

General Studies – 3 Topic: Infrastructure – energy

Solar Power Sector in India

1) Introduction

- Solar power in India is a fast-growing industry and as of 30 September 2016, the country's solar grid had a cumulative capacity of 8.63 gigawatts (GW).
- In January 2015, the government expanded its solar plans, targeting US\$100 billion of investment and 100 GW of solar capacity, including 40 GW's directly from rooftop solar, by 2022
- India being a tropical country has huge potential for solar energy generation

2) Recent Developments

- Huge advances have been made in the past few years—in terms of solar energy specifically and renewable energy in general.
- Solar Energy Corporation of India (SECI) called for bids to install 1GW of rooftop solar power projects on central government buildings
- India is already home to the world's largest single-location solar power plant which has been set up by the Adani Group at Kamuthi in Tamil Nadu.
- According to a Bloomberg New Energy Finance report, the solar sector has had an impressive compound annual growth rate of 59% in the last four fiscal years
- India seems to be on track to achieve its INDCs, promised at Paris summit, to get at least 40% of its total installed power from non-fossil fuel sources by 2030.
- The solar power tariff rates have been consistently falling since 2010 is now on track to compete with cheap fossil fuels.
- International Solar Alliance is a right move for realizing solar dream of our nation

3) India's Solar Energy Potential

- According to the government-developed India Energy Security Scenarios, India can achieve 479GW of solar power by 2047
- Solar Energy may eventually drive India's economic growth.
- Solar represents 2.5% of net installed power generation capacity in India, up from 1.4 % a year ago.
- With around 300 days of sunshine every year, India has among the best conditions in the world to harness solar energy.

4) Why Promote Solar Energy?

- Today, India is one of the lowest per capita consumers of electricity in the world
- The projected economic growth and the increase in population, and the demand for energy in India are expected to double by 2040.
- Solar Energy will lead India to the forefront of the global effort to bring electricity to all, and mitigate the effects of climate change.
- Solar energy will help reduce CO2 emissions and save tons of natural gas which is used to generate electricity.
- Generating clean renewable electricity is crucial for India where nearly 300 million people—about a quarter of its population—live without access to electricity.
- It can also create thousands of jobs in the solar industry and underpin progress in all areas of development, helping the country fulfil its dream of becoming the 'India of the future'

5) Solar power can address poverty

- Solar energy is reliable, clean and cheaper in the long run than kerosene and the village's generator.
- Solar energy can be a lifeline for low-income rural areas, where the grid does not reach.
- Since electricity even in small doses — powers lamps, cellphones, fans, water pumps, health clinics and equipment for businesses, it is critical in improving the lives of the poor.
- Installation of solar plants will also generate employment for the locals.
- The rapid expansion of solar power can improve the quality of life for millions of Indians, especially for its poorest citizens.

6) Financial Assistance

- The World Bank Group has committed to provide US\$ 1 billion for India's solar energy projects
- The SBI has signed an agreement with The World Bank for Rs 4,200 crore credit facility, aimed at financing Grid Connected Rooftop Solar Photovoltaic projects in India.
- The Ministry of New and Renewable Energy (MNRE) has signed an agreement with Germany- based Development Bank to fund the Rs 300 crore floating solar project
- SunEdison, world's largest renewable energy company, plans to continue its focus on 'Make in India' by developing solar projects in the country by 2022.

7) Government Initiatives

- Wider adoption of roof-top solar power generation.
- The Ministry of New and Renewable Energy (MNRE), which provides 30 per cent subsidy to most solar powered items such as solar lamps and solar heating systems, has further extended its subsidy scheme to solar-powered cold storages.
- The Ministry of Shipping plans to install solar based power systems at all the major ports across the country by 2017
- The Government of India announced a massive renewable power production target of 175,000 MW by 2022 of which 100,000 MW is from solar power
- The Government of India is taking a number of steps and initiatives like 10-year tax exemption for solar energy projects.
- The National Solar Mission aims to promote the development and use of solar energy for power generation
- Renewable Energy Certificates (RECs) that provide an incentive to those who generate green power by providing financial incentives for every unit of power they generate.

8) Challenges

- Lack of easy and cheap funding, and increasing cheap imports from China and Taiwan is hurting the domestic industry.
- The fundamental re-structuring of the country's power and energy infrastructure will be its biggest challenge.
- Cost associated with solar power generation is more when compared to coal.
- Transmission & Distribution losses that at approximately 40 percent make generation through solar energy sources highly unfeasible
- Per capita land availability is very low in India, and land is a scarce resource.
- Manufacturers are mostly focused on export markets that buy Solar PV cells. This could result in reduced supplies for the local market.
- Competition from Ultra Super Critical Coal Power Generation Plants which are cheaper, lesser emissions and higher efficiency.

- People are not aware about benefits of cleaner sources of energy and hence still depend on traditional sources of energy.

9) **Need of the Hour**

- India still has to make available the necessary capital for developing renewable energy infrastructure
- several structural issues in the distribution of power need to be addressed
- As a NITI Aayog expert group report notes, “A probable re-engineering of institutions, the redefinition of policies, the re-tuning of power systems, and the replacement of old habits with new ones” will be required.
- Decentralize solar plants to minimize transmission and distribution losses
- use the water surface area available on canals, lakes, reservoirs and the sea for locating large capacity solar power plants
- The world must turn to (the) sun to power our future
- Developing solar parks, promoting innovative solutions to generate and store solar power, and providing support for solar mini-grids.
- Increase the availability of private financing and build capacity for solar rooftop units

