Logistic Efficiency Enhancement Programme (LEEP)

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In News: NHAI initiates DPRS for Logistic Efficiency Enhancement Programme (LEEP) under Bharatmala Pariyojna.

About LEEP

- **Aimed** to enhance the freight transportation in India through improving cost, time, tracking and transferability of consignments through infrastructure, procedural and Information Technology (IT) interventions, Consultants are being tasked to carry out critical examination of existing logistic infrastructure and destination of freight movement in the country, and 44 freight corridors (Economic Corridors), Inter corridors and feeder routes to reduce cost and time of freight movement.
- These are proposed to be developed by taking an end-to-end corridor view, rather than stretch-by-stretch road construction view to ensure consistent infrastructure along the corridor, as per discussion between NHAI and Government.
- As a first step towards this task, preparation of Detailed Project Reports is being undertaken by NHAI.
- In the first phase, DPRs of identified 15000 km are proposed to be prepared. In LOT1, NHAI has invited bids for preparation of DPRs for 15,000 km of length in the country. Bids have been invited in 45 packages of about 300 Km length each.
- In order to drastically reduce the time taken for conducting surveys, it has been decided to use the latest technologies such as LiDAR, Satellite mapping and Ground Penetration Radar (GPR) in preparation of DPRs.
- This will also help to make data collection

comprehensive with accurate measure points and increase the safety for project personnel.

LiDAR Technology

- According to the American Geoscience Institute, LiDAR uses a pulsed laser to calculate an object's variable distances from the earth surface.
- These light pulses — put together with the information collected by the airborne system — generate accurate 3D information about the earth surface and the target object.
- There are three primary components of a LiDAR instrument — the scanner, laser and GPS receiver. Other elements that play a vital role in the data collection and analysis are the photodetector and optics. Most government and private organizations use helicopters, drones and airplanes for acquiring LiDAR data.

Types of LiDAR Systems

LiDAR systems are divided into two types based on its functionality — **Airborne LiDAR**

- Airborne LiDAR is installed on a helicopter or drone for collecting data.
- As soon as it's activated, Airborne LiDAR emits light towards the ground surface, which returns to the sensor immediately after hitting the object, giving an exact measurement of its distance.
- Airborne LiDAR is further divided into two types — Topological LiDAR and Bathymetric LiDAR.

Terrestrial LiDAR

- Unlike Airborne, Terrestrial LiDAR systems are installed on moving vehicles or tripods on the earth surface for collecting accurate data points.
- These are quite common for observing highways, analysing

infrastructure or even collecting point clouds from the inside and outside of buildings.
- Terrestrial LiDAR systems have two types — Mobile LiDAR and Static LiDAR.