

RENEWABLE ENERGY



SECTOR OVERVIEW



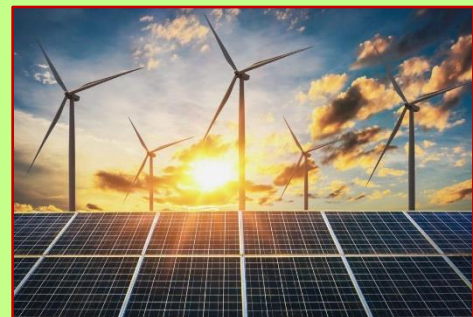
Indian Renewable Energy Sector is the fourth most attractive renewable energy market in the world. India is ranked fourth in wind power, fifth in solar power and fifth in renewable power installed capacity as of 2018. India is among the top three nations in the world which are leading the global renewable energy growth. Biomass power includes installations from biomass combustion, biomass gasification and bagasse co-generation, for which capacity stands at 9.8 GW as of December 2019¹. Power

consumption clocked double digit Year-over-Year (YoY) growth of 12.1 per cent in October, buoyed by recovery in commercial and industrial activity as compared to a growth of 4.6 per cent in September, 2020.

Installed renewable power generation capacity has gained pace over the past few years, posting a CAGR of 17.33% between FY16-20. With the increased support of Government and improved economics, the Sector has become attractive from investors perspective. As India looks to meet its energy demand on its own, which is expected to reach 15,820 TWh by 2040, renewable energy is set to play an important role. The Government is aiming to achieve 225 GW of renewable energy capacity (including 114 GW of solar capacity addition and 67 GW of wind power capacity) by 2022, more than its 175 GW target as per the Paris Agreement. The Government plans to establish renewable energy capacity of 500 GW by 2030.

MARKET SIZE

As of October 31, 2020, the installed renewable energy capacity stood at 89.63 GW, of which solar and wind comprised 36.31 GW and 38.26 GW, respectively. Biomass and small hydro power constituted 10.14 GW and 4.74 GW, respectively. By December 2019, 15,100 megawatts (MW) of wind power projects were issued, of which, projects of 12,162.50 MW capacity has already been awarded. Power generation from renewable energy sources in India reached 127.01 Billion units (BU) in FY20.



¹ Annual Report 2019-20, Ministry of New and Renewable Energy, https://mnre.gov.in/img/documents/uploads/file_f-1597797108502.pdf

In 2019, India installed 7.3 GW of solar power across the country, establishing its position as the third-largest solar market in the world.

With a potential capacity of 363 GW and with policies focused on the renewable energy sector, Northern India is expected to become the hub for renewable energy in India.



REASONS TO INVEST

- ✓ Economic growth, increasing prosperity, a growing rate of urbanization and rising per capita energy consumption is contributing to increasing demand for energy in the country.
- ✓ The National Solar Mission was launched in 2010. The objective of the Mission is to establish India as a global leader in solar energy. The target of National Solar Mission has been up-scaled to 100 GW from 20 GW of grid connected solar power by 2022.²
- ✓ India has a wind potential of more than 300 GW (at hub height 100 meter), solar potential of 750 GW, assuming 3% wasteland is made available, Small Hydro potential of 20 GW, and Bio-energy potential of 25 GW.³
- ✓ As per the Paris Accord on Climate Change, the Government of India has set a target of adding 175 GW of renewable power by 2022, which includes 100 GW from solar, 60 GW from wind, 10 GW from biomass and 5 GW from small hydro power. This will offer massive investment opportunities across the value chain.⁴ This has been further extended to 450 GW by 2030.
- ✓ India aims to achieve 40% of installed power generation capacity from non-fossil fuel sources and reduce emission intensity of GDP by 33-35 % from 2005 level by 2030. With the accomplishment of these ambitious targets, India will become one of the largest Green Energy producers in the world, surpassing several developed countries.⁵
- ✓ India submitted its Intended Nationally Determined Contribution (**INDC**) to the UNFCCC, on its goal of installing 175 giga watts (**GW**) of renewable power capacity by 2022 by setting a new

² Annual Report 2019-20, Ministry of New and Renewable Energy, https://mnre.gov.in/img/documents/uploads/file_f-1597797108502.pdf

³ Supra

⁴ Year-End Review 2019, MNRE, PIB, <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1598948>

⁵ Supra

target to increase the country's share of non-fossil-based installed electric capacity to 40 percent by 2030.⁶

- ✓ MNRE will issue an issuance of Concessional Custom Duty Certificate (**CCDCs**) for setting up projects for generation of Compressed bio-gas using Urban and Industrial Waste of Renewable Nature.

FDI POLICY

- ✓ FDI up to 100% is permitted in the Renewable Energy Sector under the Automatic Route and no prior Government Approval is required.⁷
- ✓ The cumulative FDI equity inflow in the Non-Conventional Energy industry is USD 9,686.09 Million during the period April 2000 to September 2020. This constitutes 1.94% of the total equity inflow received in all the sectors during the same period.⁸



INVESTMENTS/ DEVELOPMENTS

According to the data released by Department for Promotion of Industry and Internal Trade (**DPIIT**), FDI inflow in the Indian Non-Conventional Energy Sector stood at USD 9.56 Billion between April 2000 and June 2020. More than USD 42 Billion has been invested in India's Renewable Energy Sector since 2014.



Some major investments and developments in the Indian Renewable Energy Sector are as follows:

- ❖ In November 2020, Sun Source Energy announced that it will develop a 4 MW grid-connected floating solar PV power project, along with a 2 MW Battery Energy Storage System (**BESS**) in Andaman and Nicobar Islands, which was won in a tender bid with the Solar Energy Corporation of India (**SECI**).

⁶ Annual Report 2019-20, Ministry of New and Renewable Energy, https://mnre.gov.in/img/documents/uploads/file_f-1597797108502.pdf

⁷ Consolidated FDI Policy, https://static.investindia.gov.in/s3fs-public/2020-09/FDI%20Policy%202020%20revised_18%20Sept%202020.pdf

⁸ Factsheet on FDI - April 2000 to September 2020, Department for Promotion of Industry and Internal Trade, https://dipp.gov.in/sites/default/files/FDI_Factsheet_June20_23Sept2020.pdf

- ❖ In November 2020, The Airports Authority of India (**AAI**) signed a memorandum of understanding with NTPC Vidyut Vyapar Nigam, an NTPC subsidiary to promote use of electric vehicles and set up solar power plants at its airports.
- ❖ In October 2020, Patel Engineering announced that it has won an order worth Rs. 1,564.42 Crore (USD 211.15 Million) to build 2,000 MW Subansiri Lower Hydro Electric project in Arunachal Pradesh.
- ❖ India added 2,320 MW of solar capacity amidst COVID-19 pandemic from January to September 2020.
- ❖ In October 2020, Tata Power announced its plan to develop 100 MW solar project in Dholera Solar Park of Gujarat.
- ❖ In October 2020, post approval from NITI Aayog and the Department of Investment and Public Asset Management, NTPC set up a wholly owned company for its renewable energy business NTPC Renewable Energy Ltd. NTPC is targeting to generate 30% or 39 GW of its overall power capacity from renewable energy sources by 2032.



- ❖ The Solar Energy Corporation of India (**SECI**) implemented large-scale central auctions for solar parks and has awarded contracts for 47 parks with over 25 GW of combined capacity.
- ❖ In April 2020, Vikram Solar bagged a 300 megawatt (MW) solar plant project for Rs. 1,750 Crore (USD 250.39 Million) from National Thermal Power Corporation Ltd (**NTPC**) under CPSU-II scheme in a reverse bidding auction.
- ❖ Adani Group aims to become the world's largest solar power company by 2025 and the biggest renewable energy firm by 2030.
- ❖ Around Rs. 36,729.49 Crore (USD 5.26 Billion) investment was made during April-December 2019 by private companies in renewable energy.
- ❖ ReNew Power and Shapoorji Pallonji will invest nearly Rs. 750 Crore (USD 0.11 Billion) in a 150 MW floating solar power project in Uttar Pradesh.

- ❖ As of 2019, India was set to open its solar power plant, Bhadla Solar Park in Rajasthan, which would be world's largest solar plant with a capacity of 2,255 MW.



GOVERNMENT INITIATIVES

Some initiatives by Government of India to boost India's Renewable Energy Sector are as follows:

- ❖ On November 17, 2020 Energy Efficiency Services Limited (**EESL**), a joint venture of PSUs under the Ministry of Power and the Department of New & Renewable Energy (**DNRE**), Goa, signed a memorandum of understanding to discuss roll-out of India's first Convergence Project in the state.
- ❖ In October 2020, the Government announced a plan to set up an inter-ministerial committee under NITI Aayog to forefront research and study on energy modelling. This, along with a steering committee, will serve the India Energy Modelling Forum (**IEMF**), which was jointly launched by NITI Aayog and the United States Agency for International Development (**USAID**).
- ❖ In August 2020, the Government announced plans to offer land near its ports to companies for building solar equipment factories.
- ❖ India plans to add 30 GW of renewable energy capacity along a desert on its western border such as Gujarat and Rajasthan.
- ❖ Delhi Government decided to shut down thermal power plant in Rajghat and develop it into 5,000 KW solar park
- ❖ Rajasthan Government, in Budget 2019-20, exempted solar energy from electricity duty and focussed on the utilization of solar power in its agriculture and public health sectors.
- ❖ A new Hydropower Policy for 2018-28 was drafted for the growth of hydro projects in the Country.
- ❖ The Government of India has announced plans to implement a USD 238 Million National Mission on advanced ultra-supercritical technologies for cleaner coal utilisation.

- ❖ The Ministry of New and Renewable Energy (**MNRE**) has decided to provide custom and excise duty benefits to the solar rooftop sector, which will lower the cost of setting up as well as generate power, thus boosting growth.
- ❖ Indian Railways is taking increased efforts through sustained energy efficient measures and maximum use of clean fuel to cut down emission level by 33% by 2030.

FOREIGN INVESTORS

- Enercon (Germany)
- Vestas (Denmark)
- Applied Materials (US)
- Asian Development Bank
- Enel (Italy)
- Gamesa (Spain)
- Orix (Japan)
- Nordex (Germany)
- Mudaajaya (Malaysia)



AGENCIES



- ✓ Ministry of New and Renewable Energy (MNRE)
- ✓ National Institute of Solar Energy (NISE)
- ✓ National Institute of Wind Energy (NIWE)
- ✓ Sardar Swaran Singh National Institute of Bio-Energy
- ✓ Skill Council for Green Jobs
- ✓ Solar Energy Corporation of India (SECI)

ROAD AHEAD

The Government is committed to increased use of clean energy sources and is already undertaking various large-scale sustainable power projects and promoting green energy heavily. In addition, renewable energy has the potential to create many employment opportunities at all levels, especially in rural areas. The Ministry of New and Renewable Energy (**MNRE**) has set an ambitious target to set up renewable energy capacities to the tune of 225 GW by 2022, of which about 114 GW is planned for solar, 67 GW for wind and other for hydro and bio among other. India's renewable energy sector is expected to attract investment worth USD 80 Billion in the next four years. About 5,000 Compressed Biogas plants will be set up across India by 2023.

It is expected that by 2040, around 49% of the total electricity will be generated by renewable energy as more efficient batteries will be used to store electricity, which will further cut the solar energy cost by 66% as compared to the current cost. Use of renewables in place of coal will save India Rs. 54,000 Crore (USD 8.43 Billion) annually. Renewable energy will account for 55% of the total installed power capacity by 2030.

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