindu.com/sci-tech/science/18-hike-for-department-of-space-in-union-budget-lions-share-for-development-of-space-technologies/article68436318.ece>



Historically, the sector has operated under a veil of secrecy, which limited its access to essential resources and knowledge despite an abundance of talent. Reflecting this optimism, **the Union Budget 2024-25 increased the Department of Space's annual budget by 18%**. Besides this, recent policy changes have dramatically propelled the sector forward, paving the way for unprecedented advancements and achievements. A major turning point came with the 2023 space policy, which allowed private sector participation in ISRO's activities.

## 01 UNION BUDGET 2024-25 PROVISIONS: AN ANALYTICAL REVIEW

### Enhanced Vision

- Budget underscores a forward-looking strategy for space exploration.

### Private Sector Inclusion

- New policy permits private firms in ISRO activities, leading to a surge in startups.

### Prominent Startups

- AgniKul Cosmos and Skyroot making strides; global interest from SpaceX.

### Increased Funding

- 18% budget increase for space, focusing on technology development.

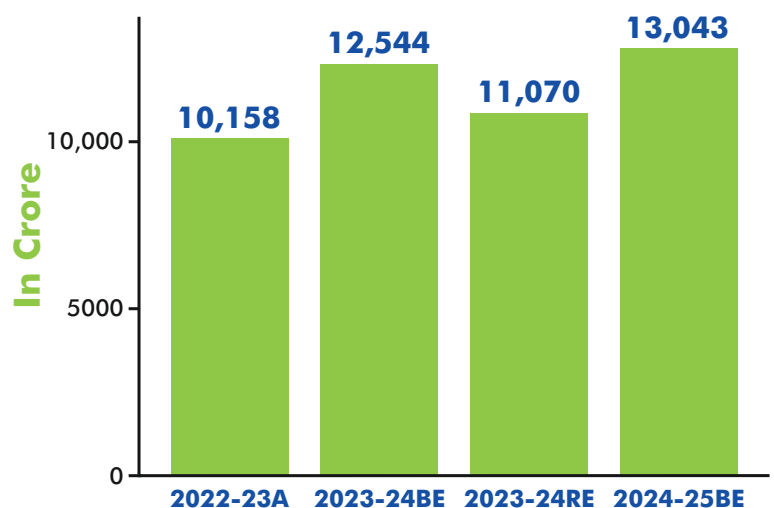
### Future Missions

- Gaganyaan human flight planned for 2025, Indian space station by 2035.

### Economic Growth

- Space economy expected to reach \$44 billion in a decade, boosting job opportunities.

The establishment of IN-SPACe, an agency facilitating collaboration between the government and private players, alongside the formation of New Space India Limited to produce launch vehicles marked a new era. **The space sector has since experienced explosive growth, with the number of startups skyrocketing from single digits to nearly 300.** Significant startups like AgniKul Cosmos, which established a private launchpad within ISRO's premises, and Skyroot, responsible for the first-ever private sub-orbital launch are making their place in India's space endeavors.



Union Budget 2024-25

\*A: Actuals, BE: Budget estimate, RE: Revised estimate

Source: <https://www.thehindu.com/sci-tech/science/18-hikefordepartmentofspacein-union-budget-lions-share-for-development-of-spacetechnologies/article68436318.ece>

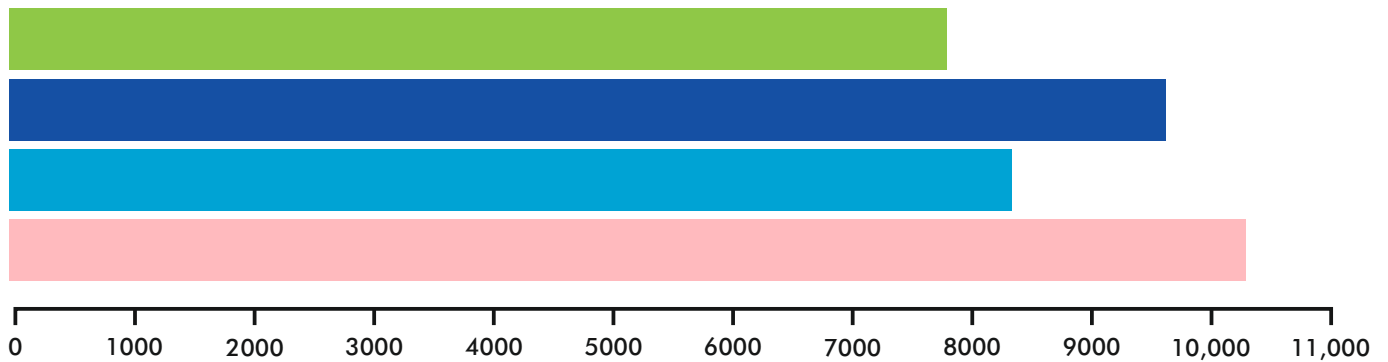
Most of the funds will be channeled towards developing cutting-edge space technologies, although allocations for space sciences and INSAT satellite systems experienced reductions. **India's bold space plans feature notable missions like Gaganyaan, scheduled for its inaugural human spaceflight in 2025, and the proposed construction of an Indian space station by 2035.** These initiatives mark significant milestones in advancing India's space expertise and capabilities.

## ALLOCATION FOR SPACE PROJECTS

Select: **Technology** Applications Sciences INSAT Satellites

2022-23 2023-24 RE2023-24 BE2024-25

### Technology



Reference: Union Budget 2024-25

Source: <https://www.thehindu.com/sci-tech/science/18-hike-for-department-of-space-in-union-budget-lions-share-for-development-of-space-technologies/article68436318.ece>

These developments have attracted attention from international giants such as SpaceX, positioning India as a key player in the global space economy. **India's space economy is poised to become a major force in the global space industry with the projection of touching the \$44 billion mark within the next decade.** It will offer

immense opportunities for employment, innovation, and entrepreneurship in this dynamically expanding sector of the Indian economy.





## CONTRIBUTION OF THE SPACE SECTOR TO INDIA'S DYNAMICALLY GROWING GDP

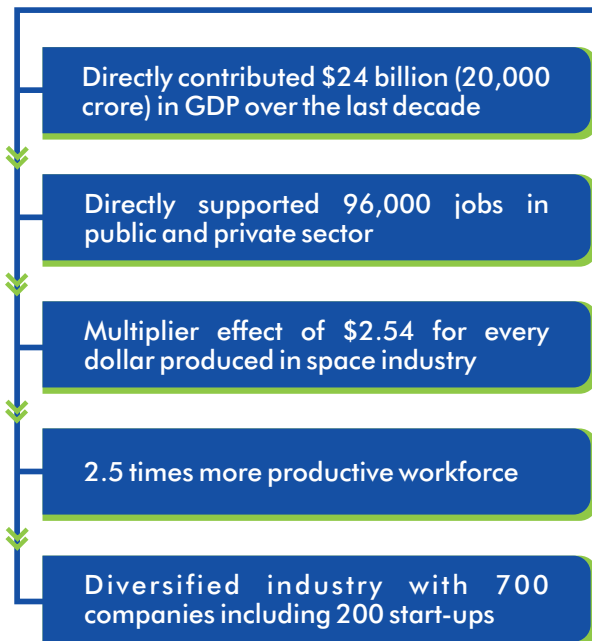
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India's space sector has emerged as a significant contributor to the nation's economic growth, playing an increasingly important role in the overall GDP. **As of 2021, the Indian space represented around 2% of the global space market share. Further, it is expected to raise its share to 8% by 2030 and around 15% by 2047.**

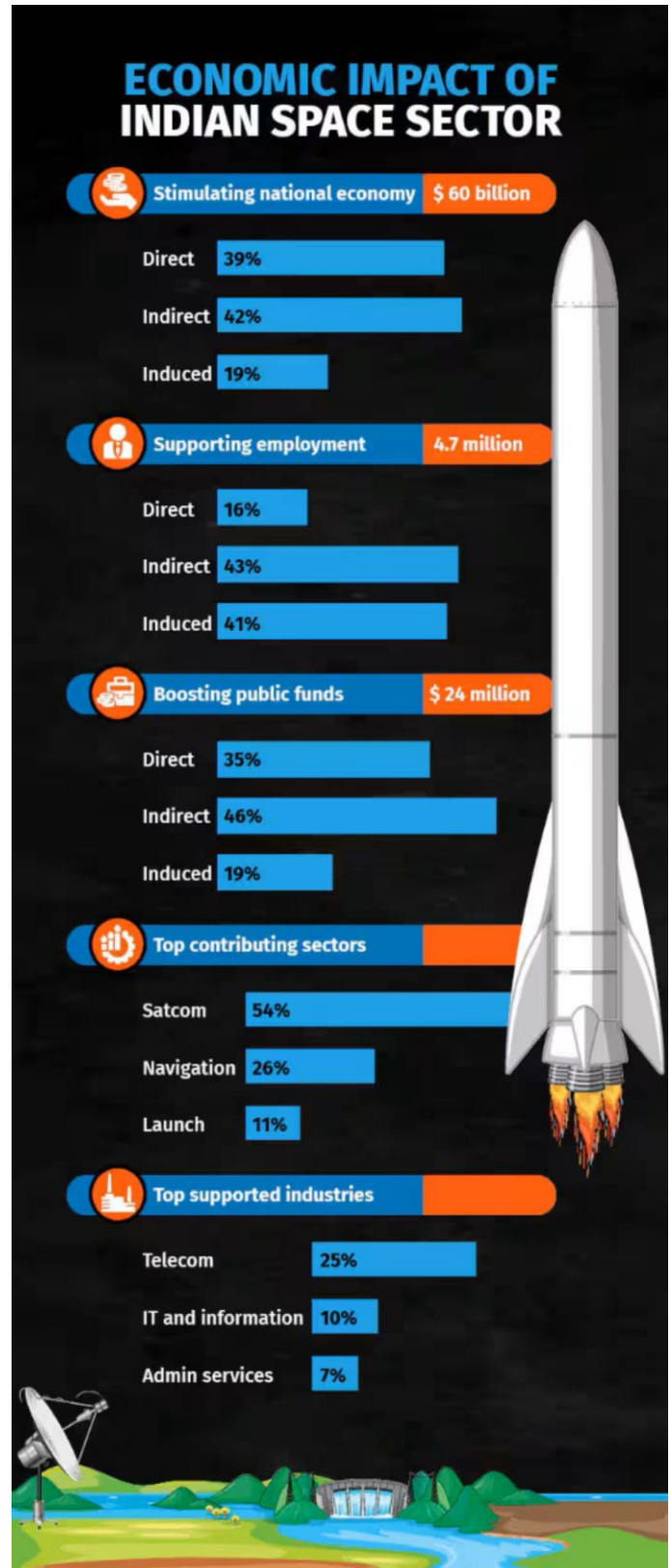


In terms of economic growth, the sector has contributed approximately Rs. 20,000 Crore (worth \$24 billion) to India's GDP over the last ten years. The multiplier effect is particularly noteworthy, as every dollar invested in the space industry generates \$2.54 in economic returns, benefiting allied industries like telecommunications and information technology. Job creation in the sector by directly employing over 96,000 people is also an encouraging trend. Moreover, with an increasing focus on high productivity, space sector workers in India have been found 2.5 times more efficient than the average industrial workforce.

### KEY CONTRIBUTIONS OF THE SPACE SECTOR



This value reflects India's consistent efforts in expanding its space-related activities through both public and private sector participation. A key development in recent years has been the government's move to liberalize the space sector and open it to private players to experience innovation.



Source: <https://www.moneycontrol.com/news/business/economy/for-every-dollar-indias-space-sector-has-given-back-2-54-to-the-economy-report-12805458.html>

The establishment of the Indian National Space Promotion and Authorization Centre (IN-SPACe) has also encouraged private investment and participation in satellite manufacturing and launch vehicle development. This has led to a surge in private startups—nearly 200 companies have entered the sector, many of which are contributing to a projected five-fold growth in India's space economy by 2040.



Source: <https://www.thehindu.com/sci-tech/science/space-sector-contributed-2000-crore-to-indias-gdp-over-the-last-decade/article68559540.ece>



Source: [https://www.inspace.gov.in/inspace?id=inspace\\_index](https://www.inspace.gov.in/inspace?id=inspace_index)

By 2040, it is estimated that the space economy could grow to \$100 billion, aided by investments in satellite launches, space tourism, and global partnerships. Looking ahead, India's space sector is poised for significant expansion with sustained government support and private-sector innovation. Thus, India's space sector is set to play an even larger role in driving India's economic growth and technological advancement in the coming decades.

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## INDIA'S FDI POLICY ON THE SPACE SECTOR

India's space sector has undergone significant transformations, particularly with the rise of private participation and policy changes related to Foreign Direct Investment (FDI). **ISRO is currently holding the position of 6<sup>th</sup> largest space agency in the world** with an unprecedented success rate in the last few years. It reflects India's ambitions to become a member of elite global space superpowers in years to come.



Source: <https://timesofindia.indiatimes.com/business/india-business/government-may-liberalise-fdi-norms-for-space-sector-dpiitsecretary/articleshow/104213470.cms>

Marking a shift in policy direction, historically which is dominated by the Indian Space Research Organisation (ISRO), is now embracing global partnerships and private sector involvement. For this, recent changes in India's FDI policy for the space sector have been one of the key enablers. It was aimed at balancing national security concerns while promoting technological transfer and innovation in the domain.

The 2024 amendments to India's FDI policy in the space sector marked a significant revision that allows for up to 100% FDI in satellite establishment and communication networks under the automatic route for companies involved in space-based communication services. However, for other space activities like space transportation, manufacturing of rockets, and satellite systems, FDI is permitted up to 74% under the automatic route with the remainder requiring government approval.

## FOREIGN COLLABORATION STATISTICS

### 3.6%

World space related companies in India

### 424

Foreign satellite launched of 34 countries

### \$279 Mn+

Revenue earned by India from launch of foreign satellites by ISRO

## FDI LIMITS PERMISSIBLE IN SPACE SECTOR THROUGH VARIOUS ROUTES

Sector/Activity	Sectoral cap	Entry Route
5.2.12.1 (1) Satellites-Manufacturing & Operation (2) Satellites Data Products (3) Ground segment & User Segment	100%	<b>Up to 74%:</b> Automatic <b>Beyond 74%:</b> Government route
5.2.12.2 (1) Launch Vehicles and associated systems or subsystems (2) Creation of Spaceports for launching and receiving Spacecraft	100%	<b>Up to 49%:</b> Automatic <b>Beyond 49%:</b> Government route
5.2.12.3 Manufacturing of components and systems/sub-systems for satellites, ground segment and user segment	100%	<b>Up to 100%:</b> Automatic

Source: <https://pib.gov.in/PressReleaseframePage.aspx?PRID=2011523>

Additionally, the new policy aligns with India's commitment to multilateral frameworks like the Outer Space Treaty and ensures compliance with export controls and international norms on space activities. **The Indian National Space Promotion and Authorization Center (IN-SPACe) plays a key role in regulating and facilitating private sector activities**, including those involving foreign investors, thereby acting as a single-window clearance mechanism for FDI in space



Source: <https://indiplomacy.com/2024/02/22/indias-space-sector-now-open-to-foreign-direct-investment/>

The amended FDI policy has made India a more attractive destination for foreign space companies, fostering partnerships that bring advanced technology and capital. It positions India to compete in the global satellite market, estimated to be worth billions while maintaining strategic autonomy over critical space technologies. This balance of growth and security is paramount to making India a **global hub for space innovation** in the future.





## EMINENT INSIGHT

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We are looking at a substantial growth in the space activity in private but more than that, there are institutional works which are happening. There is a new vision that has been put forward by the government in terms of what we want to do in the space sector in future.

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**Dr S Somanath**  
**Chairman**  
**Indian Space Research**  
**Organisation (ISRO)**

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