

National Solar Mission

Jawaharlal Nehru National Solar Mission is also known as the National Solar Mission. The mission was launched in January 2010 by the Government of India. This topic would be of importance in the [IAS Exam](#) for both Prelims and Mains.

For more details on Government actions to protect the environment, candidates can go through the other missions of [NAPCC](#) formulated by the Government.

India is a tropical country where sunshine is available for longer hours per day and in great intensity. The daily average solar energy incident over India varies from 4 to 7 kWh/meter square with about 1500 – 2000 sunshine hours per year, depending upon location resulting in aggregate incident radiation of about 5000 trillion kWh/yr. This is too higher than the current total energy consumption. Hence solar energy has the potential to be a great source of future energy.

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National Solar Mission (NSM)- Funds for 100 GW Solar Power Capacity

Initially in India, the focus on solar technologies was bordered on the social and rural segments. Some institutes like IIT's, National Physical Laboratory focused on developing solar, thermal, and photovoltaic (PV) technologies. PV technology was being promoted extensively to meet the challenge of providing electricity for rural telecom networks, village electrification, and electrification of the unmanned railway crossing.

The Target for National Solar Mission

- It had a set a target of 20,000 MW of grid-connected solar power by 2022. It was revised in June 2015 to 1,00,000 MW by 2022.
- The 100 GW solar power capacity has been divided into:
 - Rooftop solar electricity generation – 40 GW
 - Large and Medium Scale grid-connected solar projects – 60 GW

- To achieve 15 million sq meters of solar thermal collector area by 2017 and 20 million by 2022.
- To deploy 20 million solar lighting systems for rural areas by 2022.
- To build up capacity of grid connected solar power generation to 1000 MW within three years by 2013; an additional 3000 MW by 2017 through the mandatory use of the renewable purchase obligation by utilities backed with a preferential tariff.
- This capacity can be more than doubled reaching 10,000MW installed power by 2017 or more, based on the enhanced and enabled international finance and technology transfer.
- The ambitious target for 2022 of 20,000 MW or more, will depend on the learning insights from the other two phases. The capacity could be compounded if there is availability of international finance and technology.
- To create favourable conditions for solar manufacturing capability, particularly solar thermal, for indigenous production and market leadership.
- To promote programmes for off grid applications, reaching 1000 MW by 2017 and 2000 MW by 2022.
- To achieve 15 million sq. meters solar thermal collector area by 2017 and 20 million by 2022.
- To deploy 20 million solar lighting systems for rural areas by 2022.

Funds:

1. The total cost for up-gradation to 100 GW solar power capacity would be \$ 94 Billion.
2. Central Government is also planning to leverage bilateral and international donors, including green climate fund under the United Nations Framework Convention on Climate Change (UNFCCC).
3. Using the bundling mechanism with thermal power.
4. Investments would come from large Public Sector undertakings.
5. Funds would be generated from Independent Power Producers.

Benefits of Using Solar Power

1. Energy security
2. Mitigation of adverse impacts due to Climate change
3. Reduction in pollution and health benefits.
4. Reduce dependence on fossil fuels that put a strain on foreign reserves and ecology.
5. The solar manufacturing sector will get a boost
6. Help in the creation of technology hubs for manufacturing
7. Increased manufacturing capacity and installation

To get the [List of Solar Plants in India](#), candidates can visit the linked article.

Some of the improvements required in the policy

1. Locate projects near towns and village clusters so that there will be an uninterrupted power supply.
2. Minimize transmission losses
3. In the medium to long term minimize the need for new investments in transmission infrastructure.

Government funding

1. The government of India is providing Rs 15,050 crore as a capital subsidy to promote solar capacity addition.
2. This capital subsidy is for rooftop solar projects in various cities and towns, for viability gap funding based projects to be developed through the Solar Energy Corporation of India (SECI) and for decentralized generation through smaller projects.

The mission is made up of 3 phases,

Phase 1 – 2012 – 13

Phase 2 – 2013 – 17

Phase 3 – 2017 – 22

Targets of the 3 phases of the mission are given in the below table

S.No	Targets / Application Segment	Solar Collectors	Off-grid solar applications	Utility grid power, including rooftop
1	Target for Phase 1 (2010-13)	7 million sq mt	200 MW	1000 MW
2	Target for Phase 2 (2013-17)	15 million sq mt	1000 MW	4000 – 10000 MW
3	Target for Phase 3 (2017-22)	20 million sq mt	2000 MW	100,000 MW

Implementation model of Phase-II

1. Bundling scheme
2. Generation Based Incentive (GBI) Scheme
3. Viability Gap funding scheme

The mission also aims to reduce the cost of Solar Power Generation in the country through

1. Long term policy
2. Large Scale deployment goals
3. Aggressive R&D
4. Domestic production of critical raw materials, components, and products, as a result, to achieve grid tariff by 2022.

Achievements of the National Solar Mission

1. To reduce the risks of solar power producers, Solar Energy Corporation of India (SECI) was established as a major procurement agency.
2. Creation of larger projects to bring down capital investments in solar power generation projects through the development of integrated solar parks to provide infrastructure for solar power plants.
3. The renewable energy corridor was also launched to develop a dedicated transmission grid for areas with an abundance of sunlight or wind to create solar and wind energy.
4. Solar radiation monitoring stations were set up across India.

Major Positive Developments since 2014

1. The new Government as per its ambition to provide electricity for all, the target was revised for establishing grid-connected solar power from 20 GW to 100 GW under the National Solar Mission (NSM).
2. The huge quantum jump in targets generated huge demands for solar energy projects and equipment.
3. 100 GW is divided into two major segments – a) 60 GW of grid-connected ground-mounted large solar power plants, typically above 1 MW capacity. b) 40 GW of rooftop solar power plants for the generation of electricity.
4. Emphasized to rope in Central and State Public Sector companies, defence establishments, and others who started establishing projects on their unexploited land. To avoid the problem of limited land availability, innovative ideas such as floating solar power plants, solar power plants over canals, use of barren land for solar power plants are being promoted.
5. Revised targets for Renewable Purchase Obligations (RPO), to ease the purchase of solar power, net metering, interstate power purchase by bulk consumers such as Delhi Metro.
6. Focus on skill development and indigenous manufacturing through the establishment of the Skill Council for green jobs.

The above details would be of help to candidates preparing for [UPSC 2021](#) exams from the perspective of the mains examination.

Frequently Asked Questions on National Solar Mission

Q 1. What is the main objective of the National Solar Mission?

Ans. The National Solar Mission was set with a target of 20,000 MW of grid-connected solar power by 2022. It was revised in June 2015 to 1,00,000 MW by 2022.

Q 2. What are the three phases of the National Solar Mission?

Ans.

- Phase I (2010-2013) – Target for off-grid solar PV applications: 200 MW

- Phase II (2014-2017) – Target for off-grid solar PV applications: 1 000 MW
- Phase III (2017-2022) – Target for off-grid solar PV applications: 2 000 MW

Q 3. How can using solar power be useful?

Ans. The benefits of solar power are as follows:

- Solar energy is a renewable source of energy
- Reduces usage costs
- Beneficial for the environment
- Reduces dependency on fossil fuels
- Helps in the creation of technology hubs for manufacturing

Q 4. When was the National Solar Mission launched?

Ans. The National Solar Mission was launched by the Government of India in January 2010 to promote solar power in India.