



India has almost doubled its solar and wind capacity to 61GW in 2018.

## Rising costs screw India's 175GW energy goals

Will India hit its 2022 wind-solar targets amidst waning investor confidence, auction cancellations, and higher solar prices?

With a little more than just three years down the line, India's 175GW wind-solar targets are in jeopardy as equipment duties rise and dampen investor confidence. Analysts also point to the scrapping of solar auctions during what supposedly was a sunshine year for domestic players.

India has set the targets at 100GW for solar and 75GW for wind for 2022, already an ambitious endeavour from the point of view of analysts and stakeholders. **Rishab Shrestha**, solar analyst, Wood Mackenzie, said that despite significant cost declines, India will meet only 76% of the total target, which could be considered an achievement given the

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circumstances and in view of increasing electricity demand.

During a panel discussion in November 2018, **Kanika Chawla**, senior programme lead of the Council on Energy, Environment and Water (CEEW), a think-tank which advises the Indian government, said that the 175GW target is still considered "very much the floor and not the ceiling" and shared that experts even recommended that the target should be at 300GW.

Over the last four years, India has already achieved a lot in terms of increasing its wind and solar capacity. The numbers have almost doubled from 2014 levels to 61GW in 2018, driven by the significant cost decline from auctions.

However, in the government's process of churning reforms to strengthen the power sector, Chawla has observed some gaps in policy making. "I think at some point between forming the stop level target and where we are right now, we've lost sight at some of the trade-offs and now we're making some policies that are at opposites with each other," she said, referring especially to the two-year safeguard duties.

Domestic power players immediately felt the pain from what is considered a frail attempt to protect them from overseas competition. About 7,000MW

of solar tenders have been scrapped by central and state agencies in 2018.

The Indian Solar Manufacturers Association (ISMA) said in a report that developers have stalled projects to avoid the duty timeframe and have resorted to importing equipment from Southeast Asia. The trade body plans to refresh a petition it withdrew last year to call for tighter anti-dumping measures and cash incentives for the local industry.

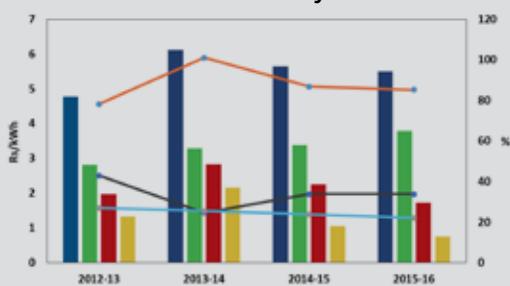
### Investor confidence dampens

"Various duties on equipment and the associated uncertainty has led to a short-term uptick in solar prices. This leads to knock-on effect on already cash-strapped state distribution companies (discoms) who are showing an unwillingness to greenlight high priced solar projects," Shrestha explained.

Investors may have lost their excitement around the targets, but the Indian government's commitment and support appear to be strong as they respond to various industry hurdles. According to Shrestha, the government has been helping reduce project risks and as a result, has been able to keep renewable prices at a competitive rate.

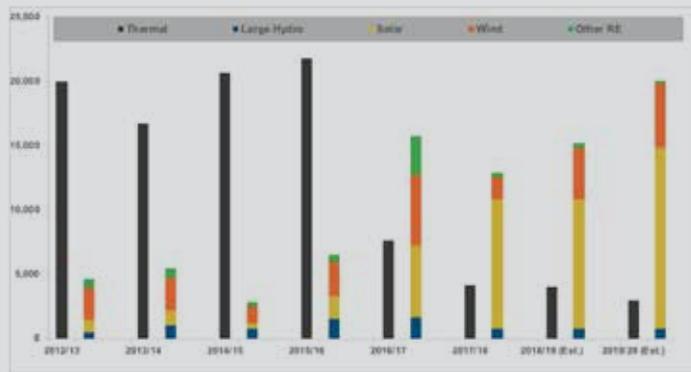
The analyst added that capital costs are expected to decline by 23% for wind and 31% for solar in the next five years as new

Financial indicators of UP electricity discoms



Source: PFC. Note: ACS (Average Cost of Supply) & ARR (Average Revenue Realised)

## India Renewable and Thermal Power Capacity Additions (MW)



Source: Central Electricity Authority of India (CEA), MNRE India, IEEFA estimates.

generation technologies push out old ones. By 2023, non-hydro renewables are expected to make up 13% of the generation mix.

“Initial policy discussions on 2030 renewables target already shed a positive light on renewables. Improving grid flexibility through storage and flexible power generation will be extremely crucial in achieving high levels of renewable penetration. Economic competitiveness, technological maturity, and financially healthy off-takers will provide a solid base for renewable capacity growth to cater to electricity demand growth,” he said.

Furthermore, it must also be noted that India had already installed 25GW of solar power by September 2018, a quadruple increase over less than three years. By the same month, total renewable energy installations across India had reached 75GW, which is 21% of total installed capacity and a record high of 11.9% of the entire power generation mix.

**Tim Buckley**, director, Energy Finance Studies, Australasia, Institute for Energy Economics and Financial Analysis (IEEFA) also said that the momentum is still very positive, with 26GW of new solar tenders in train and Prime Minister Narendra Modi’s \$70-80b of renewable energy investment in the next four years. Buckley notes that the country’s ambitious targets are not without rationales, as community concerns rise over excessive air pollution and associated health costs, especially in New Delhi.

“The devaluation of the rupee coupled with a volatility in oil prices during 2018 has increased the country’s energy security concerns, drawing attention to India’s excessive reliance on increasingly expensive imported fossil fuels. In addition, \$10b worth of financial distress being experienced by import coal fired power plants at Mundra in Gujarat is further adding to the country’s significant financial and political angst of late,” Buckley added.

On top of renewables targets, India is on track to meet most of its Paris agreement goals. In fact, analysts estimate that 40% of the country’s non-fossil fuel capacity target will be met a decade early. Buckley said that India’s achievement comes from Prime Minister Narendra Modi’s 2015 announcement of ambitious policy commitments to meet the global Paris agreement, focused on sustainable development and climate justice.

### Struggling towards Paris goals

However, headwinds have also begun hampering the path to the Paris agreement targets. The country’s National Electricity Plan (NEP) target to cut fossil fuel capacity to just 43% of its total installed capacity by 2027 is challenged by the electric grid’s struggle to incorporate high variable energy penetration.

India’s nationally determined contributions post-2020 include achieving 40% of electric power installed capacity from non-fossil fuel by 2030, representing a jump of 33% over non-fossil fuel capacity of 2015; reduction of emissions intensity of the country’s gross domestic product (GDP) by 33-35% from the 2005 level to 2030; and the creation of an additional 2.5-3.0 billion tonnes of carbon sinks through additional tree and forest cover. On the last one, analysts observe that India is behind schedule.

“The deflationary momentum in the solar and wind generation sectors has enabled India’s electricity sector to turn to deflationary, emissions-free, domestic alternatives in the past several years, particularly as renewable energy tariffs have fallen below 4.2 cents (Rs3.00)/kWh with zero indexation for 25 years. In contrast, the Central Electricity Authority of India estimates the levelised tariff for an outdated-technology, super-critical mine-mouth coal-fired power plant operating at a realistic capacity factor of 60% would be Rs4.39/kWh,” Buckley said.

On the other hand, coal remains to be a key feature of India’s generation mix,



Rishab Shrestha



Kanika Chawla



Tim Buckley



Pralabh Bhargava

especially in the short-term. **Pralabh Bhargava**, coal principal analyst, Wood Mackenzie, said that they have increased India’s imports for thermal coal from 158 Mt to 164 Mt in 2018, with a further upside risk of 3-4 Mt as coal stocks are at historically low levels.

The country’s fast growing electricity needs have been the subject of various proposals, one of which is THDC India Limited’s proposed 1,320MW Khurja Supercritical Thermal Power Plant located in the Bulandshahr district of Uttar Pradesh. However, Buckley said that the power plant is a long delayed, outdated business proposal that can no longer satisfy the country’s energy hunger.

### Coal’s continued dominance

“The cost at the Khurja plant will almost certainly be higher. For starters, the plant is not a mine-mouth facility and will have to transport its coal more than 900km, incurring significant freight charges. In addition, the plant’s initial cost estimates were prepared before the coal price increases of the past couple of years. Finally, the plant’s environmental impact assessment (EIA) from November 2016 assumed the facility would post a capacity factor of 90%; the country’s existing coal fleet has averaged below 60% for the past two years,” the analyst added.

According to Bhargava, the growth in domestic coal production and dispatches can only partially meet the growing demand for coal, which is resulting in increased reliance on imports. “With a decade-low stockpile at Coal India’s mines and more than half of the plants with a supercritical level of less than seven days’ stock, the reliance on imported coal for several power plants will increase the flow of imports into India,” he said.

If India wants to meet its energy targets at all, it should not only look towards a distant future. A report by the International Energy Agency (IEA) noted that in highly regulated markets such as India, there is a risk that capacity runs ahead of demand. They estimate that today, there are 350GW of excess capacity in regions including India, China, Southeast Asia, and the Middle East. IEA said that this represents additional costs to the system which it cannot afford.

Meanwhile, there has not been an acceleration of emission standards enforcement for existing thermal plants, especially for private and state plants. Analysts say that retrofits are expensive for plants left with substantial operational life. This, coupled with the existing financial burden in the thermal power sector, has left the government at a loss on how to resolve thermal power challenges. Hence, coal remains in the focus whilst renewable targets are being strived for.