



# Rooftop Solar Installations

**For Prelims:** Schemes and Programmes for Achieving Renewable Energy Target

**For Mains:** India's achievements in renewable energy sector, India's renewables energy targets, challenges and initiatives taken to achieve it.

## Why in News?

Rooftop solar capacity installations in India fell 29% to 320 megawatt (MW) in July-September 2022, according to Mercom Research India.

## What are the Findings?

- **Cumulative Installations:**
  - At the end of Q3 2022, cumulative rooftop solar (RTS) installations **reached 8.3 GW**.
  - Gujarat became the **leading state with the highest rooftop solar installations**, followed by Maharashtra and Rajasthan.
  - The top 10 states accounted for **approximately 73% of cumulative rooftop solar installations**.
- **Decline in Installations:**
  - During January-September, the installations at 1,165 MW were also down 11% compared with 1,310 MW in the corresponding nine-month period of 2021.
- **Causes of Decline:**
  - Solar installations are trending down because **their costs have risen**.
  - The market is struggling **with supply issues because of the Approved List of Module and Manufacturers (ALMM)**, and installers are finding it a tough environment to operate in overall.

## What is Rooftop Solar?

- **About:**
  - Rooftop solar is a [photovoltaic system](#) that has its electricity-generating solar panels mounted on the rooftop of a residential or commercial building or structure.
  - Rooftop mounted systems are small compared to ground-mounted photovoltaic power stations with capacities in the megawatt range.
  - Rooftop PV systems on residential buildings typically feature a capacity of about 5 to 20 kilowatts (kW), while those mounted on commercial buildings often reach 100 kilowatts or more.
- **Challenges:**
  - **Flip-Flopping Policies:**
    - Although many companies began using solar energy, flip-flopping (sudden real or apparent change of policy) policies remained a major hurdle, especially when it came to power distribution companies (discoms).
    - Industry executives point out RTS was becoming attractive for several consumer

segments when discoms and state governments started tightening regulations for the sector.

- India's [Goods and Service Tax \(GST\) Council](#) recently hiked the GST of many components of the solar system from 5% to 12%.
- **It will increase RTS's capital cost by 4-5%.**
- **Regulatory Framework:**
  - The growth of the RTS segment is highly dependent on the regulatory framework.
  - Slow growth has been primarily caused by the absence or withdrawal of state-level policy support for the RTS segment, especially for the business and industrial segment, which makes up the bulk of target consumers.
- **Inconsistent Rules on Net and Gross Metering:**
  - Net metering regulations are one of the major obstacles facing the sector.
  - According to a report, Power ministry's new rules that **excludes rooftop solar systems above 10 kilowatts (kW) from net-metering** would stall adoption of larger installations in India affecting the country's rooftop solar target.
    - The new rules mandate net-metering for rooftop solar projects up to 10 kW and gross metering for systems with loads above 10 kW.
    - Net metering allows surplus power produced by RTS systems to be fed back into the grid.
    - Under the gross metering scheme, **state DISCOMS compensate consumers with a fixed feed-in-tariff for the solar power** supplied to the grid by the consumer.
- **Low Financing:**
  - The Union Ministry of New and Renewable Energy (MNRE) has advised banks to give loans for RTS at subsidised rates. However, nationalised banks hardly offer loans to RTS.
  - Thus, many private players have come into the market that offer **loans for RTS at higher rates like 10-12%.**

## What are the Schemes for Promoting Solar Energy?

- **Rooftop Solar Scheme:** To generate solar power by installing solar panels on the roof of the houses, the Ministry of New and Renewable Energy is implementing Grid-connected Rooftop Solar Scheme (Phase II).
  - It aims to achieve a cumulative capacity of 40,000 MW from Rooftop Solar Projects by 2022.
- **Kisan Urja Suraksha evam Utthaan Mahabhiyan:** The scheme covers grid-connected Renewable Energy power plants (0.5 – 2 MW)/Solar water pumps/grid connected agriculture pumps.
- **International Solar Alliance (ISA):** The ISA, is an Indian initiative that was launched by the Prime Minister of India and the President of France on 30th November 2015 in Paris, France on the side-lines of the Conference of the Parties (COP-21), with 121 solar resource rich countries lying fully or partially between the tropic of Cancer and tropic of Capricorn as prospective members.
- **One Sun, One World, One Grid:** It has been taken up under the technical assistance program of the World Bank. Its objective is to aid in developing a worldwide grid through which clean energy can be transmitted anywhere, anytime.
- **National Solar Mission (A part of National Action Plan on Climate Change).**

## Way Forward

- The RTS needs easy financing, unrestricted net metering, and an easy regulatory process. Public Financial Institutions and other key lenders could be mandated to lend to the segment.
- Some of the existing bank lines of credit could be adapted to meet the challenges of the Indian RTS segment, making it more attractive to developers in this area.

**UPSC Civil Services Examination, Previous Year Question (PYQ)**

## **Prelims**

**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)**

**Exp:**

- 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.**

**Q2. 'Net metering' is sometimes seen in the news in the context of promoting the (2016)**

- (a) production and use of solar energy by the households/consumers  
(b) use of piped natural gas in the kitchens of households  
(c) installation of CNG kits in motor cars  
(d) installation of water meters in urban households

**Ans: (a)**

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## **Mains**

**Q. India has immense potential of solar energy though there are regional variations in its developments. Elaborate. (2020)**

**Source: TH**