

ISRO is an important body in India and spearheads research in space science in India, also playing a huge role in the development of the country through educational, agricultural, communication, and defence sector projects. Hence, it is an important segment of UPSC science and technology syllabus.

ISRO or Indian Space Research Organisation is India's space agency founded in 1969 to help develop an indigenous Indian space program. It is one of the 6 largest space agencies in the world today. ISRO maintains one of the biggest fleets of remote sensing (IRS) and communication (INSAT) satellites catering to the needs of the nation through a network of centres, offices, and research institutes in different parts of the country. ISRO functions in the following areas: broadcasting, weather forecasting, disaster management, geographic information systems, navigation, cartography (maps), telemedicine, distance education satellites, etc.

ISRO is headquartered in Bengaluru.

ISRO Chairman: Dr K Sivan (who is also the Secretary of the Department of Space, GOI)

ISRO Formation

- The Indian National Committee for Space Research (INCOSPAR) was established by Jawaharlal Nehru in 1962 under the Department of Atomic Energy (DAE).
- Eminent scientist Dr Vikram Sarabhai had a big role in this development. He understood the need for space research and was convinced of the role it can play in helping a nation develop.
- INCOSPAR set up the Thumba Equatorial Rocket Launching Station (TERLS) at Thumba, near Thiruvananthapuram at India's southern tip. TERLS is a spaceport used to launch rockets.
- The INCOSPAR became ISRO in 1969.
- The Department of Space was created in 1972 and ISRO became a part of it and remains so till date. The Space Department reports directly to the Prime Minister of the country.

ISRO has many facilities each dedicated to a specialised field of study in space. A few of them are as follows:

- Vikram Sarabhai Space Centre (VSSC), Thiruvananthapuram
- Liquid Propulsion Systems Centre (LPSC), Thiruvananthapuram
- Satish Dhawan Space Centre (SDSC-SHAR), Sriharikota
- Space Applications Centre (SAC), Ahmedabad
- National Remote Sensing Centre (NRSC), Hyderabad

ISRO Milestones

- The first Indian-made sounding rocket was the RH-75 (Rohini-75). It was launched from TERLS in 1967. It weighed just 32 kg. Series of Rohini Sounding Rockets were developed by ISRO for atmospheric and meteorological studies.
- ISRO built its first satellite in 1975 and named it Aryabhata. This was launched by the Soviet Union.

- The first Indian-built launch vehicle was SLV-3 and it was used to launch the Rohini satellite in 1980.
- ISRO launched its first INSAT satellite in 1982. It was a communication satellite. It was named as INSAT-1A, which failed in orbit. The next communication satellite INSAT-1B was launched in 1983.
- ISRO also launched the first IRS (remote-sensing satellite) in 1988.
- ISRO has developed three types of launch vehicles (or rockets) namely, the PSLV (Polar Satellite Launch Vehicle), the GSLV (Geosynchronous Satellite Launch Vehicle) and Geosynchronous Satellite Launch Vehicle Mark III (GSLV Mark III) or Launch Vehicle Mark 3 (LVM3).
- ISRO launched its first lunar mission Chandrayaan I in 2008.
- It also launched the Mars Orbiter Mission (MOM) or the Mangalyaan in 2014. With this, India became the first country to achieve success in putting a satellite in the Mars orbit in its maiden attempt and the fourth space agency and the first space Asian agency to do so.
- In 2017, ISRO created another world record by launching 104 satellites in a single rocket. It launched its heaviest rocket yet, the Geosynchronous Satellite Launch Vehicle-Mark III and placed the GSAT 19 in orbit. There are future plans for human spaceflight (Gaganyaan), interplanetary probes and a solar mission as well.

ISRO Vision & Objectives

ISRO's vision is stated as *"Harness space technology for national development while pursuing space science research and planetary exploration."*

ISRO Mission

- Design and development of launch vehicles and related technologies for providing access to space.
- Design and development of satellites and related technologies for earth observation, communication, navigation, meteorology and space science.
- Indian National Satellite (INSAT) programme for meeting telecommunication, television broadcasting and developmental applications.
- Indian Remote Sensing Satellite (IRS) programme for management of natural resources and monitoring of environment using space-based imagery.
- Space-based Applications for Societal development.
- Research and Development in space science and planetary exploration.