

# Is India on track to meet its Renewable Energy target of 175 GW by 2022. If not, why not? What can and must be done to ensure that we can move to cleaner energy, which meets the needs of all

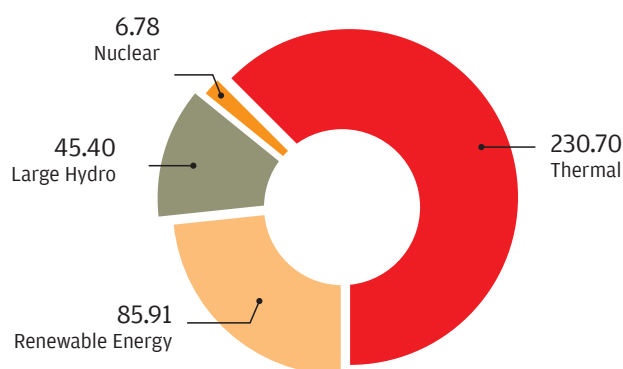
### PART A The big picture: Where we stand today

**A.1** India has set up a target of 175 GW of installed renewable energy (RE) capacity by 2022. Currently, this target – adding up solar, wind and other sources of energy – stands at 85.91 GW (December 2019) (see Graph 1). Its share in power generation in 2018-19 was less than 10 per cent. (see Graph 2)

**A.2.** In the 175 GW target solar and wind have the highest share – 100 GW of solar; 60 GW of wind.

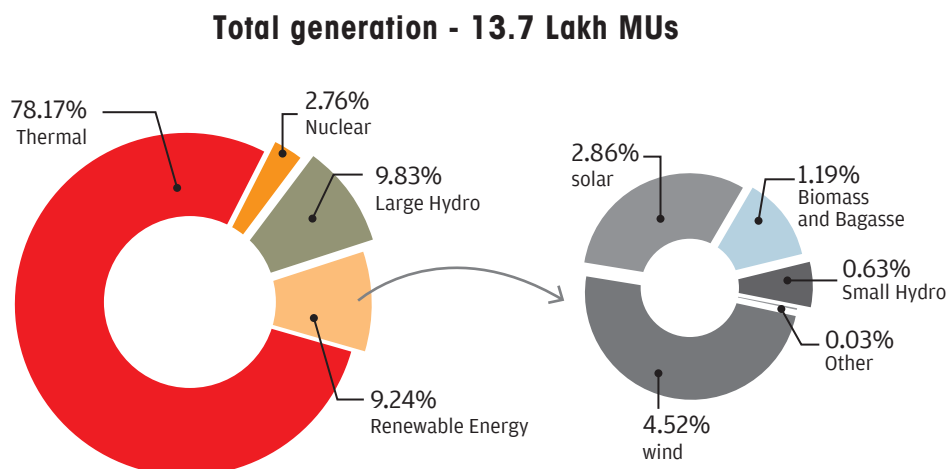
**A.3.** In the last 10 years, the growth in this sector has been remarkable -- cumulative aggregated growth rate (CAGR) has been over 18 per cent. (see Graph 3)

**Graph1: Installed capacity of power generation in India in GW (December 2019)**



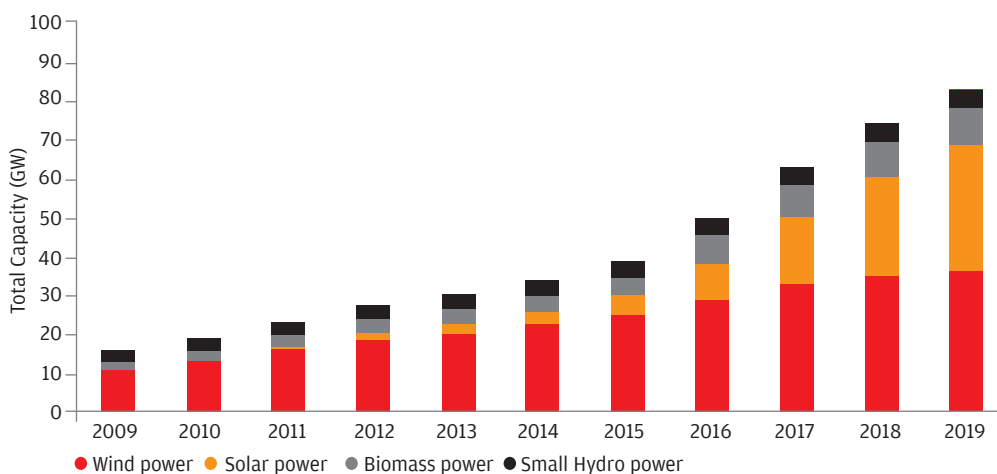
Source: Central Electricity Authority (CEA), Monthly Report on Installed capacity for December 2019

**Graph 2: Share of various energy sources in total power generation for year 2018-19**



Source: CEA, Monthly generation and Renewable generation reports, March 2019

**Graph 3: Year-on-year capacity addition of Renewable Energy**

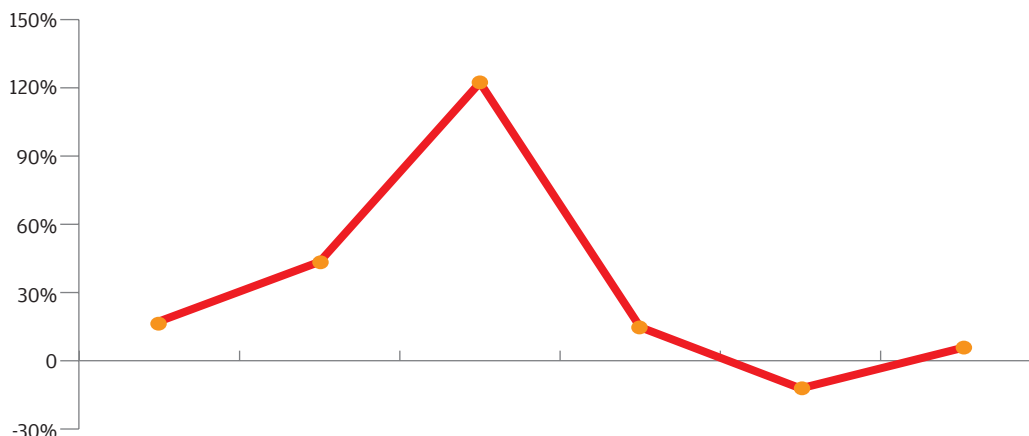


Source: Compiled from MNRE and CEA reports

## PART B

**B.1** But now, growth it seems is flagging (see Graph 4). In the past year, capacity addition has come down; tenders are being cancelled and even cleared projects are not going online. Is this temporary? Does it suggest that the RE sector is also facing the same headwinds that are driving down the economy? Is it about the fact that India has a power surplus today and so, renewable energy is losing its sheen. What then is the future? What needs to be done?

**Graph 4: Rate of capacity addition of RE as compared to the previous year shows a sharp decreasing trend**



Source: CSE analysis for CEA/MNRE data

**Table 1: Result of solar and wind tenders in recent years**

Category	2015-17	2017-18	2018-19
Auctioned	12.3	10.4	21.4
Delayed	1.5	15.5	19.6
Under/no-subscription	1	1.1	16.6
Cancelled	1.1	0.5	6.2
<b>Total</b>	<b>15.9</b>	<b>27.6</b>	<b>63.9</b>

Source: CRISIL

## B.2 Tenders are being cancelled.

In 2018-19, 8 GW of tenders for solar energy were cancelled, which is more than the capacity added in that year. Data put compiled by CRISIL shows that of the 63.9 GW of tenders launched in 2018-19 only 34 per cent was fully auctioned, and 31 per cent was cancelled, 26 per cent was under- or not-subscribed and 10 per cent was delayed. In fact, the proportion of fully-auctioned capacity in tendered has declined substantially from 77 per cent in 2015-17 (see Table 1). CRISIL assesses that if the situation persists solar capacity would only reach 59 GW by 2022, and 81 GW by 2024 – far from the 100 GW by 2022 target.

**B.3 Non-commissioning of projects:** Central Energy Authority (CEA) at its own is collecting data on the commissioning of new RE facilities. It has

**Table 2: Data gap between commissioning of RE generator**

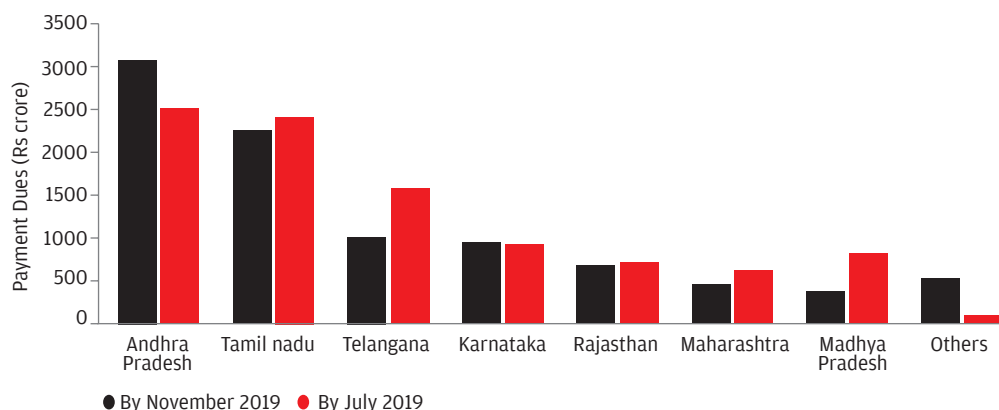
Month	As per MNRE	Data received by CEA
Oct-19	790.5	315
Nov-19	1020.4	35
Dec-19	1508.5	100

CEA (January 2020), Commissioning details of new RE projects

discovered a huge gap between the provided by the MNRE for last three months of year 2019 and what projects have been commissioned – project developers are required to inform CEA when the project is commissioned.

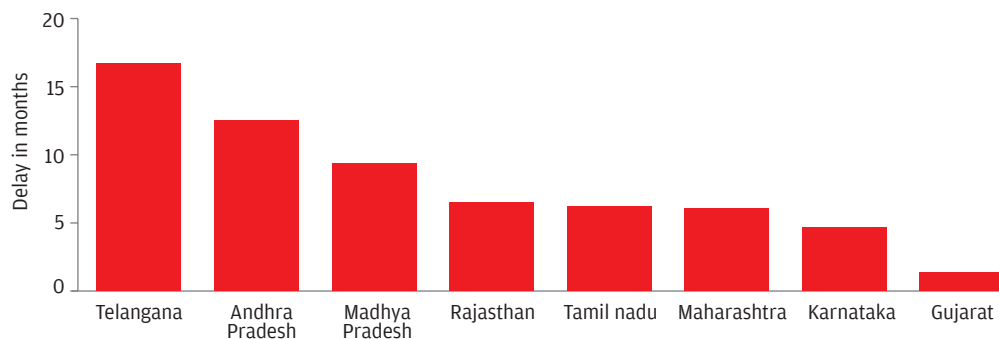
Out of the total of 3319.40 MW of capacity addition as per MNRE, data has been received for 450 MW – which suggests that there is a shortfall of 2870 MW – or 86 per cent gap in commissioning of projects or at least delays in informing CEA of the project going online. These projects include the Bhadla clean solar project in Rajasthan, with an installed capacity of 100 MW and ACME Chittorgarh solar energy project with 230 MW of installed capacity. (see Table 2)

**Graph 5: State-wise payment owed to RE generators**



Source: CEA, Report on Payment dues of RE Generators

**Graph 6: Average time of delay in making payments**



Source: CSE Analysis

## PART C

### C. Big challenges

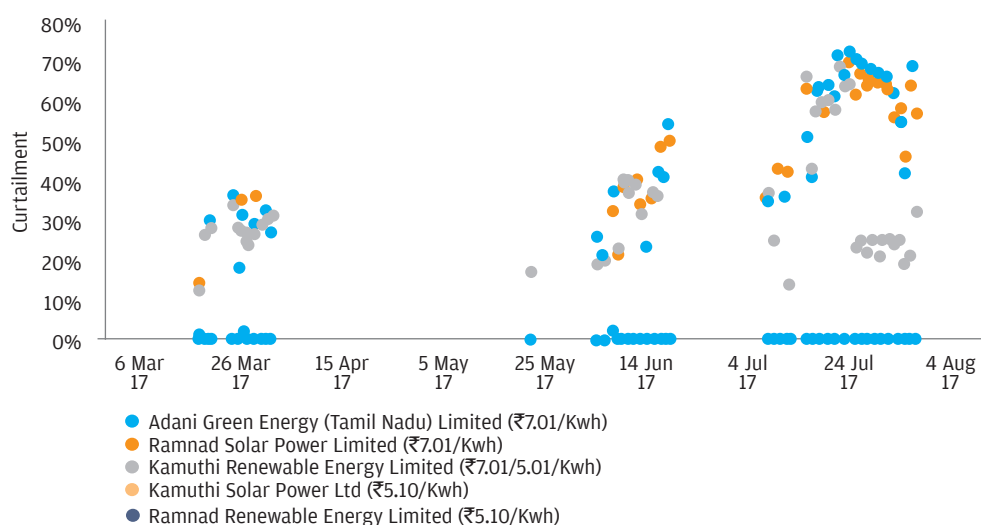
**C.1.** Distribution companies are in deep debt; they cannot pay for power or they delay the payment – putting pressure on developers: Payments for power to renewable energy generators is frequently delayed. In July 2019, roughly ₹10,000 crore was owed to renewable energy generators. (see Graph 5)

The RE rich states are those also that are delaying payments. Andhra Pradesh accounts for about one-third of the total due amount and it has increased by 22 per cent just in four months. The four south Indian states account for more than three-fourths of the total dues to the RE generators in the country and more than half of the solar and wind installations. (see Graph 6)

**C.2.** If states cannot pay, they simply curtail power – ask for shut-down of this ‘must run’ sector: ‘Curtailment’ of power generated by wind and solar projects is a persistent problem for renewable energy developers in India despite a ‘must-run’ assurance in regulation. There is no data on this ‘curtailment’ because of the lack of transparency on the part of state load dispatch centers (SLDCs) and distribution companies.

Industry says curtailment is between 1-5 per cent for solar power; wind, particularly in Tamil Nadu sees much higher curtailment, pegged at 30-35 per cent. But all these numbers are seen to be under-estimates. This is clear from

**Graph 7: Comparative curtailment of new and old solar projects in Tamil Nadu**



Source: CSE analysis based on TNERC Orders

the fact that capacity utilization in wind sector of Tamil Nadu has dropped from 30 per cent in 2016-17 to 25 per cent in 2019-20. This when the Indian Electricity Grid Code 2010 asks SLDCs to prioritize scheduling of renewable power over other generators/sources to incentivize green energy projects unless there are technical constraints – congestion in the grid or unavailability of renewable energy.

This ‘illegal curtailment is also pegged with the price of the power – discoms ask older plants, with higher tariff in the power purchase agreement to cut back on generation. That is not to feed to the grid. (see Graph 7)

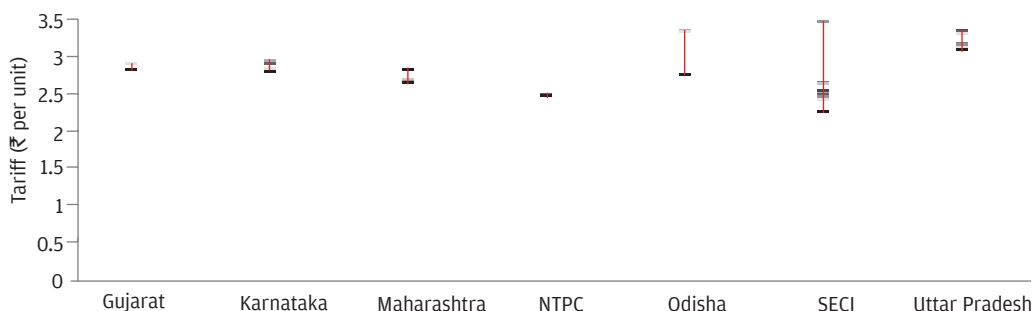
In Andhra Pradesh, after the newly elected state government failed to re-negotiate the ‘expensive’ wind and solar projects, it has started using ‘curtailment’ as its best option. In October 2019, National Solar Energy Federation of India (NSEFI) – the association of large solar generators -- wrote to the Union Ministry of Power asking for its intervention as solar projects in the state were being ‘suffering from continuous curtailment of 60-70 per cent since July 2019. This in spite of the directions of the state High Court ordering against this ‘curtailment’ from ‘must-run’ renewable energy projects.

On December 20, 2019, CEA has taken cognizance of this matter and convened a meeting to discuss ‘curtailment of power from renewable energy based generating stations.’ Its notice says that it has been observed during high RE season of April-October 2019 that growth of energy generation from RE sources was less as compared to previous years, this even after addition of new RE capacity.” One possible reason is curtailment instructions issued by the SLDCs, as brought to CEA’s notice by the Indian Wind Power Association. It therefore wants to set up a mechanism to collect curtailment data on a monthly basis. Clearly, this matter will need careful intervention.

### **C.3. State governments are increasingly keen to renegotiate or cancel the power purchase agreement with higher tariffs**

The solar and wind energy developers sign a contract with a power purchaser, mostly distribution companies (Discoms) for a prescribed period (mostly 25 years) on a particular tariff rate per unit – based on the then prevailing best rate. But then the rate goes down, as prices of renewable energy fall. Now states do not want to pay the higher rate and they are pushing of re-negotiation – jeopardizing the industry. In Andhra Pradesh, the government wanted to renegotiate energy tariffs with developers for some 140 power plants to revise tariff to ₹2.43 per unit for wind and ₹2.44 per unit for solar from higher legacy levels and to do this retrospectively or otherwise it would cancel the project. In this case, the High Court stepped in. But tensions on cost of tariff is simmering.

**Graph 8: Tariff range for auctions conducted during 2018-19**



Source: CSE compilation

**C.4. Low tariffs discovered in tenders in the past few years have ironically become the problem – governments use these to benchmark the cost of power that they will pay – and refuse to accept tenders with higher costs:** The lowest realized tariffs for solar at ₹2.44 (May 2016) and wind ₹2.43 (December 2017) have become the benchmark. Risks have increased since then and these tariffs are not viable says industry. Furthermore, GST has had a cost impact. In some cases, government has imposed ceilings on tariffs – in the case of solar at ₹2.5 to ₹2.6 per unit.

Also, tariffs quoted by developers in auctions for renewable energy projects, differ based on the rating of the discoms – who will be purchasing the power. In 2018-19, most SECI auctions drew a tariff of ₹2.55 to 2.71 per unit, while most auctions by Uttar Pradesh discovered a tariff of ₹3.02 to 3.38 per unit (see Graph 8).

**But all this could also just be that the RE sector is facing the impacts of the economy slow-down. This is a time when the country has surplus power and lower demand. But all this does mean that we need to re-think the present policies so that we can pick up momentum and not miss the target.**