

12– 11 – 2024

News: Wind energy in India

- In August 2024, the Tamil Nadu government introduced the “Repowering, Refurbishment, and Life Extension Policy” to replace old turbines and optimise wind energy use.
- However, wind energy generators have opposed the policy, approached the Madras High Court and got a stay.

Tamil Nadu Repowering, Refurbishment, and Life Extension Policy for Wind Power Projects 2024

- Wind energy generators in Tamil Nadu with windmills older than 20 years needed upgradation for energy efficiency.

The policy includes three major aspects:

- **Life Extension:** Extending the operational life of windmills over 20 years old.
- **Repowering:** Replacing old windmills with new machines.
- **Refurbishment:** Upgrading or repairing old windmills.

- **Capacity Overview:** Approximately 300 MW of the 9,000 MW wind energy capacity in Tamil Nadu is over 20 years old.

Reason for Opposition

- For life extension, wind energy generators are expected to pay Rs 30 lakhs per MW every five years.
- For repowering, a one-time payment of Rs 30 lakhs per MW is required to replace old machines with new ones.

Wind Energy in India

- **Wind Energy Potential:** India has a wind power potential of 1,163.86 GW at 150 metres above ground level while at a 120-metre turbine height, it is 695.51 GW.
- **Wind Energy Utilisation:** Only about 6.5% of India's wind potential is used at the national level and nearly 15% in Tamil Nadu.
- **Wind Power Generation:** India has been ranked 4th in wind power capacity and fourth in renewable energy installed capacity behind China, United States and Germany, as of 2024.
- **Cost Competitive:** Power generation from wind projects is likely to be cost-competitive relative to thermal power generation in India in 2025-30.

Wind Turbine Maintenance

- **Repowering:** Replacing wind turbines older than 15 years or under 2 MW capacity with new ones.
- **Refurbishing:** Upgrading turbines by increasing height, changing blades, or installing higher-capacity gearboxes to boost energy output.
- **Life Extension:** Implementing safety measures to extend the lifespan of older turbines.
- **Windy States:** Major wind energy states are Gujarat, Tamil Nadu, Karnataka, Maharashtra, Rajasthan, and Andhra Pradesh, which together contributes 93.37% of the country's installed wind energy capacity.
- Tamil Nadu has the second largest installed wind energy capacity with 10,603.5 MW after Gujarat.

Challenges in Repowering and Refurbishing Wind Turbines

- **Land requirements:** New turbines, especially those with higher capacities (2 MW and 2.5 MW), require more land (3.5 to 5 acres) compared to older, smaller turbines.

- **Displacement:** Since the 1980s when turbines were installed, **habitats have come up between wind sites which pose new challenges of displacement and rehabilitation of population.**
- **Technology Evolution:** Upgrading turbines, blades, and gearboxes to keep pace with advances **requires significant investment, time, and expertise.**
- **Banking issue:** **Wind turbines installed after 2018 in Tamil Nadu do not have banking facilities, meaning that repowered turbines are treated as new installations, and generators cannot bank the energy generated, affecting financial viability.**

India's Renewable Energy Target

India has **presented the following five nectar elements (Panchamrit) of India's climate action at COP-26 to the United Nations Framework Convention on Climate Change (UNFCCC) held in Glasgow, United Kingdom:**

- **It aims to reach 500 GW Non-fossil energy capacity by 2030.**
- **50% of its energy requirements from renewable energy by 2030.**
- **Reduction of total projected carbon emissions by one billion tonnes from now to 2030.**
- **Reduction of the carbon intensity of the economy by 45% by 2030, over 2005 levels.**
- **Achieving the target of net zero emissions by 2070.**