

**GOVERNMENT OF INDIA
DEPARTMENT OF SPACE**

LOK SABHA

UNSTARRED QUESTION NO. 2548

TO BE ANSWERED ON WEDNESDAY, AUGUST 07, 2024

INDIAN NAVIC SYSTEM

2548. SHRI RAJU BISTA:

Will the PRIME MINISTER be pleased to state:

- (a) the status of India's NavIC system and the manner in which it is different from the contemporary systems vis a vis GPS, GLONASS;**
- (b) the impact ISRO & Earth observation satellites had on various sectors, such as agriculture, disaster management, and environmental monitoring;**
- (c) the details of the progress made by the country in its mission to send humans to space;**
- (d) the future plans of ISRO including the development of human spaceflight capabilities and exploration of deeper space; and**
- (e) the details of the measures taken by the Government to promote private sector participation in the space sector?**

ANSWER

**MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC
GRIEVANCES & PENSIONS AND IN THE PRIME MINISTER'S OFFICE**

(DR. JITENDRA SINGH):

(a) India's NavIC is an independent regional navigation satellite system designed to provide PNT (Position, Navigation and Timing) service over Indian landmass and 1500 kilometers beyond. NavIC space segment consists of a constellation of seven satellites in geosynchronous orbits. Currently, there are four functional satellites providing PNT service. The satellites that are no longer capable of PNT service have been repurposed for additional useful services like safety-of-life messaging. The full constellation of seven satellites is expected to be completed in the coming years.

NavIC is a regional system, whereas GPS and GLONASS are global systems. However, the performance of NavIC, as seen with a seven satellite constellation, is at par with the contemporary systems in the envisaged service area.

(b) ISRO's Earth Observation (EO) satellites are providing data for applications in the domains of Agriculture, Water, Environment, Urban & Rural Development, and for Disaster Management Support, which have been internalised / institutionalised by the respective users.

In the Agriculture domain, EO data has facilitated advance information on yield of major crops and in assessing & monitoring agriculture drought situations. The EO data is also being used in the PMFBY programme, benefiting farmers and agricultural insurance companies.

EO data is used for disaster management support for deriving near-real time information; development of early warning models and damage assessment with reference to disasters such as

Floods, Forest fires, Cyclones, Landslides and Earthquakes. Such inputs help in decision making for disaster response, planning long term mitigation measures, and also in reducing the loss of lives; and extent & cost of evacuation operations for major disasters such as cyclones & floods.

EO data is also providing information on aerosols, agricultural residue burning and weather parameters, for environmental monitoring and citizens' benefit.

All these applications provide tangible and intangible contributions for societal development.

(c) The progress made for Gaganyaan Programme are as follows:

- i. Human Rated Launch Vehicle: Ground testing of propulsion stages, including solid, liquid and cryogenic engine, towards human rating of the launch vehicle has 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 validation of crew escape system and parachute deployment has been successfully accomplished.**
- iii. Orbital Module Systems: Design of Crew Module and Service Module structure have 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. Gaganyatri 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, Astronaut Training Facility, Oxygen Testing Facility have been operationalized.

vi. Gaganyaan First Uncrewed mission: Solid and Liquid Propulsion Stages of human rated launch vehicle are ready for flight integration. C32 Cryogenic stage is nearing completion. Crew Module and Service Module structure realization completed. Flight integration activities are in progress.

(d) The mandate of Gaganyaan programme is to demonstrate the capability to indigenously carry out human spaceflight to Low earth orbit. In continuation of Gaganyaan programme, ISRO has developed a comprehensive road map for human spaceflight activities. As per the roadmap, ISRO is planning to carry out crewed and uncrewed follow-on missions. The objectives of these mission will be to induct various indigenous technologies such as flight suits, crew seat, viewport and advanced avionics systems.

ISRO is also formulating a proposal to develop and deploy Bharatiya Antariksh Station (BAS) in Low earth orbit. Currently,

the teams are working on the preparation of a detailed project report for the same. These programmes will pave the way for demonstration of Lunar landing of an Indian by 2040.

- (e) The Government of India has announced reforms in the space sector in June, 2020, 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 (IN-SPACe), a single-window agency, was formed under Department of Space, to promote, regulate and authorize space activities of Non-Governmental Entities (NGEs).

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, in order to carry out space activities, the facilities across various ISRO centres will also be permitted for use by private sector through IN-SPACe.

IN-SPACe has signed around 58 MoUs with NGEs to provide necessary support for realization of space systems and applications envisaged by such NGEs, which is expected to increase the industry participation in manufacturing of launch vehicles and satellites.

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) i.e. private sector 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. Further, amendment was made to the Foreign Direct Investment policy for space sector, enabling higher threshold of foreign investments in various space domains.

M/s. New Space India Ltd. (NSIL), a CPSE under the Department of Space will transfer the matured technologies developed by ISRO to Indian industries. ISRO will also nurture Indian space industries by sharing its experiences on quality and reliability protocols, documentation, testing procedures etc. 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.
