

Breathing New Life into Wind Energy: How High-Potential States Can Revive the Sector

India's wind capacity target for 2030 is 140 GW, and the current wind installation achieved until April 2023 is 42.8 GW. To achieve the remaining 98 GW, considerable growth rate and comprehensive efforts are needed in the coming years. India has a total wind energy potential of 695GW at 120 metres (National Institute of Wind Energy), which is on par with the solar energy potential of 748GW (National Institute of Solar Energy). Despite such striking parity, in recent years, capacity addition efforts through wind projects have been much slower compared to solar.

From 2016 to 2022, solar capacity in India benefitted from policy actions and favourable techno-economics with wide-scale adoption. It grew at a compound annual growth rate(CAGR) of 30.51%.The wind sector, on the other hand, has been stagnating at 5.95% and reeling under techno-economics issues. Current wind installations are realised only at a CAGR of 5.84%, which extrapolates to 63 GW by 2030.

To meet the 2030 target, the wind sector must triumph over many ecosystem challenges related to manufacturing and installation. This includes financial challenges for wind energy manufacturers and developers in India, such as the high overall cost of manufacturing, getting below-expected bid prices, and the inability to transfer the GST impact to consumers. With unfavourable market conditions, several suppliers and developers are closing their facilities. To adapt, struggling Indian manufacturers use their existing plants for exports, burdening the domestic supply chain.

Similarly, wind energy companies need help with issues such as delayed payments by distribution companies (DISCOMs) and the inability to extract optimum tariffs because of competitive bidding processes. Further, some of these bidding processes are perpetually causing a forced decline in tariff prices, making projects unviable for wind project developer companies and inhibiting the smooth functioning of regular operations. To ensure that projects are feasible and address low tariffs, the Ministry of New and Renewable Energy (MNRE) recently changed the bidding process from reverse bidding to closed bidding. However, the change being new, effects can be seen only gradually and remain uncertain.

The need of the hour is to seek actionable support from states with high wind potential, identify and resolve existing issues, and renew state policies to triple the efforts to meet and surpass the nation's wind target for 2030.

India has eight states that have close to 610.6 GW of untapped onshore wind potential, considering an average of 92%–93% of untapped potential in each state (see Table 1 for details). The states are grouped into regions, and the potential of each region is as follows: 324.3 GW in the southern region (Andhra Pradesh, Karnataka, Kerala, and Tamil Nadu), 151.9 GW in the northern region (Madhya Pradesh and Rajasthan), and 134.4 GW in the western region (Gujarat and Maharashtra).

If each region realises a mere 17% of its untapped wind potential, India will be on track to achieve the 2030 wind energy target. Similarly, realising 43% will help achieve 300 GW of wind installations by 2030. It is also important to note that the Central Electricity Authority projects solar installations at close to 300 GW by 2030. The 43% scenario can create parity in the performance of both renewables by 2030.

Table 1: Distribution of Remaining Onshore Wind Potential in Indian Regions

Region	State	Installed capacity (GW)	State potential (at 120meters, in GW)	Remaining potential (%)	Remaining potential (in GW)
Southern	Andhra Pradesh	4.10	74.91	95%	70.8
	Karnataka	5.29	124.16	93%	118.9
	Kerala	0.06	2.31	96%	2.2
	Tamil Nadu	10.07	68.75	97%	58.7
Northern	Madhya Pradesh	2.85	15.40	95%	12.6
	Rajasthan	5.91	127.76	85%	121.8
Western	Gujarat	10.14	142.56	82%	132.4
	Maharashtra	5.03	98.21	95%	93.2

(Source: NIWE Wind Atlas and MNRE Progress Report April2023)

These scenarios can be used as a region-wise benchmark to collectively push for wind installations in India and serve as a basis for a renewed national wind policy. The national wind policy can further suggest uptakes based on the wind installation trajectory. In response, these states can align their wind policies, which suit their geographies, and envision a road map for both onshore and offshore wind in the next 7 years.

Beyond target setting, policy formulation at the state level must be effective. It must include measures that mitigate project viability issues through financial incentives and easier approval mechanisms to support private players and technology partners. Financial facilitation by state government schemes—such as feed-in-tariff, tax credits, pilot grants, and improved bidding systems—can create a long-term positive impact on the uptake of wind projects in the market.

Likewise, simplifying and shortening project life cycles and streamlining permission processes with single-window clearances can encourage local stakeholders. A collective effort with a targeted push at the national level and effective policy formulation at the state level can help achieve India's wind energy targets for 2030.

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