Chandrayaan-2 Mission

For the first time in the history of Indian Space Research Organisation (ISRO), two **women will head** the Chandrayaan-2 mission.

- **Ritu Kridhal** and **M Vanitha** are leading as project and mission directors respectively for Chandrayaan-2 mission.

Chandrayaan-2 Mission

Chandrayaan-2 is India's second lunar exploration mission after Chandrayaan-1, developed by the Indian Space Research Organisation.

Objectives

- **Quantify the water** available on the moon's surface.
- **Map its topography,** to explore chemicals and minerals such as magnesium, iron, and Helium.
- Study topmost part of the **lunar atmosphere**.

Significance

- **Global Power:** If successful, India will be the **fourth country** (After Russia, China, and the USA) to land a rover on the moon.
    - **India will be the first** country to land on the **southern pole** of the moon.
    - This would give ISRO opportunity to name that site on the moon.
- **Indigenous mission:** 13 instruments from India, one instrument from US space agency, NASA.
- **Future Space Exploration**: mission will also expand the country's footprint in space as moon is the perfect test-bed for proving technologies required for future space exploration.

Complexities involved in a moon landing

- **Trajectory accuracy:** Ensuring trajectory accuracy while navigating 3.844 lakh km has its own challenges.
- **Communication hurdle:** Owing to the large distance from Earth, radio signals, which need to be picked up, would be weak.
- **Lunar dust:** Firing engines close to the lunar surface results in the backward flow of gases and dust, causing hindrance to deployment mechanism and damaging sensors.
- **Extreme temperatures:** A lunar day or night lasts 14 earth days, resulting in extreme surface temperature.
- **Trans-lunar injection, capture:** Series of engine burns to get close to the moon, intersection of probe and moon must be predicted in advance with accuracy.
- **Orbiting:** The lumpy lunar gravity influences the orbit of the spacecraft.