

**NEXT IAS**

**DAILY EDITORIAL  
ANALYSIS**

**TOPIC**

---

**Advancing India's Solar  
Energy**

---

[www.nextias.com](http://www.nextias.com)

## ADVANCING INDIA'S SOLAR ENERGY

### Context

- The government is bringing into effect a policy that will discourage solar power project developers from relying on imported panels.

### About Solar energy sector

- Solar energy is the most abundant & cleanest energy resource on earth.
  - ♦ India is endowed with vast solar energy potential.
- Solar energy can be used mainly in three ways one is direct conversion of sunlight into electricity through PV cells, the two others being concentrating solar power (CSP) and solar thermal collectors for heating and cooling (SHC).

### What is driving India's solar power plan?

- India gets around 250 to 300 days of sunshine per year; equivalent to about 2,200–3,000 sunshine hours in a year depending upon the location.
- In terms of energy, it receives around 5,000 trillion kWh of solar energy every year, and the incidence ranges from 4 to 7 kWh per square metre per day in most areas.
- Rampant air pollution emphasizes the need for cleaner energy sources like solar to combat pollution caused by fossil fuels
- Therefore ,the government has undertaken a series of policy measures and provided financial incentives, keeping solar energy at the forefront of the push to achieve net-zero carbon emissions by 2070 and meet 50% of its electricity requirements from renewable sources.
- **Status :** India, one of the world's largest emitters of greenhouse gases, has set a target of 500 GW from non-fossil sources by 2030.
  - ♦ Solar energy has emerged as a major prong of India's commitment to achieve these ambitious targets.
  - ♦ India stands 4th globally in Renewable Energy Installed Capacity, 4th in Wind Power capacity and 5th in Solar Power capacity (as per International Renewable Energy Agency - Renewable capacity statistics 2023).

### Benefits

- Solar provides the ability to **generate power** on a distributed basis and enables rapid capacity addition with short lead times.
- **From an energy security perspective**, solar is the most secure of all sources, since it is abundantly available.
- The **social and economic benefits** include reduction in drudgery among rural women and girls engaged in the collection of fuel wood from long distances and cooking in smoky kitchens, minimization of the risks of contracting lung and eye ailments, employment generation at village level.
- It will lead to the improvement in the standard of living and creation of opportunities for economic activities at village level in an environment friendly manner.
- It supports the government agenda of sustainable growth, while emerging as an integral part of the solution to meet the nation's energy needs and an essential player for **energy security**.

### Related Initiatives

- Solar energy has taken a central place in India's National Action Plan on Climate Change with the **National Solar Mission (NSM)**
- **PM Surya Ghar Muft Bijlee Yojana :It** is a **Central Scheme** that aims to provide free electricity to one crore households in India, who opt to install roof top solar electricity units.

- The **International Solar Alliance (ISA)** : It is an **action-oriented**, member-driven, collaborative platform for increased deployment of solar energy technologies
  - ♦ The ISA was conceived as a joint effort by **India and France** to mobilize efforts against climate change through deployment of solar energy solutions.
  - ♦ It was conceptualized on the sidelines of the 21st Conference of Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris in 2015.
- Permitting **Foreign Direct Investment (FDI) up to 100** percent under the automatic route,
- Waiver of **Inter State Transmission System (ISTS) charges** for inter-state sale of solar and wind power for projects to be commissioned by 30th June 2025.
- The **Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirement for Compulsory Registration) Order, 2019**, requires module makers to submit to an inspection of their manufacturing facilities by the National Institute of Solar Energy.
  - ♦ Being on the list as an 'approved' manufacturing facility certifies a company as legitimately manufacturing solar panels within its premises and not importing modules.
- In 2010, the **Centre launched the Jawaharlal Nehru National Solar Mission (JNNSM)** to focus on the promotion and development of solar power.

### Concerns and Challenges

- Despite government nudges, solar power installed capacity had reached only **73.31 GW**, with rooftop solar around 11.08 GW by December 2023.
- The tepid growth of rooftop solar to **limited consumer awareness, inconsistent policies, high capital cost** and a dearth of suitable financing options.
- Policy uncertainty and regulatory pushbacks have been a major factor limiting growth in rooftop solar
- More importantly, **restrictions and/or ambiguity on provisions** such as banking of electricity and net metering have undermined rooftop solar opportunities in India
- In recent years, a significant fraction of India's solar installations has been met by imports.
  - ♦ This affects the **interests of domestic panel manufacturers** who have to pay the government to be certified while at the same time losing out on orders to the cheaper Chinese panels.

### Conclusion and Way Forward

- India's energy demand is expected to increase more in the coming decades due to its sheer size and enormous potential for growth and development.
- Therefore, it is imperative for India to not only find alternatives to coal-based fuels but also secure its energy demands in a sustainable manner.
  - ♦ Most of this new energy demand must be met by low-carbon, renewable sources.
- The extensive use of solar power plants is a crucial step towards cleaner, cheaper, and sustainable energy, offering benefits at both utility and individual levels.
  - ♦ As soon as the targets are moved in line with India's demand, there is no doubt India can become a clean energy powerhouse."

### Mains Practice Question

**[Q] Analyze the socio-economic benefits of expanding solar energy infrastructure in rural India. How can solar energy development address issues related to rural livelihoods, health, and education while contributing to overall sustainable development?**

