



## OneWeb India-2 Mission

### Why in News?

In its second commercial launch, [ISRO's \(Indian Space Research Organisation\)](#) heaviest launch vehicle [LVM-3 \(Launch Vehicle Mark 3\)](#) will launch a fleet of **36 OneWeb satellites**, completing the first generation of the huge broadband constellation.

### What is the LVM3-M3/OneWeb India-2 Mission?

- This will be the 18<sup>th</sup> launch of OneWeb and will add to the UK-based company's (OneWeb) existing constellation of 582 satellites.
- ISRO's commercial arm [NSIL](#) had signed a contract with OneWeb to launch **72 satellites in two phases**. The first set of 36 satellites was launched in LVM3-M2/OneWeb India-1 mission on October 23, 2022.
- This is the second OneWeb fleet that India is launching. This **initiated India's journey into the commercial heavy lift-off space**.

### What is OneWeb Constellation?

- **About:**
  - OneWeb Constellation operates in a **LEO Polar Orbit**.
  - **Satellites** are arranged in 12 rings (Orbital planes) with 49 satellites in each plane.
  - The orbital planes are **inclined to be near polar (87.9 Deg.)**
  - The orbital planes are 1200 km above the Earth. **Each satellite completes a full trip around the earth every 109 minutes.**
- **Significance:**
  - OneWeb already has connectivity solutions active today in key geographies across the globe and is bringing new areas online.
  - OneWeb's **high-speed, low-latency solutions will help connect communities, enterprises, and governments around the world, demonstrating the unparalleled potential of LEO connectivity.**

### What are the Launch Vehicles Developed by ISRO?

- **Satellite Launch Vehicle (SLV):** The first rocket developed by ISRO was simply called SLV, or Satellite Launch Vehicle.
  - It was followed by the Augmented Satellite Launch Vehicle or ASLV.
- **Augmented Satellite Launch Vehicle (ASLV):** SLV and ASLV both could carry small satellites, weighing up to 150 kg, to lower earth orbits.
  - ASLV operated till the early 1990s before PSLV came on the scene.
- **Polar Satellite Launch Vehicle (PSLV):** PSLV's first launch was in 1994, and it has been ISRO's main rocket ever since. Today's PSLV, however, is vastly improved and several times more powerful than the ones used in the 1990s.
  - It is the first Indian launch vehicle to be equipped with liquid stages.
  - PSLV is the most reliable rocket used by ISRO to date, with 52 of its 54 flights being successful.
  - It successfully launched two spacecraft - [Chandrayaan-1](#) in 2008 and [Mars Orbiter](#)

[Spacecraft in 2013](#) - that later travelled to Moon and Mars respectively.

- **Geosynchronous Satellite Launch Vehicle (GSLV):** GSLV is a much more powerful rocket, meant to carry heavier satellites much deeper into space. To date, GSLV rockets have carried out 18 missions, of which four ended in failure.
  - It can take 10,000 kg of satellites to lower the earth's orbits.
  - The indigenously developed Cryogenic Upper Stage (CUS), forms the third stage of GSLV Mk II.
  - Mk-III versions have made ISRO entirely self-sufficient in launching its satellites.
    - Before this, it used to depend on the European Ariane launch vehicle to take its heavier satellites into space.
  - ISRO **has renamed the GSLV Mark-III as Launch Vehicle Mark-III.** A GSLV - for the Geostationary Orbit (GEO) - will continue to be called so.
    - The **LVM3 will go everywhere —GEO, Medium Earth orbit (MEO), LEO, and missions to the moon, sun.**

## UPSC Civil Services Examination, Previous Year Question (PYQ)

**Q. With reference to India's satellite launch vehicles, consider the following statements: (2018)**

1. PSLVs launch the satellites useful for Earth resources monitoring whereas GSLVs are designed mainly to launch communication satellites.
2. Satellites launched by PSLV appear to remain permanently fixed in the same position in the sky, as viewed from a particular location on Earth.
3. GSLV Mk III is a four-staged launch vehicle with the first and third stages using solid rocket motors; and the second and fourth stages using liquid rocket engines.

**Which of the statements given above is/are correct?**

- (a) 1 only
- (b) 2 and 3
- (c) 1 and 2
- (d) 3 only

**Ans: (a)**

**Source: IE**

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