

Wind energy is an important source of renewable energy in India. Many of the largest operational onshore wind farms are located in the United States, India and China. This article throws light on the advantages and disadvantages of wind parks.

Wind Farm/Park - Meaning & Types

A wind farm or wind park, also called a wind power station or wind power plant, is a group of wind turbines in the same location used to produce electricity. Wind farms vary in size from a small number of turbines to several hundred wind turbines covering an extensive area.

Types of Wind Farm/Parks

1. Onshore - Wind turbines harness the energy of moving air to generate electricity. Onshore wind refers to turbines located on land
2. Offshore - offshore turbines are located out at sea or in freshwater.

List of 10 Largest Wind Power Plants in India

Below-table shares the list of 10 largest wind power plants in India

Wind Power Plant	Megawatt (MW)	Location
Muppandal wind farm	1500	Tamil Nadu, Kanyakumari
Jaisalmer Wind Park	1064	Rajasthan, Jaisalmer
Brahmanvel wind farm	528	Maharashtra, Dhule
Dhalgaon wind farm	278	Maharashtra, Sangli
Vankusawade Wind Park	259	Maharashtra, Satara District.
Vaspeta	144	Maharashtra, Vaspeta
Tuljapur	126	Maharashtra, Osmanabad
Beluguppa Wind Park	100.8	Beluguppa, Andhra Pradesh
Mamatkheda Wind Park	100.5	Madhya Pradesh, Mamatkheda
Anantapur Wind Park	100	Andhra Pradesh, Nimbaganu

Muppandal Wind Farm

1. The project was developed by Tamil Nadu Energy Development Agency.
2. The Muppandal Wind Farm is India's largest operational onshore wind farm.

Jaisalmer Wind Park

1. This project is located in Jaisalmer district, Rajasthan, Western India.
2. The project was initiated in August 2001.
3. This wind park was developed by Suzlon Energy.
4. The Jaisalmer Wind Park is India's second largest operational onshore wind farm.

Vankusawade Wind Park

1. It is located at a distance of 40 km from the town of Satara, Satara District in Maharashtra.
2. Vankusawade Wind Park is a wind farm located on a high mountain plateau at 1,150 m above the Koyna Reservoir.

Wind Power Potential in India

1. The Union government has set an ambitious target of achieving 175 GigaWatt (GW) of installed capacity from renewable energy sources by 2022, which includes 100 GW of solar and 60 GW of wind power capacity. The total renewable power installed capacity in the country stood at about 70 GW in the financial year 2017-18.
2. It is found by the National Institute for Wind Energy (based in Chennai) that western states have larger potential in terms of a stable, steady and a speedy windflow starting from Gujarat, Maharashtra, Karnataka to Tamil Nadu and Andhra Pradesh.

Top States in India - Installed Wind Power Capacity

1. Tamil Nadu - Tamil Nadu tops the list of states with the largest installed wind power generation capacity in the country. Share of wind power in electricity generation was around 28% in 2018. Total wind capacity at the end of 2018 stood at 8,631 MW while its total installed electricity generation capacity stood at 30,447 MW at the end of 2018.
2. Gujarat - Gujarat houses the second-largest installed wind power generation capacity in the country. Share of wind power in electricity generation was around 19% in 2018.
3. Maharashtra - Maharashtra houses the third-largest installed wind power generation capacity in the country.

4. Karnataka - Karnataka houses the fourth-largest installed wind power generation capacity in the country.
5. Rajasthan - Rajasthan houses the fifth-largest installed wind power generation capacity in the country. Wind contributes around 20% of total electricity generated in the state.

Advantages of Wind Park or Wind Farms

1. Renewable - meaning that the source of energy is not depleted when it is used. So, as we use wind energy we don't decrease the amount of wind available; whereas in case of fossil fuels, it leads to depletion of resources.
2. Low-cost energy - Although wind turbines have high upfront costs, the energy they produce is cheap.
3. Clean energy - Generating energy using wind turbines does not emit any greenhouse gases.

Disadvantages of Wind Park or Wind Farms

1. Onshore wind is an intermittent source of energy, as turbines cannot generate electricity on demand, but only when the wind is blowing, and at sufficient strength.
2. When wind strength is insufficient for turbines to operate, fossil-fuel-based power supply is needed as backup, which can temporarily increase greenhouse gas emissions.
3. As per some research, people who live or work in close proximity to IWTs have experienced symptoms that include decreased quality of life, annoyance, stress, sleep disturbance, headache, anxiety, depression, and cognitive dysfunction. However, many researchers have differing opinions.
4. Wind turbine syndrome and wind farm syndrome are terms for the alleged adverse human health effects related to the proximity of wind turbines. Wind turbine syndrome has been characterized as pseudoscience.
5. Wind Parks need to be spread over more land than other power stations and need to be built in wild and rural areas, which can lead to industrialization of the countryside.

List of World's 10 Largest Wind Power Plants

Below-table shares the list of 10 largest wind power plants in the world. 2 wind power plants located in Tamil Nadu and Rajasthan are in top 10.

Wind Power Plant	Megawatt (MW)	Location
Gansu	7,965	China
Alta	1,548	United States of America (USA)

Muppandal wind farm	1500	Tamil Nadu, Kanyakumari
Jaisalmer Wind Park	1064	Rajasthan, Jaisalmer
Los Vientos Wind Farm	912	United States of America (USA)
Shepherds Flat	845	United States of America (USA)
Meadow Lake Wind Farm	801	United States of America (USA)
Roscoe	782	United States of America (USA)
Horse Hollow	736	United States of America (USA)
Tehachapi Pass Wind Farm	705	United States of America (USA)

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