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RENEWABLE ENERGY

SECTOR OVERVIEW

India does not lack in renewable energy resources such as sunlight, biomass and wind. India is the only nation in the world to have a dedicated Ministry for the same, the Ministry of Non-Conventional Energy Sources (MNES), which is now known as the Ministry of New and Renewable Energy (MNRE). This department is responsible for promoting renewable energy technologies, creating conducive environment for promotion and commercialisation of these technologies, resource assessment, extension etc. The Indian renewable energy programme has received increased recognition internationally in recent years.

Today, India's 275 GW of installed electricity generating capacity is significantly higher than 140 GW of peak demand. India's coal generation capacity alone is higher than its peak demand. India has the fifth largest power generation portfolio in the world and its current renewable energy contribution stands at 44.812 GW which includes 27.441 GW of Wind power and 8.062 GW of Solar power installed capacity in the country.

- Fourth largest installed capacity of wind power.
- Third largest installed capacity of Concentrated Solar Power (CSP)
- Renewable energy contributes 14.7% of the total installed capacity in the country.

REASONS TO INVEST

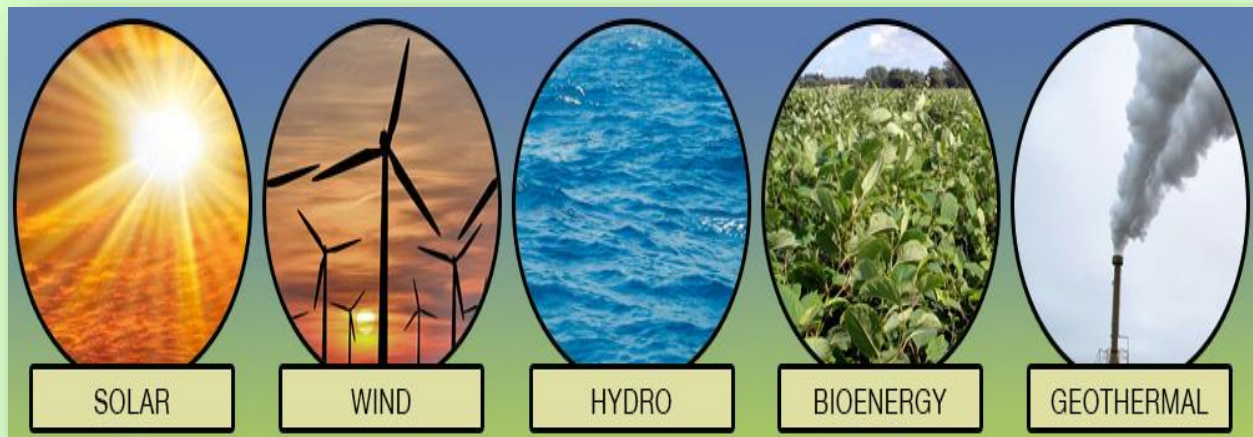
The MNRE has been interacting with developed and developing countries for cooperation in new and renewable energy. Many countries evinced interest in cooperation with India for promotion of new and renewable energy. The focus of the interaction for cooperation has been to explore opportunities for exchange of scientists to share experience and for taking up joint research, design, development, demonstration and manufacture of new and renewable energy systems/devices by R&D institutions/organizations of both countries and thereby establishing institutional linkages between institutions of India and other countries. Bilateral/multilateral cooperation frameworks have been established for cooperation.

NEW TECHNOLOGIES

MNRE has taken up the following demonstration projects which have been initiated at various research, scientific and educational institutes, universities, national laboratories, industry, etc. these projects are helping in the development of indigenous research and industrial base, expertise, trained manpower and prototypes/devices/systems in the country on:

- hydrogen energy
 - chemical sources of energy (fuel cells)
 - battery operated vehicles
 - geo thermal energy
 - ocean energy
 - biofuels
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- Economic growth, increasing prosperity, a growing rate of urbanisation and rising per capita energy consumption has led to increased demand for energy in the country.
 - Huge renewable resource availability and potential.
 - The target of National Solar Mission (NSM) has been up-scaled to 100 GW from 20 GW of grid connected solar power by 2022, which creates a positive environment among investors keen to tap into India's renewable energy potential.
 - Government of India has a target of adding 175 GW of renewable power in the country by 2022, includes 100 GW of Solar power, 60 GW from wind power, 10 GW from biomass power and 5 GW from small hydro power, which will offer massive investment opportunities across the value chain.

STATISTICS



Across the generation, transmission and distribution segments of the renewable energy sector to meet the targets indicated below by 2022:

Solar (utility-scale, distributed, off-grid/mini-grid – 100 GW)

Wind (utility-scale – 60 GW) 3.

Small hydro (5 GW) 4.

Bioenergy (10 GW)

- India's Annual Solar installations to grow over four times by 2017. 10.50 GW of utility-scale solar and grid connected rooftop solar capacity will be added by 2016-17.
- Wind energy accounts for nearly 61% (27.441 GW) of renewable installed capacity, thereby making India the world's fourth largest wind energy producer.
- The Government of India has set targets which will take the total renewable capacity to 175 GW by the end of 2022. This includes 60 GW from wind power, 100 GW from solar power, 10 GW from biomass power and 5 GW from small hydro power.

GROWTH IN THIS SECTOR

1. India is the fourth largest importer of oil and the 15th largest importer of petroleum products and Liquefied Natural Gas (LNG) globally. The increased use of indigenous renewable resources is expected to reduce India's dependence on expensive imported fossil fuels.

2. The Government of India through Ministry of New and Renewable Energy (MNRE) is playing a proactive role in promoting the adoption of renewable energy resources by offering various incentives such as Generation-based Incentives (GBIs), capital and interest subsidies, Viability Gap Funding (VGF), concessional finance, fiscal incentives etc.
 - The NSM aims to promote the development and use of solar energy for power generation and other uses, with the ultimate objective of making solar energy compete with fossil-based energy options.
 - The objective of the NSM is to reduce the cost of solar power generation in the country through long-term policy, large scale deployment goals, aggressive R & D and the domestic production of critical raw materials, components and products.
 - The Government has created a liberal environment for foreign investment in renewable energy projects. The establishment of a dedicated financial institution – the Indian Renewable Energy Development Agency (IREDA), makes for renewed impetus on the promotion, development and extension of financial assistance for renewable energy and energy efficiency/conservation projects.
3. Renewable energy is becoming increasingly cost-competitive as compared to fossil fuel-based generation, like the prices of solar modules have declined by almost 80% since 2008.
4. Reserve Bank of India (RBI) has revised the guidelines for all scheduled commercial banks including renewable energy in the categories priority sector, in addition to existing categories making significant inroads for renewable energy in the priority sector lending, also bank loans for solar rooftop systems to be treated as a part of home loan/ home improvement loan with subsequent tax benefits.
5. Solar energy is an inexhaustible source of energy available in abundance in India. Every year, India is showered with about 5,000 TWh of solar power. Power problem in India can be solved even by utilising a tenth of this available resource. The Indian Solar Loan Programme is one of the most impressive programmes supported by the United Nations Environment Programme. It has also won the Energy Globe Award for Sustainability. Finance has been provided for more than 16,000 solar home systems through 2,000 banks in just three years under this programme.
6. Focus on skill development of workforce: “Suryamitra Scheme” launched in May 2015 to create 0.05 million trained personnel within a period of 5 years (2015-16 to 2019-20).

SECTOR POLICY



Guidelines for Green Large-Area Developments by MNRE:

- These guidelines cover various fiscal and promotional policies for the development of grid interactive solar and wind energy.
- The package of incentives includes fiscal concessions such as 80% accelerated depreciation, concessional custom duty for specific critical components, excise duty exemption, income tax exemption on profits for power generation etc.
- GBI of USD 0.007/unit subject to max of USD 153,846.2/MW for wind power projects (not availing the benefits of AD).
- VGF support up to USD 153,846.2/MW based on reverse e-auction for 5000 MW, VGF scheme to be implemented in 4 years by Solar Energy Corporation of India (SECI).

The Provision of Central Financial Assistance for Small/Micro Hydro-Power Projects:

- The MNRE is providing central financial assistance to set up small hydro projects both in the public and private sectors. Support is also given to State Governments for the identification of new potential sites, including surveys, the preparation of detailed project reports and the renovation and modernisation of old projects.

The Setting up of the Solar Energy Corporation of India:

- The mandate of the SECI allows wide-ranging activities to be undertaken with an overall view to facilitate the implementation of the National Solar Mission and the achievement of targets set therein. The SECI has the objective of developing renewable energy (RE) technologies and ensuring inclusive RE power development throughout India.

The Announcement of the Offshore Wind Energy Policy:

- To explore and promote deployment of offshore wind farms in the Exclusive Economic Zone (EEZ) of the country.
- To promote investment in energy infrastructure.
- To promote spatial planning and management of maritime renewable energy resources in the exclusive economic zone.
- To achieve energy security and reduce carbon emissions.
- To encourage indigenisation of offshore wind energy technology.
- To promote R & D in the offshore wind energy sector.

The Policy for Repowering of the Wind Power Projects:

- To promote optimum utilisation of wind energy resources repowering policy has been issued.

The National Policy on Biofuels:

- To encourage the accelerated development and promotion of the cultivation, production and use of biofuels to increasingly substitute petrol and diesel for transport and be used in stationary and other applications.

The Policy for Grid connected Solar Roof-top Projects:

- Joint Electricity Regulatory Commission (JERC)/State Electricity Regulatory Commissions (SERC) of 29 States/UTs namely Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Haryana, Himachal Pradesh, Jharkhand, Karnataka, Kerala, Maharashtra, Madhya Pradesh, Meghalaya, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh, Uttarakhand, West Bengal, Andaman and Nicobar and Lakshadweep Islands, Chandigarh, Dadra and Nagar Haveli, Daman and Diu, Delhi and Pondicherry have notified regulations/tariff order for grid connected solar rooftop projects.

State Initiatives:

- State Electricity Regulatory Commissions in Andhra Pradesh, Haryana, Punjab, Madhya Pradesh, Maharashtra, Rajasthan, Tamil Nadu, Gujarat, Kerala, Punjab, Orissa and West Bengal have announced preferential tariffs for purchase of power from wind power projects.
- New Solar Policy in 2016 – Delhi, Himachal Pradesh and Haryana.
- New Solar Policy in 2015 - Telangana Jharkhand, Gujarat, and Andhra Pradesh.



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FDI POLICY

- Foreign Direct Investment (FDI) up to 100% is permitted under the automatic route for renewable energy generation and distribution projects subject to provisions of The Electricity Act, 2003.



FINANCIAL SUPPORT

KEY PROVISIONS IN BUDGET 2016-17:

- Full exemption on excise duty is being provided on Pig Iron (Spheroidal Graphite grade) and ferro-silicon-magnesium for use in the manufacture of cast components of wind-operated electricity generators.
- The excise duty on solar water heater and system is restructured from 12% to NIL without Central Value Added Tax (CENVAT) credit or 12.5% with CENVAT credit.
- Full exemption on excise duty is being provided on round copper wire and tin alloys for use in the manufacture of solar PV ribbon for manufacture of solar PV cells.
- Full exemption from basic customs duty (BCD) is being provided on evacuated tubes with three tyres of solar selective coating for use in the manufacture of solar water heater and system.

Incentives offered by Government for the development of the Solar Energy Sector includes:

- Exemption from excise duties and concession on import duties on components and equipment required to set up a solar plant.
- Wheeling, banking and third party sales, buyback facility by states.
- Guaranteed market through solar power purchase obligation for states.
- Reduced wheeling charges as compared to those for conventional energy.
- Special incentives for exports from India in renewable energy technology under renewable sector-specific SEZ.
- A payment security mechanism to cover the risk of default by state utilities/discoms.
- A subsidy of 30% of the project cost for off-grid Photovoltaics (PV) and solar thermal projects.



- Loans at concessional rates for off-grid applications.

Fiscal Incentives for Biomass Power Projects:

- Accelerated depreciation: a claim of 80% depreciation in the first year for certain specific equipment.
- To promote solar roof tops, INR 5,000 crore has been approved for implementation of Grid Connected Rooftops systems over a period of five years up to 2019-20 under National Solar Mission (NSM). This will support installation of 4,200 MW Solar Rooftop systems in the country in the next five years (December 2015).
- Fiscal incentives such as accelerated depreciation, concessional custom duty, excise duty exemption, income tax holidays for 10 years to promote renewable energy.
- Concessional customs duty and excise duty exemption for machinery and components during the setting up of the project.
- Clean Energy Fund – Clean environment cess on coal, lignite and peat has been doubled from Rs.200 per tonne to Rs.400 per tonne, to promote use of renewable energy sources (Budget 2016-17)
- An exemption of sales tax in certain states.
- Financial assistance from IREDA for the setting up of biomass power and bagasse co-generation projects.
- A subsidy of USD 30,769 per MW for biomass power projects and USD 23,076 per MW for Bagasse Co-generation projects limited to USD 230769.2 per project.

Fiscal Incentives for Small Hydro Power Projects:

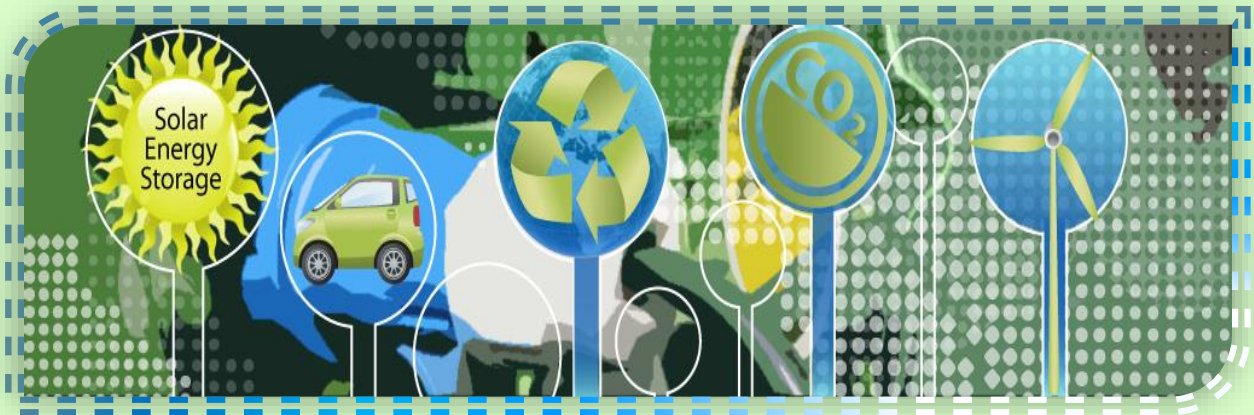
- Central financial assistance to the State Government and the private sector for the setting up of small/mini hydro projects.
- Subsidy to upgrade watermills and thereby improve their efficiency.
- A subsidy of USD 1.15 million/ MW for special categories and North-Eastern states and USD 0.53 million/ MW for other states limited to USD 3.07 million per project for State Government projects.
- A subsidy of USD 230769.2/ MW for special categories and North-Eastern states and USD 153846.2/ MW for other states for the projects developed by private developers.

FOREIGN INVESTORS

- Enercon (Germany)
- Vestas (Denmark)
- Applied Materials (USA)



INVESTMENT OPPORTUNITIES



- From barely 20 MW in 2011, India's installed solar capacity has increased to 8.062 GW.
- India has vast untapped renewable energy resources — wind energy has installed capacity of 27.44 GW and an estimated potential of 302 GW at 100 meter height.
- Small hydro has installed capacity of 4.3 GW and an estimated potential of 19.7 GW.
- Bio-power (including biomass and bagasse co-generation) has an installed capacity of 4.88 GW as opposed to an estimated potential of 22.5 GW.
- The Solar Policy of Rajasthan notified in 2014 envisages the setting up of solar manufacturing facilities at proposed solar parks.
- 34 solar parks of total capacity 20 GW have been sanctioned.
- Land for the solar parks are identified in Andhra Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisha, Rajasthan, Telangana, Uttar Pradesh, Uttarakhand, West Bengal and Tamil Nadu.

AGENCIES

- Ministry of New and Renewable Energy
- Indian Renewable Energy Development Agency
- Solar Energy Corporation of India
- National Institute of Solar Energy
- National Institute of Wind Energy
- Sardar Swaran Singh National Institute of Bio-Energy
- All states have exclusive implementing agencies (State Nodal Agencies).

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