Surveying Solar Energy Potential of Rooftops

Why in news?

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Bengaluru sets out an aerial mission to collect data on the solar energy potential of its rooftops.

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What is the mission on?

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- Bengaluru sent helicopter which hovered over the rooftops of the city.
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- The aim was to collect data on the solar energy potential of the city's rooftops.
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- This is being executed by the Centre for Study of Science, Technology and Policy (CSTEP).
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- It offers support to the Bangalore Electricity Supply Company (Bescom).
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- The data will also be put in the public domain.
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How does it work?

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- It employs the 'web-based rooftop photovoltaic tool using aerial LIDAR (Light Detection and Ranging) project'.
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- The helicopter has a camera that emits laser pulses.
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- Reflections from the ground get captured, creating a rough 3D map.
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- This raw data will be sent to the Defence Ministry for vetting.
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- After this, the process of shadow analysis and creation of a model city map will begin.
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What are the benefits?

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- **Bescom** - The Bangalore Electricity Supply Company will be equipped with a map of the most lucrative rooftops to generate solar power.
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- Bescom will move to achieve the 1 GW solar target for 2021-22.
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- **Resource assessment** - It helps assess how much of the city's power needs can be met through rooftop solar installations.
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- The survey helps determine usable rooftops, separating them from green spaces.
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- It thus helps analyse the quality of the solar resource.
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- **Investments** - With urbanisation, solar maps help electricity utilities come up with good business cases and investment vehicles.
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- They can also give residents an opportunity to become partners in the effort.
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- People can make money by consuming and/or selling the solar energy generated.
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- **Solar Target** - Moreover, scaling up rooftop solar installations is essential to achieve the solar target of 100GW by 2022.
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- It is aimed at creating 40GW of power capacity through rooftop solar panels alone by 2022.
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What are the limitations?

- The industry is apprehensive that the favourable scope could diminish for the solar sector during the current year.
- Impact of factors such as imposition of safeguard duty and anti-dumping duty on imports should be evaluated.
- The levy of the goods and services tax on photovoltaic modules also needs an assessment.
- Major solar projects that connect to the grid often face the challenge of land acquisition and transmission connectivity.
- This has led to a delay in planned capacity coming on stream during 2017.
- Notably, nearly 3,600 MW did not get commissioned during the last quarter, out of a scheduled 5,100 MW.

What is the way forward?

- The domestic policy has to be attuned to the overall objective of augmenting solar capacity.
- The Centre should come up with incentives to utilise the investment potential.
- The southern States and Rajasthan host the bulk of national solar infrastructure on a large scale.
- These regions should continue to lead by adding rooftop capacity, with some forward-looking policymaking.
- Initiatives such as the Bengaluru mapping project can contribute to assessments of real potential.
- Surveys to map usable rooftops for solar power must be undertaken on a nationwide scale.

Source: The Hindu

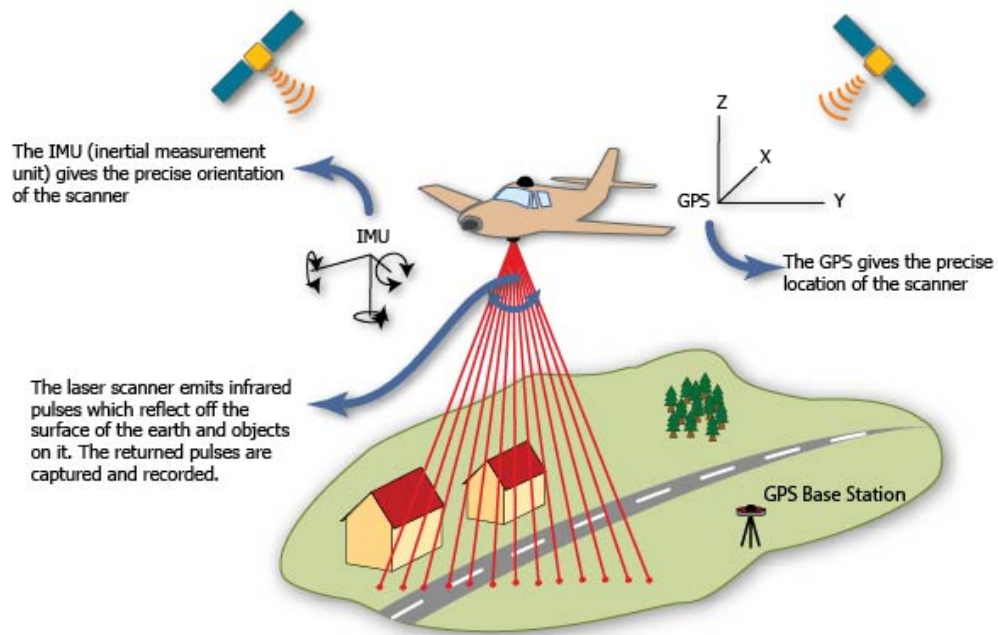**LiDAR**

- LiDAR (Light Detection and Ranging) is a monitoring system.
- LiDAR works by projecting laser beams towards the sky.
- The light interplays with the objects falling on its path through absorption, reflection and scattering.
- This helps determine the composition of suspended particulates.
- It is used for mapping and modelling in micro-topography, forestry, agriculture, meteorology and environmental pollution.

The IMU (inertial measurement unit) gives the precise orientation of the scanner

IMU

The laser scanner emits infrared pulses which reflect off the surface of the earth and objects on it. The returned pulses are captured and recorded.

GPS

The GPS gives the precise location of the scanner

GPS Base Station

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