

India's Solar Policy

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India is shining in energy transition by treading a strong renewable energy path post-2015 Paris Agreement as it witnesses a step-up in investments in solar energy. Additionally, there's a significant slowdown in investments in thermal power plants.

In news: India shines in energy transition with strong renewable path

Placing it in syllabus: Environment

Dimensions:

- Recent achievement of 100 Gw Renewable energy
- Evolution of National Solar mission
- International Solar Alliance
- PM KUSUM
- Solar parks and Ultra mega power parks
- Challenges to India's Solar transition

Content:

Recent achievement of 100 GW Renewable Energy:

- The Ministry of New and Renewable Energy announced that the total installed renewable energy capacity in India, excluding large hydropower, has crossed the milestone of 100 GW or 100,000 MW.
- This comes to about **26 per cent of the total capacity**
- This is a **turning point in the history of renewables** as India is celebrating 75th Independence Day.
- India **now stands fourth in the world in terms of installed renewable capacity, fifth in solar and fourth in wind** in terms of installed capacity.
- The feat of 100GW of renewable energy is a testimony to India's desire to adopt sustainable energy choices.

- This milestone came at a time when the Intergovernmental Panel on Climate Change (IPCC) report was launched citing the need for urgent climate actions collectively to keep global warming under 1.5 degrees.
- India has gone from 10 GW to 100 GW in just 15 years, from 2005 onwards.
- It highlights the success that is achieved with simultaneous, strengthening availability:
 - of both equity and debt,
 - of human and organisational capacity in the solar, financial and policy sectors, and
 - of continuously tweaking business models in light of advances in solar technologies, investments, and markets.

Evolution of National Solar Mission:

- The **Jawaharlal Nehru National Solar Mission**, also known as **National Solar Mission**, began as one of the eight key National Mission's in India's **National Action Plan on Climate Change (NAPCC)**.
- NAPCC was launched on **30th June 2008** which identified development of solar energy technologies in the country as a National Mission.
- The National Solar Mission was approved on January 11, 2010 by the government.
- The Mission had set the ambitious target of deploying 20,000 MW of grid connected solar power by 2022,
- However, in 2015 this target was revised to 1,00,000 MW(i.e. 100GW) by 2022
 - The objective of the National Solar Mission is to establish India as a global leader in solar energy, by creating the policy conditions for its diffusion across the country as quickly as possible.
- **Mission anticipates achieving grid parity by 2022 and**

parity with coal based thermal power by 2030.

- The Mission adopted a **3 – phase approach**, Phase 1 (up to 2012 – 13), Phase 2 (2013 – 17) and Phase 3 (2017 – 22).
- The immediate aim of the Mission was to focus on setting up an enabling environment for solar technology penetration in the country both at a centralized and decentralized level.

Phase 1

- The first phase announced the **broad policy framework** to achieve the objectives of the National Solar Mission by 2022.
- During the first phase of the Jawaharlal Nehru National Solar Mission, the target was to:
 - set up 1,000 MW grid connected (33 KV and above) solar plants,
 - 100 MW of roof top and small solar plants connected to LT/11 KV grid and
 - 200 MW capacity equivalent off-grid solar applications.
- 100 MW capacity of solar roof top and small grid connected solar power plants norms and guidelines were developed for **direct purchase of such power generated by the distribution utilities**
- 200 MW equivalent capacity of off-grid solar applications, both solar thermal and photovoltaic were implemented through a combination of low interest bearing loans and /or central financial assistance
- In addition, the Mission supported various activities, as considered necessary, on R&D, Human Resource Development, Technical Assistance, training, publicity and awareness etc. for successful implementation of the Mission.

Phase 2

National Solar Mission envisages installation of around 10 GW utility scale solar power projects in Phase-II.

It is envisaged that out of this 10 GW target, 4 GW would be developed under central scheme and 6 GW under various State specific schemes.

The implementation Model was based on Bundling Scheme, Generation Based Incentive (GBI) Scheme and Viability Gap Funding Scheme

International Solar Alliance

- The International Solar Alliance (ISA) is a **treaty based inter-governmental organization** working to **create a global market system to tap the benefits of solar power** and promote clean energy applications.
- The International Solar Alliance (ISA) is an initiative proposed by our Prime Minister Narendra Modi and was launched by him at the UN Climate Change Conference in Paris along with the President of France. It was launched on 30th November 2015.
- The International Solar Alliance (ISA) was conceived as a **coalition of solar-resource-rich countries** (which lie either completely or partly between the Tropic of Cancer and the Tropic of Capricorn) to **address their special energy needs**.
- The ISA will provide a **dedicated platform for cooperation** among solar-resource-rich countries, through which the global community, including governments, bilateral and multilateral organizations, corporates, industry, and other stakeholders.
- It can contribute to help achieve the common goal of increasing the use and quality of solar energy in meeting energy needs of prospective ISA member countries in a safe, convenient, affordable, equitable and sustainable manner.
- The **ISA has 122 sun-belt countries that lie between the**

- two tropics** as its prospective member countries and currently boasts a membership of 86 countries globally.
- **ISA will not duplicate or replicate the efforts that others** (like International Renewable Energy Agency (IRENA), Renewable Energy and Energy Efficiency Partnership (REEEP), International Energy Agency (IEA), Renewable Energy Policy Network for the 21st Century (REN21), United Nations bodies, bilateral organizations etc.) are currently engaged in,
 - **But it will establish networks and develop synergies with them** and **supplement** their efforts in a sustainable and focused manner.

Advantages for India:

- This could position India as an energy leader of sun-rich developing countries
- It showcases India as a strong contender internationally and could generate job opportunities of a global nature.
- The ISA could be the beginning of more macro-level analysis and discussions of international energy markets, rather than just focussing on Indian policies or domestic policies.
- India lacks adequate infrastructure for solar energy. Further, the cost of solar power is not yet commercially viable. To reach its desired target of 100GW of solar power, ISA can help fund the capacity addition and make solar power commercially viable.
- It can also adopt best practices in renewable energy

PM KUSUM:

- PM-KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme is **aimed at ensuring energy security for farmers in India.**
- It also contributes towards India's commitment to increase the share of installed capacity of electric power from non-fossil-fuel sources to 40% by 2030 as

part of Intended Nationally Determined Contributions (INDCs).

The PM-KUSUM Scheme was launched in 2019 with 3 components:

Component-A: For Setting up of 10,000 MW of Decentralized Grid Connected Renewable Energy Power Plants on barren land.

- Under this component, renewable energy based power plants (REPP) of capacity 500 kW to 2 MW will be setup by individual farmers/ group of farmers/ cooperatives/ panchayats/ Farmer Producer Organisations (FPO)/Water User associations (WUA) on barren/fallow land.
- These power plants can also be installed on cultivable land on stilts where crops can also be grown below the solar panels.
- The renewable energy power project will be installed within a five km radius of the sub-stations in order to avoid high cost of sub-transmission lines and to reduce transmission losses.
- The power generated will be purchased by local DISCOM at pre-fixed tariff

Component-B: For Installation of 17.50 Lakh stand-alone solar agriculture pumps.

- Under this Component, individual farmers will be supported to install standalone solar Agriculture pumps of capacity up to 7.5 HP for replacement of existing diesel Agriculture pumps / irrigation systems in off-grid areas, where grid supply is not available.
- Pumps of capacity higher than 7.5 HP can also be installed, however, the financial support will be limited to 7.5 HP capacity

Component-C: For Solarisation of 10 Lakh Grid Connected Agriculture Pumps.

- Under this Component, individual farmers having grid

connected agriculture pump will be supported to solarise pumps.

- The farmer will be able to use the generated solar power to meet the irrigation needs and the excess solar power will be sold to DISCOMs at pre-fixed tariff

Solar parks and Ultra mega power parks:

- Solar power projects can be set up anywhere in the country, however the **scattering of solar power projects leads to higher project cost** per MW and **higher transmission losses**.
- **Individual projects of smaller capacity incur significant expenses in site development**, drawing separate transmission lines to nearest substation, procuring water and in creation of other necessary infrastructure.
- It also **takes a long time for project developers to acquire land**, get change of land use and various permissions, etc. which delays the project.
- To **overcome these challenges**, the scheme for **“Development of Solar Parks and Ultra-Mega Solar Power Projects”** was rolled out in December, 2014 with an objective to facilitate the solar project developers to **set up projects in a plug and play model**.

Salient Features

- The scheme for “Development of Solar Parks and Ultra Mega Solar Power Projects” was rolled out by **Ministry of New & Renewable Energy** on 12-12-2014.
- Under this scheme, it was proposed to set up at least 25 Solar Parks and Ultra Mega Solar Power Projects targeting over 20,000 MW of solar power installed capacity within a span of 5 years starting from 2014-15.
- The capacity of the **Scheme has been enhanced from 20,000 MW to 40,000 MW** vide this Ministry’s order dated 21-03-2017. These parks are proposed to be set up by

2021-22.

- The scheme envisages **supporting the States/UTs in setting up solar parks** at various locations in the country with a view to create required infrastructure for setting up of solar power projects
- The **solar parks provide suitable developed land with all clearances**, transmission system, water access, road connectivity, communication network, etc.
- The scheme **facilitates and speeds up installation of grid connected solar power projects** for electricity generation on a large scale.
- All the States and Union Territories are eligible for getting benefit under the scheme.
- The capacity of the solar parks shall be 500 MW and above. However, smaller parks are also considered where contiguous land may be difficult to acquire in view of difficult terrain and where there is acute shortage of non-agricultural land.

Future Targets:

- According to Central Electricity Authority (CEA) projections, instead of 40 per cent, India will have 63 per cent of installed capacity from non-fossil fuel sources by 2029-30.
- Now, India has a target of installing 175 GW of wind and solar energy by 2022. If achieved, that would be close to 50 per cent of India's current total installed power capacity.

Challenges to India's Solar transition:

Constraints of Land availability and acquisition:

- As grid-connected ground-mounted solar panels are installed more in India, there arose higher demands of large acres of land to meet the target.
- This creates the troubles on land acquisition

Lack of consistent policies:

- The solar sector also faces other impediments including the lack of consistent state policies and the lack of intent by the distribution companies in procuring the generated solar power.

Lack of interest in Rooftop solar generation:

- There is a lack of awareness and education in the residential customers about the importance of going solar.

Some Solutions:

- Meanwhile, states like Gujarat have issued plans to utilise its wastelands so as to utilise it for the generation of solar and wind power projects.
- The state has also demanded its solar panel producers and solar project developers to install 50% of the total generating capacity within three years, thus achieving its 100% by 2022.
- By introducing aesthetic structures, along with other user-friendly, profitable features and services like the net-metering and remote-sensing, more house owners can be brought into this eco-friendly, sustainable way of energy usage.
- In addition to this, those customers who have seen the benefits of grid-connected solar panels should advocate its advantages of converting to a greener energy solution by comparing it to the conventional grid electricity.
- Despite the economic slowdown induced by the coronavirus pandemic and troubles in land acquisition, India has the potential of achieving its target of harnessing solar energy.
- Addressing the various roadblocks to the growth of the sector, and educating the residential customers about

the importance of going solar, can help expedite India's journey to achieve this goal.

Mould your thought: How important is the recent achievement of 100GW solar installed power generation capacity for India? Discuss the future goals, roadblocks and solutions for it.

Approach to the answer:

- Introduction
- Mention how 100GW target has helped India both domestically and internationally
- Discuss the future goals for India
- Discuss the challenges
- Mention some solutions for them
- Conclusion