Forest Fires Reducing Solar Power Production

For Prelims: Forest Fires, Solar Energy

For Mains: Conservation, Renewable Energy

Why in News?

A new study by Aryabhatta Research Institute of Observational Sciences (ARIES) and National Observatory of Athens (NOA), Greece has found that Forest Fires **can reduce solar power production in India.**

- The scientists used remote sensing data for the research and studied the impact of aerosols and clouds on the solar energy potential over the Indian region with extensive analysis and model simulations.
- Large-scale development of a solar energy system requires proper planning, and there is a need to estimate the solar potential.
- ARIES is an autonomous institute under the Department of Science & Technology and is located in Nainital (Uttarakhand).

What are the Forest Fires?

- Also called **bush or vegetation fire or wildfire**, it can be described as any uncontrolled and non-prescribed combustion or burning of plants in a natural setting such as a forest, grassland, brush land or tundra, which consumes the natural fuels and spreads based on environmental conditions (e.g., wind, topography).
- Forest Fires can be incited by human actions, such as land clearing, extreme drought or in rare cases by **lightning.**
- There are three conditions that need to be present in order for a wildfire to burn: fuel, oxygen, and a heat source.

What are the Findings?

- Several factors like clouds, aerosols, and pollution generated from various sources **limit the solar irradiance causing performance issues in the photovoltaic and concentrated solar power plant installations.**
- Apart from clouds and aerosols, forest fires play a very crucial role in reducing solar energy production.
- The findings of the present study will drastically increase the awareness among decision-makers about the effect of forest fires on energy management and planning at a country level.
- In addition, this research **can support the mitigation processes and policies for climate change and its direct and indirect impacts on** sustainable development.
- Such analysis of the energy and financial losses due to the direct and indirect effects of forest fires

on the production of solar plants can help grid operators to plan and schedule power generation, as also the distribution, supply, security, and overall stability of power production.

UPSC Civil Services Examination Previous Year Questions (PYQs)

Q. With reference to solar power production in India, consider the following statements: (2018)

1. India is the third largest in the world in the manufacture of silicon wafers used in photovoltaic units.
2. The solar power tariffs are determined by the Solar Energy Corporation of India.

Which of the statements given above is/are correct?

(a) 1 only
(b) 2 only
(c) Both 1 and 2
(d) Neither 1 nor 2

Ans: (d)

- Silicon wafers are thin slices of semiconductor, such as a crystalline Silicon (c-Si), used for the fabrication of integrated circuits and, in photovoltaics, to manufacture solar cells. China is by far the world's largest producer of Silicon, followed by Russia, the United States, and Brazil. India does not figure among the top five producers of Silicon and Silicon wafers. **Hence, statement 1 is not correct.**
- Solar tariffs are determined by the Central Electricity Regulatory Commission and not by Solar Energy Corporation of India. **Hence, statement 2 is not correct.**
- Therefore, option (d) is the correct answer

Source: PIB