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Chandrayaan-3

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Why is in news? Chandrayaan-3 speaks to moon's rising importance in scientific, political milieus

Chandrayaan-3 is a **follow-on mission to Chandrayaan-2** to demonstrate end-to-end capability in **safe landing and roving on the lunar surface**.

It can be recalled that the Chandrayaan-2's Lander crashed while attempting to make a landing on the moon surface in 2019.

It consists of **Lander (Vikram) and Rover (Pragyan)** configuration. It will be launched by **GSLV MkIII** from Sathish Dawan Space Centre, Sriharikota.

The propulsion module will carry the lander and rover configuration till 100km lunar orbit.

The propulsion module has Spectro-polarimetry of HAbitable Planet Earth (SHAPE) payload to study the spectral and polarimetric measurements of Earth from the lunar orbit.

Lander payloads: Chandra's Surface Thermophysical Experiment (ChaSTE) to measure the thermal conductivity and temperature; Instrument for Lunar Seismic Activity (ILSA) for measuring the seismicity around the landing site; Langmuir Probe (LP) to estimate the plasma density and its variations. A passive Laser Retroreflector Array from NASA is accommodated for lunar laser ranging studies.

Rover payloads: Alpha Particle X-ray Spectrometer (APXS) and Laser Induced Breakdown Spectroscopy (LIBS) for deriving the elemental composition in the vicinity of landing site.

The payloads **Radio Anatomy of Moon Bound Hypersensitive Ionosphere and Atmosphere (RAMBHA)** — is also part of the upcoming Chandrayaan-3 mission, providing the ISRO a second chance at studying certain aspects of earth's lone natural satellite.

This will be **India's second attempt to soft-land a lander and rover** on the lunar surface, and demonstrate end-to-end capability in the relevant technologies.

Soft-landing on the moon is a complicated exercise and the possibility of failure exists, even if it may be lower — yet there is good reason to focus on the consequences of a complete success.

Chandrayaan-3 offers opportunities for India to lead the world's response to the moon's growing importance in the scientific and the political milieus.

Chandrayaan-1 mission:

It was launched in **October 2008** and it orbited the Moon and performed a number of scientific experiments and observations.

It was **India's first lunar mission** and the **first to discover water on the Moon**.

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It involved an **orbiter and an impactor**, both built by ISRO.

It was launched by the **Polar Satellite Launch Vehicle** and made more than 3,400 orbits around the Moon.

It **carried 11 scientific instruments** on board, five of which were Indian while the others were from the European Space Agency (ESA), National Aeronautics and Space Administration (NASA), and Bulgarian Academy of Sciences.

It was operational for 312 days till August 29, 2009.

Chandrayaan-2 mission:

It was launched in **July 2019**, and involves an **orbiter, a lander (Vikram), and a rover (Pragyaan)**, all built by ISRO.

It was **India's first to attempt a soft landing near the south pole of the Moon**.

It was launched from Satish Dhawan Space Centre in Sriharikota, Andhra Pradesh by the **Geosynchronous Satellite Launch Vehicle Mk-III**.

It aimed to land the Vikram lander on the lunar surface and deploy the Pragyaan rover.

It carried eight scientific payloads for mapping the lunar surface and studying the exosphere (outer atmosphere) of the Moon.

It's lander Vikram crashed into the lunar surface apparently because of an issue with its braking rockets.