



# India's Wind Energy Potential

[Source: PIB](#)

## Why in News?

Recently, the Ministry of New and Renewable Energy unveiled noteworthy insights into **India's wind energy potential**. This revelation sheds light on **key states with the highest wind power potential** and emphasizes the nation's dedication to sustainable energy practices.

- Additionally, the Ministry outlined innovative strategies aimed at enhancing wind power utilization and ensuring eco-friendly practices in the sector.

## What is the Wind Power Potential in India?

- India ranks **4<sup>th</sup> globally after China, the United States and Germany**, in terms of **installed wind energy capacity, with 42.8 GW (onshore wind) as of April 2023**.
- Wind resource assessment by the **National Institute of Wind Energy** reveals an estimated **wind power potential of approximately 695.5 GW at 120 meters and 1,164 GW at 150 meters above ground level** across the nation.
- **Best Performing States:**
  - **Wind Power Potential (in GW) at 120 m Above Ground Level:**
    - Gujrat (142.56), Rajasthan (127.75), Karnataka (124.15), Maharashtra (98.21), and Andhra Pradesh (74.90).
  - **Wind Power Potential (in GW) at 150 m Above Ground Level:**
    - Rajasthan (284.25), Gujarat (180.79), Maharashtra (173.86), Karnataka (169.25), and Andhra Pradesh (123.33).

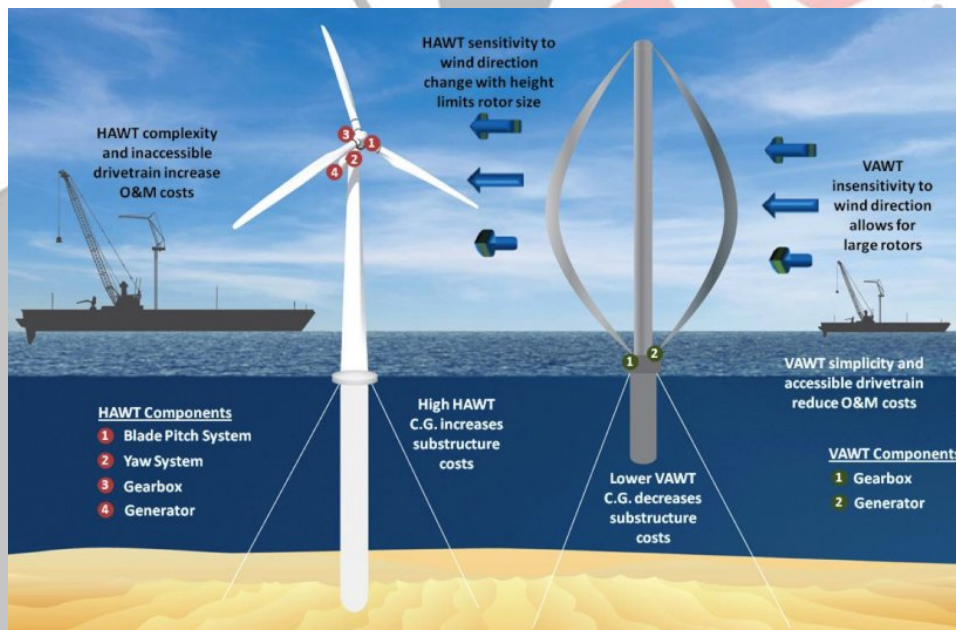
## What are the Government Initiatives for Wind Energy Development?

- **Policy for Repowering of the Wind Power Projects, 2016:**
  - This policy incentivizes wind power project repowering by providing an **additional interest rate rebate of 0.25% over existing rebates for new wind projects** financed by the [Indian Renewable Energy Development Agency \(IREDA\)](#).
- **Guidelines for Disposal of Fiber Reinforced Plastic (FRP):**
  - The [Central Pollution Control Board \(CPCB\)](#) issued specific guidelines for the proper disposal of FRP, including Sheet Moulding Compound (SMC), **used in wind turbine blades**. These guidelines ensure environmentally responsible waste management.
- **[National Wind-Solar Hybrid Policy, 2018:](#)**
  - The main objective is to provide a **framework for promotion of large grid connected wind-solar PV hybrid systems** for optimal and efficient utilization of wind and solar resources, transmission infrastructure and land.
- **[National Offshore Wind Energy Policy:](#)**
  - Objective is to develop offshore wind energy in the Indian [Exclusive Economic Zone \(EEZ\)](#) along the Indian coastline of 7600 km.

## Different Types of Turbine Used in the Wind Power:

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Aspect	Vertical-Axis Wind Turbines (VAWT)	Horizontal-Axis Wind Turbines (HAWT)
<b>Blade Orientation</b>	Blades are vertical and perpendicular to the ground.	Blades are horizontal and parallel to the ground.
<b>Blade Configuration</b>	Blades are attached to the top and bottom of a vertical rotor.	Blades are like airplane propellers, extending outward.
<b>Common Type</b>	Darrieus wind turbine is a well-known design.	Three-bladed turbines are the most common type.
<b>Performance</b>	Generally less efficient compared to HAWT.	Typically more efficient in converting wind energy.
<b>Electricity Generation</b>	Typically lower electricity generation capacity.	Higher electricity generation capacity.
<b>Application</b>	Limited use due to lower performance.	Widely used in the wind energy industry.
<b>Wind Direction Sensitivity</b>	Less sensitive to wind direction due to omnidirectional rotation.	Needs to adjust to wind direction for optimal efficiency.



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