6. ISRO's Vikram Lander Is Lost, But This Hardly Matters

Prelims: Science & Technology- Space Technology

Mains:

GS-III- Science and Technology - developments and their applications and effects in everyday life Achievements of Indians in science & technology; indigenization of technology and developing new technology.

GS-III- Awareness in the fields of IT, Space, Computers, robotics, nano-technology, bio-technology and issues relating to intellectual property rights.

eContext:

- The Indian Space Research Organisation lost contact with the Chandrayaan-2 lander Vikram just moments before it was to land on near the south pole of the Moon. The **Chandrayaan-2 mission, however, is far from being a failure**.

Why the Missing Lander Hardly Matters?

- Though the expected soft-landing of the Vikram Lander was not accomplished, the Chandrayaan-2 mission is far from over. In fact**, in science terms, very little has been lost**. But in terms of optics, it is definitely a huge setback for the Indian Space Research Organisation (ISRO).
- The lander had begun its descent normally and, for the first 13 minutes, decelerated as per the plan. But after that, the deceleration does not seem to have gone ahead as per the requirement.
- The most possible consequence of this scenario is that **the lander went on to crash-land on the moon's surface with a speed greater than was required for a safe landing**.
- But in the most optimistic case, **it could only be a problem of communication failure**. It is possible that Vikram landed on the moon as planned, but midway through its journey stopped communicating with the ground station.
- The chances of this having happened are extremely slim, considering that the graph on the screens of the control room depicting the expected and actual deceleration did begin to diverge after 13 minutes from the descent. So, the speed was noticed to be larger than required even before communication was lost.

- **It is possible to re-establish contact** with an object in space with which communication has been lost. It has happened before, even with ISRO. Some years ago, one of the satellites had lost contact with a ground control, and after a lot of effort and several manoeuvres, it was re-established. But that satellite was in orbit and not hurtling towards a planetary body at great speeds.
- But the failure to make a soft-landing does not bring the Chandrayaan-2 mission to a close. Far from it.
- The maximum amount of science in the mission is supposed to be done by the instruments onboard the Orbiter which is in perfect health and communicating with the ground station. This includes the search for further evidence of water on the moon, and an assessment of its relative abundance.
- The lander and rover were supposed to have a lifespan of only 14 days, and their science output would have been limited. The two instruments on the Pragyaan Rover were supposed to collect information to assess the elemental composition of the moon's surface and determine the relative abundance of different elements near the landing site.
- The lander had three instruments which were meant to study the lunar atmosphere, its temperature gradient and thermal conductivity. One of the instruments was also supposed to measure seismic activity on the moon's surface near the site of landing.