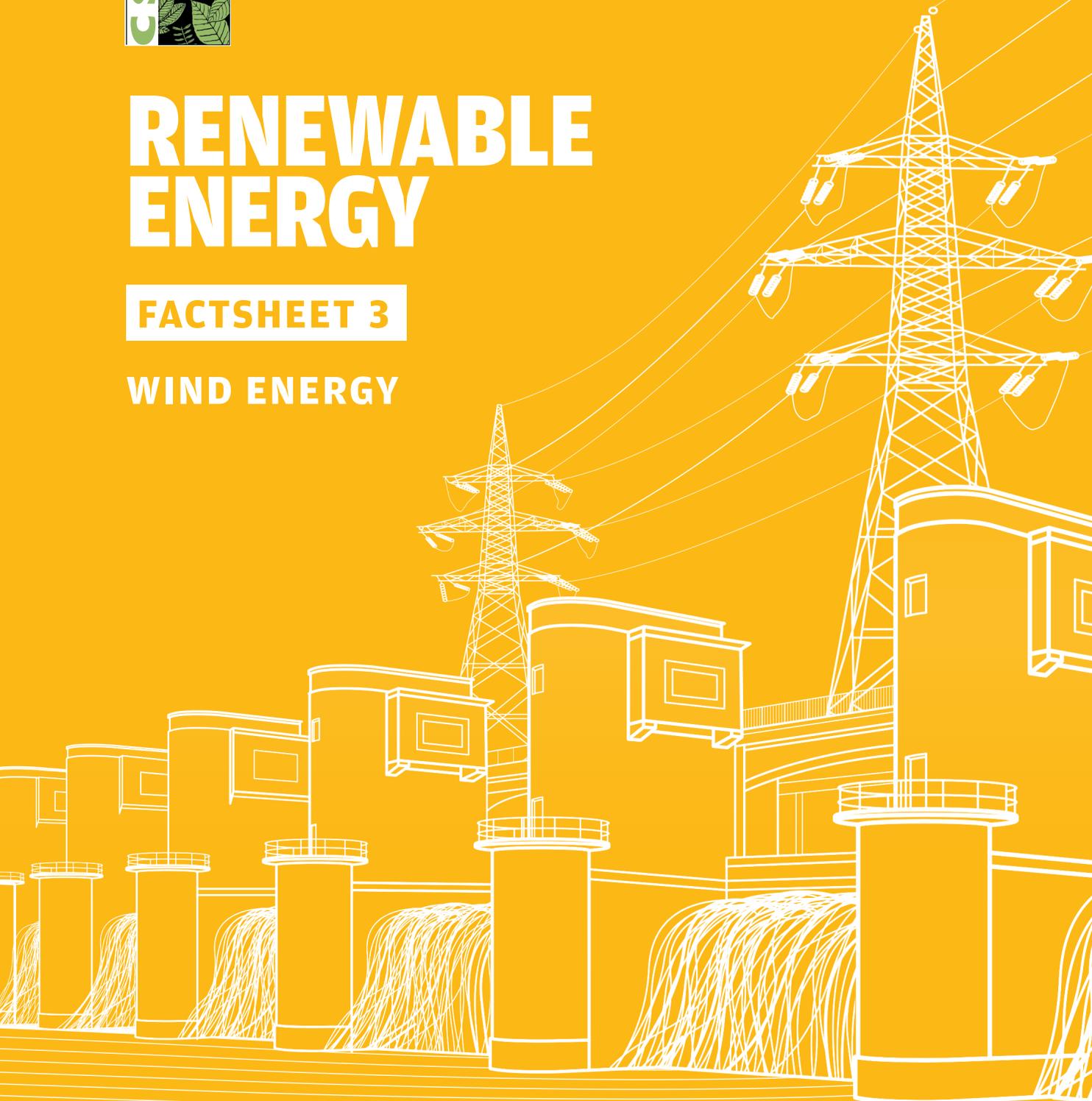




RENEWABLE ENERGY

FACTSHEET 3

WIND ENERGY





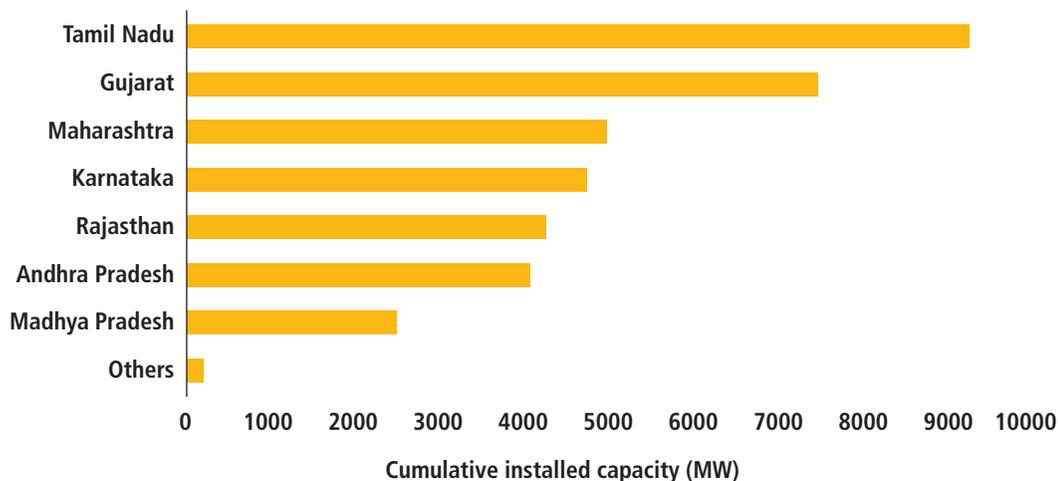
WIND ENERGY

India has an acknowledged potential in this sector, and the government is clear that it can meet the 60-GW target, However, the industry has reservations...

A. WHERE DO WE STAND TODAY

A 1 India ranks fourth in the world in terms of installed wind power – 37.7 GW as of March 2020 (see Graph 1).

Graph 1: Wind energy: State-wise installed capacities



Source: MNRE

A 2 The government has set a somewhat modest target of 60 GW for wind – as compared to 100 GW for solar – to be met by 2022.

A 3 The government remains confident of meeting this target – with 37.6 GW installed, another 11.4 GW in different stages of tendering and development, and 11 GW to be tendered (see Table 1).

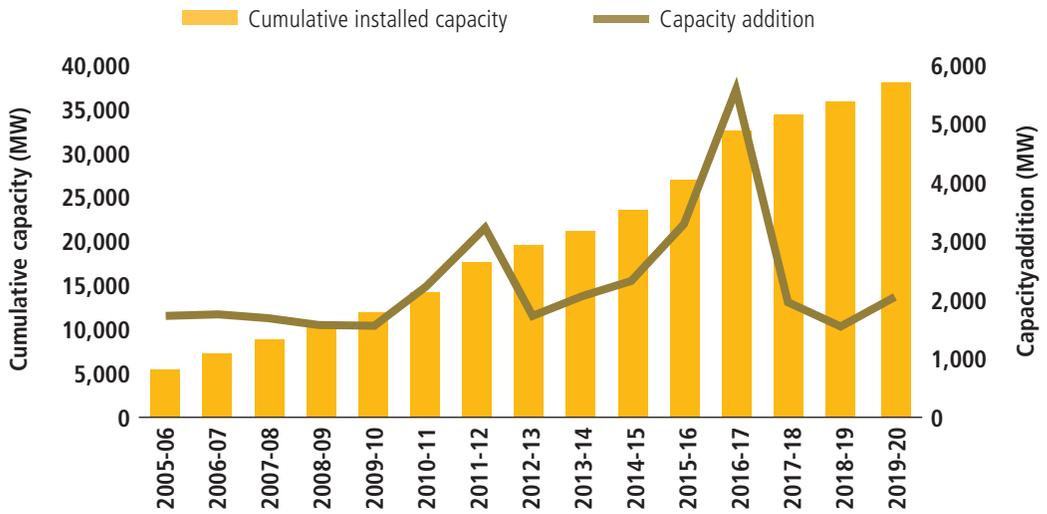
Table 1: Status of wind projects as on January 31, 2022

Target	60 GW
Installed capacity	37.60 GW
Under implementation	9.25 GW
On-going bids (GW)	2.20 GW

Source: Standing Committee on Energy (2019-20), MNRE, Demand for Grants (2020-21)

A 4 But the industry is not so sanguine. CRISIL reports that wind installations may reach only 45 GW by March 2022. This is also clear from the MNRE's under-achievement of its annual targets; in 2017-18, 2018-19 and 2019-20, it only realised 1,865, 1,461 and 2,067 MW installed capacity respectively, or roughly 50 per cent (see Graph 2).

Graph 2: Capacity addition and total installation of wind energy in India



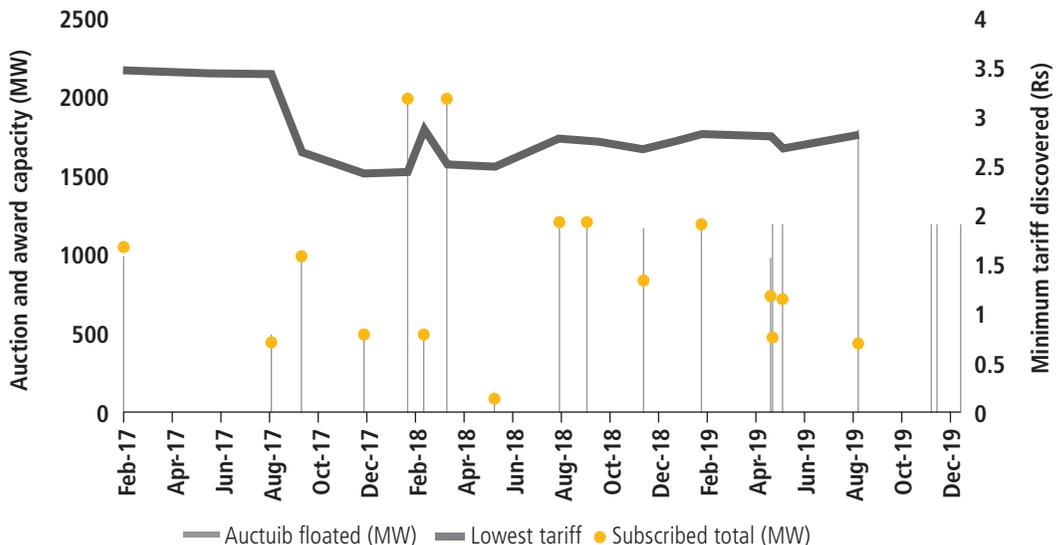
Source: MNRE reports

A 5 This is when there is high wind energy potential in the country; according to assessments of the National Institute of Wind Energy (NIWE), the country has a potential of 302 GW at 100 m hub and 695 GW at 120 m hub height.

A 6 Till 2008, wind energy was promoted through accelerated depreciation – giving investors an interest in the installation of wind farms, but not necessarily in the generation of power. In 2009, the policy shifted to generation-based incentives – providing 0.50 paise for every unit of wind energy fed into the grid. In March 2017, this policy was discontinued and there was a shift to competitive bidding.

The first 1,050 MW auction held by SECI in February 2017 brought a record bid of Rs 3.46/unit, as against the lowest operating price of Rs 4.16 in Tamil Nadu. Since then, 6.4 GW has been auctioned and tariffs have fallen steadily, reaching 2.43/unit in December 2017. Subsequently, increased risks have driven up the costs. In 2019, the tariff cap was revised to Rs 2.93/unit, but the industry says this is still unviable. All the auctions of 2019-20 have been undersubscribed and the total response has been 45 per cent (see Graph 3).

Graph 3: Wind energy project auctions and minimum discovered tariffs



Source: Compiled by CSE

B. SLOW-DOWN: WHAT ARE THE REASONS?

B 1 Delay in payments: The case is the same as with solar developers – as of July 2019, roughly Rs 10,000 crore was owed to RE developers. Payments are disbursed late. Despite the government's bail-out to discoms, this issue may persist for some time till the mechanism of disbursement is not worked out.

B 2 Transmission network: A timely development of transmission infrastructure to evacuate power from upcoming RE plants is a key hurdle. RE projects have a short gestation period of about two years, but transmission networks in India have usually been planned and constructed over four to five years. Mega schemes, such as the Green Energy Corridors (GEC)-I and II and transmission systems for Renewable Energy Zones (for 66.5 GW RE capacity), are under implementation, but these are facing commissioning delays.

B 3 Accessibility to windy sites: Wind is expected to match the solar prices, which will only happen if the site has a high wind potential. Only two states – Gujarat and Tamil Nadu – have such sites, where projects can achieve the tariffs under the cap. But these states are not ready to give up land for wind projects to be developed under the Inter-state Transmission System (ISTS) model, where energy can be exported through the grid. Also, land acquisition is becoming a huge constraint for new projects.

B 4 Curtailment of generation: Despite new installations, wind generation has been lower in 2019 during all the monsoon months from July through October (compared to that in 2018), which indicates curtailment.¹

B 5 Lack of financial viability in projects: Wind auctions have been subjected to the tariff caps. The industry says tariff caps make the projects unviable. Realising this is a bottleneck in the tendering process, the MNRE for the time being has decided not to prescribe any ceiling cap tariffs. This will provide room to the developers to factor in the risks associated with other reasons mentioned above.²

B 6 COVID-19: *Inter-alia*, the COVID-19 pandemic has adversely impacted project implementation by disrupting supply chains and labour movement; as a result, timelines have been extended. The distress would be visible throughout the year 2020.

B 7 Only 32 per cent of the allotted capacity by SECI under tranche I-IV has been commissioned despite the deadline having passed in March 2020 (see Table 2).

Table 2: Allotted vs commissioned project capacities

Tranche	Auction held	Allotted capacity (MW)	Commissioned capacity (MW)	Deadline
SECI - 1	February 2017	1050	1000	
SECI - 2	October 2017	1000	685	May 2019
SECI - 3	February 2018	2000	277	November 2019
SECI - 4	April 2018	2000	0	March 2020
Total		6050	1962	32%

Source: Economic Times³

B 8 The well-established manufacturing sector is under stress because the auctions are not bringing in increased capacity. From nearly 20 manufacturers operating in 2016-17, only a few survive now. Even the home-grown Suzlon Group, accounting for 35 per cent of existing installations, is on the brink of bankruptcy.

C. WHAT ARE THE OTHER OPTIONS?

C 1 Repowering wind projects: India has the potential to add 10 GW by repowering wind farms that currently occupy high wind sites but employ low capacity turbines (1 MW). But the policy has been a failure since it was announced in 2016.

An economic analysis of repowering

Assumptions

- Remaining life of the project/PPA: 10 years
- Tariff for old project: Rs. 5.75/kWh
- Tariff for new project: Rs 2.7/kWh
- O&M costs: Rs 2.3 million/MW per annum, inflated at 5 per cent every year
- Wheeling and transmission charges have been ignored to simplify simulation. Also, they vary across the country with many states partly waiving them.

	Old project	New project	
Capacity	500 Kw x 2 turbines	2 MW	4 MW
CUF (%)	10	40	45
NPV	Rs 2.7 crore		
Expected increase in tariff		Rs 0.2/kWh	Rs 0.08/kWh

The above analysis clearly shows that repowering is economically lucrative. The compensation that needs to be paid to the old turbine owners will be just about 3-7 per cent of the tariff of the new turbine, depending on the size of the new turbines.

Source: CSE, SoRE 2019

C 2 Off-shore wind: With a long coastline, India's immense off-shore wind potential is unexploited. The National Offshore Wind Policy has been notified in October 2015. Despite suitable conditions, the pace of development has been slow and the 5 GW target is out of reach given project gestation of six-seven years. Not enough action has been taken as of now.

C 3 Hybrid (wind-solar): Notified in 2018, this has received some attention. So far, projects worth more than 4,500 MW have been announced, but less than one-third capacity is under implementation. These projects are facing combined problems of the solar and wind sectors (see Table 4).

Table 4: Wind-solar hybrid projects awarded by SECI

Sr. No	Developer	Project capacity (MW)	Tariff (INR/kWh)	Project location	Scheduled commissioning date
1	Mahoba Solar (UP) Private Limited	390	2.69	Rajasthan	03.12.2020
2	SBE Renewables Ten Private Limited	450	2.67	Tamil Nadu	03.12.2020
3	Adani Renewable Energy (Park) Gujarat Ltd.	600	2.69	Rajasthan	17.02.2021
	Total	1440			

Source: MNRE

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2. <http://164.100.47.5/qsearch/QResult.aspx>, UNSTARRED QUESTION NO-1409, ANSWERED ON-03.03.2020
3. https://m.economicstimes.com/industry/energy/power/only-one-third-seci-wind-projects-commissioned-so-far/amp_articles/75682069.cms



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