

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

RAJYA SABHA
UNSTARRED QUESTION NO. 1248

TO BE ANSWERED ON THURSDAY, DECEMBER 05, 2024

STATUS OF GAGANYAAN MISSION

1248. SHRI KARTIKEYA SHARMA:

Will the PRIME MINISTER be pleased to state:

- (a) the recent measures taken to implement the Human Rated Launch Vehicle Programme or Gaganyaan, including the timeline for the planned uncrewed and crewed missions, and the key milestones achieved so far, the details thereof;
- (b) the larger intended socio-economic benefits of the programme which would benefit the Indian populace across industries and geographies, the details thereof; and
- (c) whether any initiatives have been implemented to promote the participation of the private sector, including companies and startups based in Haryana in the Gaganyaan program, if so, the details thereof?

ANSWER

**MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC
GRIEVANCES & PENSIONS AND IN THE PRIME MINISTER'S OFFICE
(DR. JITENDRA SINGH):**

- (a) The status of the progress of Gaganyaan programme is as follows:
 - i. Human Rated Launch Vehicle :Ground testing of propulsion systems stages, including solid, liquid and cryogenic engine, towards human rating of the launch vehicle have been completed .
 - ii. Crew Module Escape System: Design & realization of five types of Crew Escape system solid motors completed. Static testing of all five types of solid motors

completed. First Test Vehicle mission (TV-D1) for the performance validation of Crew Escape System (CES) has been successfully accomplished.

- iii. **Orbital Module Systems**: Design of Crew Module and Service Module structure has been completed. Various Parachute Systems have been tested through Integrated Main parachute Air drop Test and Rail Track Rocket Sledge Tests. Ground test programme towards human rating of Crew Module Propulsion System has been completed and Service Module Propulsion System test programme is nearing completion. Characterization of Thermal Protection System has been completed.
- iv. **Gaganyaan Training**: Two out of three semesters of the training programme completed. Independent Training Simulator and Static Mockup Simulators realized.
- v. **Major Ground Infrastructure**: Critical ground facilities such as Orbital Module Preparation Facility (OMPF), Astronaut Training Facility (ATF) and Oxygen Testing Facility have been operationalized. Realization of Mission Control Centre (MCC) Facilities and establishment of Ground Station Networks are nearing completion.
- vi. **Gaganyaan First Uncrewed mission** :Solid and Liquid Propulsion Stages of human rated launch vehicle are ready for flight integration. C32 Cryogenic stage is under preparation for flight integration. Crew Module and Service Module structure realization completed. Flight integration activities are in progress.

(b) The Gaganyaan mission, while primarily a scientific and technological endeavor, carries significant socio-economic benefits for India. Some of the key areas where the mission is expected to have a positive impact:

i. Technological Advancements and Spin-offs:

New Technologies: The development of advanced technologies like cryogenic engines, lightweight materials, life support systems, and robotics will have applications in various industries, including aerospace, automotive, healthcare, and energy.

Job Creation: The mission is expected to create numerous jobs in the aerospace industry, research institutions, and associated sectors.

Economic Growth: The development of indigenous space technology will attract investments, boost domestic manufacturing, and contribute to economic growth.

ii. Inspiring Future Generations:

STEM Education: The mission will inspire young minds to pursue careers in science, technology, engineering, and mathematics (STEM).

National Pride: A successful human spaceflight program will enhance national pride and inspire a sense of achievement among the Indian populace.

iii. International Collaboration and Diplomacy:

Global Partnerships: The mission will foster international collaborations with other spacefaring nations, leading to knowledge sharing and joint ventures.

Diplomatic Influence: India's successful space program will enhance its global standing and diplomatic influence.

iv. Scientific Research and Innovation:

Microgravity Experiments: Conducting experiments in microgravity can lead to breakthroughs in various fields, including materials science, biotechnology, and medicine.

Remote Sensing and Earth Observation: The mission can contribute to improved weather forecasting, disaster management, and resource management.

(c) The government has taken several initiatives to promote participation of Indian Industries and start-ups across India including State of Haryana in Indian Space Programmes.

The Government of India has announced reforms, on June, 2020, in the space sector towards enabling the private players to provide end-to-end services towards enhancing the Indian space economy to a significant level. Indian National Space Promotion and Authorisation Centre (INSPACe), a single-window agency, was formed under Department of Space, to promote, regulate and authorize space activities of Non-Governmental Entities (NGEs). Indian Space Policy-2023 was released in April 2023 as an overarching, composite and dynamic framework to implement the space reform vision. It helps to promote greater participation of Non-Governmental Entities (NGEs) in the value chain of space economy in order to develop robust, innovative and competitive space ecosystem aiming for a larger share of India in global space economy. It also enables the NGEs to make use of infrastructure created through public funds. Various schemes to encourage and hand hold private sector also announced and

implemented by IN-SPACe i.e, Seed Fund Scheme, Pricing Support Policy, Mentorship Support, Design Lab for NGEs, Skill Development in Space Sector, Technology Transfer to NGEs. Further, amendment was made to the Foreign Direct Investment policy for space sector, enabling higher threshold of foreign investments in various space domains. Announcement of opportunities and initiatives like 'Atmanirbharta in development of space technologies/ products/ systems through Indian industry' are also being undertaken offering challenges in new domains of space technology.
