

PARLIAMENT QUESTION: PUBLIC-PRIVATE PARTNERSHIP (PPP) MODEL FOR EARTH OBSERVATION SATELLITE CONSTELLATIONS

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The Government, through the Indian National Space Promotion and Authorization Centre (IN-SPACe), has formulated a Public Private Partnership (PPP) framework for the development, deployment and operation of Earth Observation (EO) satellite constellations, with a view to enhancing the country's space-based observation capabilities, space economy and building an indigenous, self-reliant Earth Observation ecosystem in the country.

Under this framework, Non-Government Entities (NGEs) including private industry, start-ups and, where relevant, academic and research institutions are enabled to design, build, own and operate Earth Observation satellite constellations on an end-to-end basis. The envisaged roles include:

- i. **Satellite manufacturing:** Design, fabrication, integration and testing of EO satellites, including 5 ultra-high resolution optical satellites with 4 bands, 3 multispectral satellites with 8 bands, 2 hyperspectral optical satellites with 250 bands and 2 Synthetic Aperture Radar (SAR) satellites in X-band, by Indian industry.
- ii. **Launch services:** Utilisation of Indian launch vehicles (private/ISRO), for placing the satellites in to orbit.
- iii. **Data generation and ground infrastructure:** Establishment of ground stations, mission control and data reception/processing infrastructure by the private consortium.
- iv. **Downstream applications:** Development of value-added products, analytics and decision-support tools for Government departments, strategic users and commercial customers.
- v. **Academic and R&D linkages:** Collaboration with academic and research institutions for capacity building and application development.

The following financial assistance, policy incentives and institutional mechanisms have been put in place by the Government to encourage private investment in Earth Observation and allied space missions:

- i. Antariksh Venture Capital Fund of Rs. 1,000 crores, announced to catalyse private investment in the space sector.
- ii. Technology Adoption Fund (TAF) of Rs. 500 crores, providing financial support of up to 60% of project cost for start-ups/MSMEs and up to 40% for larger industries, subject to a cap of Rs. 25 crores per project, to enable commercialisation of early-stage space technologies, including EO-related technologies.
- iii. Seed Fund Scheme, providing grants of up to Rs. 1 crore to start-ups and NGEs, including for applications in agriculture, disaster management, urban planning and marine domain awareness.

- iv. Common Technical Facilities, with an outlay of Rs. 500 crores, along with support to State Governments for setting up Space Manufacturing Clusters.
- v. Differential pricing policy for NGEs buying Indian satellite data to provide demand certainty for EO data and services.
- vi. Transfer of Technology (ToT) from ISRO to NGEs, including for satellite sub-systems and launch vehicle technologies.
- vii. Facilitation support, including Resident Experts placed by IN-SPACe to provide technical assistance to industry at no cost, and a Pre-Incubation Entrepreneurship Development Programme.
- viii. Institutional single-window mechanism: IN-SPACe functions as the nodal authorisation, promotion and facilitation body for all NGE space activities, including EO missions.

These measures are complemented by the Indian Space Policy-2023, which provide the overarching regulatory and ease-of-doing-business framework for private participation in the space sector.

IN-SPACe has approved and signed an agreement for the country's first indigenous, fully commercial Earth Observation constellation under the PPP model with a private consortium named Allied Orbits Private Limited. The details are as follows:

- i. **Allied Orbits Private Limited Consortium:** Led by PixxelSpace India, along with Dhruva Space, PierSight Space and Satsure Analytics India.
- ii. **Scope:** Design, build, own and operate a 12-satellite constellation having panchromatic, multispectral, hyperspectral and Synthetic Aperture Radar (SAR) capabilities, supported by indigenous ground infrastructure.
- iii. **Estimated investment:** More than Rs. 1,200 crores, to be invested by the consortium.
- iv. **Timeline:** The constellation is to be developed and operationalised by the year 2029.
- v. **Manufacturing and launch:** All satellites are to be manufactured domestically and launched on Indian launch vehicles, with mission control based in India.

The PPP-based Earth Observation constellations are expected to strengthen national capabilities in the following manner:

- i. **Disaster management:** Near-real-time, high-revisit daily imagery for early warning, damage assessment and post-disaster response coordination.
- ii. **Agriculture:** Crop health monitoring, yield estimation, soil and water stress detection using multispectral and hyperspectral data, supporting schemes for farmer welfare and food security.
- iii. **Climate monitoring:** Enhanced observation of climate impact monitoring like land-use/ land-cover change, glacial and coastal dynamics, and environmental parameters to support India's climate action and reporting commitments.
- iv. **Urban planning:** Improved mapping of urban infrastructure, land records and planning inputs for smart city and infrastructure development initiatives.
- v. **Border surveillance:** SAR and ultra-high resolution optical capabilities providing all-weather, day-night surveillance to support strategic and security requirements, while reducing dependence on foreign satellite imagery.
- vi. **Space economy:** These initiatives are expected to strengthen indigenous manufacturing, generate skilled employment, attract private and foreign investment, and contribute to the Government's goal

of significantly expanding India's share of the global space economy.

Overall, the PPP framework for Earth Observation is aimed at building a self-reliant (Aatmanirbhar), data-sovereign EO ecosystem, with the private sector as the primary driver of manufacturing and downstream innovation, while the Government continues to act as an enabler, regulator, and anchor customer.

This information was given by the Minister of State (Ind. Charge) Science & Technology; Earth Sciences and Minister of State PMO; Personnel, Public Grievances and Pensions; Department of Atomic Energy and Space Dr. Jitendra Singh in a written reply in Lok Sabha today.

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