

PARLIAMENT QUESTION: MAJOR SPACE MISSION BY ISRO

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During the last 5 years (December 2020 to December 2025), 22 ISRO satellites have been launched. Out of which 7 are Earth Observation, 4 are communication, 2 are navigation, 3 are space science and 6 are technology demonstration missions. The details of the launches are attached in Annexure-1.

There has been no cost overrun in Chandrayaan-3 and Aditya-L1 satellite projects. However, there has been time overrun of 28 and 46 months respectively for Chandrayaan-3 and Aditya-L1 satellites, mainly due to the following reasons:

Aditya-L1: Time overrun in the project is due to change in the scope, change in orbit from Low Earth Orbit (LEO) to Lagrangian Point (L1) calling for changes in the satellite configuration, longer cycle for the payload development and procurement of long lead items.

Chandrayaan-3: Time overrun is due to reconfiguration of systems to incorporate suggested by Chandrayaan-2 Failure Analysis Committee, COVID-19 Pandemic, Conduct of New Special Test and New Sensor development.

Gaganyaan Programme aims to demonstrate indigenous human spaceflight capability to Low Earth Orbit (LEO). The programme was officially sanctioned by the Government of India in January 2019 with a mandate to undertake two uncrewed missions in identical configuration and one crewed mission with total budget approval of ₹9,023 Crore with target schedule of crewed mission launch in May 2022.

Recently in October 2024, the scope of Gaganyaan programme was revised from three to eight mission including additional uncrewed mission (G1) and also four precursor missions for Bharatiya Antariksh Station (BAS) with total revised budget provision of ₹20,193 Crore. The activities as per revised approval is in progress with target of first Crewed mission in year 2027-28.

For the Gaganyaan programme, ISRO is developing and realising various systems for accomplishing the planned missions. Considering the stringent human rating requirements, extensive testing of propulsion elements, structures of Human-Rated Launch Vehicle (HLVM3), Service Module Propulsion System and Crew Module Propulsion System, parachute-based deceleration system has been completed. The critical Crew Escape System motors have also been developed and static tests have been completed. In parallel, development of indigenous Environmental Control and Life Support Systems is in progress.

Major infrastructure such as the Orbital Module Preparation Facility, Gaganyaan Control Centre, Crew training facility have been established. Second launch pad modifications have been incorporated. Precursor missions such as TV-D1 and IADT-01 have been successfully accomplished. Ground tracking networks, terrestrial links and IDRSS-1 feeder stations have been established. Crew Module Recovery plan as well as assets to be deployed have been finalized. For the first uncrewed mission (G1), all HLVM3 stages and CES motors are ready. Crew and Service Module systems have been realized. Assembly and integration activities are nearing completion. The first crewed mission is targeted in 2027-28.

India has achieved self-reliance in space transportation systems to launch satellites up to 10 tons to Low Earth Orbit (LEO) and 4.2 tons to Geo-Synchronous Transfer Orbit (GTO) through the currently operational PSLV, GSLV and LVM3 launch vehicles. These launch vehicles have enabled independent space access to satellites for earth observation, communication, navigation and space exploration. In order to enhance the launch vehicle capabilities towards meeting the expanded space vision, Government has approved the development of a Next Generation Launch Vehicle (NGLV) which will provide a maximum payload capability of 30 tons to Low Earth Orbit. Towards achieving low-cost access to space, reusable launch vehicle technologies are also being developed including a partially reusable variant of NGLV with 14 tons payload capability to LEO. Another development is of a winged body upper stage which will fly back from the orbit to the Earth and autonomously land on a runway.

With regard to development of more powerful and more efficient propulsion systems, ISRO has undertaken the development of a high-thrust (2000kN) semi-cryogenic engine for inducting in the LVM3 vehicle. An environmentally friendly Methane based propulsion system for high-thrust engine is also being conceptualized for the Next Generation Launch Vehicle, ensuring technology readiness for the launch vehicle for the proposed Crewed Moon Mission. Apart from these, development of an air-breathing propulsion system is underway towards a Dual-Fuel Scramjet engine.

The Government proposes to increase budget allocation for critical space infrastructure and R&D projects of the Department of Space. The Space Vision 2047 of the Government targets establishment of the Bharatiya Antariksh Station by 2035 and landing of an Indian on Moon by 2040. Towards this, Government has approved five key R&D intensive projects: the Gaganyaan follow-on mission; the Chandrayaan follow-on missions including Chandrayaan-4 Lunar Sample Return Mission and the Chandrayaan-5/LUPEX mission; the Venus Orbiter Mission; and the development of the Next Generation Launch Vehicle. As part of the expansion of ground infrastructure for achieving the Space Vision, Government has approved two more launch pads – one at Kulasekarapattinam in Tamil Nadu and a Third Launch Pad for the next generation of Launch Vehicles.

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Annexure-1

List of satellites launched during last 5 years

Sl. No	Satellite	Launch Date	Launch Vehicle	Status
1.	CMS-01	17-12-2020	PSLV-C50	Operational
2.	EOS-03 (GISAT-1)	08-12-2021	GSLV-F10	Launch unsuccessful
3.	EOS-04(RISAT-1A)	14-02-2022	PSLV-C52	Operational
4.	INS-2TD	14-02-2022	PSLV-C52	Not Operational

Sl. No	Satellite	Launch Date	Launch Vehicle	Status
5.	GSAT-24	24-06-2022	Ariane-V(VS257)	Operational
6.	EOS-02 (Microsat-2A)	08-07-2022	SSLV-D1	Launch unsuccessful
7.	EOS-06 (OS-3)	26-11-2022	PSLV-C54	Operational
8.	INDIA-BHUTAN SAT	26-11-2022	PSLV-C54	Operational
9.	Aditya-L1	09-02-2023	PSLV-C57	Operational
10.	NVS-01	29-05-2023	GSLV-F12	Operational for PNT service
11.	Chandrayaan-3	14-07-2023	LVM3 M4	Not Operational
12.	EOS-07 (Microsat-2B)	02-10-2023	SSLV-D2	Operational
13.	XPoSat	01.01.2024	PSLV-C58	Operational
14.	INSAT-3DS	18-02-2024	GSLV-F14	Operational
15.	EOS-08 (Microsat-2C)	16-08-2024	SSLV-D3	Operational
16.	GSAT-N2	19-11-2024	Falcon-9	Operational
17.	SPADEX-A	30-12-2024	PSLV C60	Operational
18.	SPADEX-B	30-12-2024	PSLV C60	Operational
19.	NVS-02	29-01-2025	GSLV-F15	Not operational
20.	CMS-03 (GSAT-7R)	11-02-2025	LVM3-M5	Being Operationalized
21.	RISAT-1B	18-05-2025	PSLV-C61	Launch unsuccessful
22.	NISAR	30-07-2025	GSLV-F16	Operational
