Modi's mission

Market update | India's government insists that its target of 100GW solar by 2022 is still on track. But after 2019 proved another disappointing year, will the sector's barriers be overcome in time? Catherine Early reports

Credit: Tata Power

"When the energy sources and excesses of our industrial age have put our planet in peril, the world must turn to sun to power our future." So said India's prime minister Narendra Modi in December 2015, when announcing his International Solar Alliance alongside India's new target to install 100GW of solar generation by March 2022.

The goal was an ambitious upgrade by Modi from the previous government's aim to install 20GW by 2020, announced in 2010. The prime minister, at that point just 18 months in power, wanted to position India as a leader in solar power in front of the world audience at the UN climate talks in Paris.

By the end of December 2019, India had installed a total of around 35GW of solar power generation. Although final figures are not yet available, analysts at Mercom have estimated that some 7.5GW was installed in 2019, compared with 8.3GW in 2018. But the past two years have seen a slowdown in growth compared with 2017, when 9.8GW was commissioned.

"I'm disappointed with 2019, it could have been a boom year where solar installations went up 50- 100%," says Tim Buckley, director of energy finance studies at the Institute for Energy Economics and Financial Analysis (IEEFA). Buckley puts this down to "a myriad of regulatory headwinds and hiccups".

One major feature of early 2019 was the election, held in seven phases from April 11-May 2019. According to consultancy Mercom Capital Group, tender and auction activity slowed down in the run-up to the election, with central and state implementing agencies issuing just a few tenders. Land allocation was also delayed, and there was a shortage of labour as workers travelled to their home states to vote.

As the two-year countdown to India's 100GW solar target begins, deployment has faltered

Raj Prabhu, chief executive of Mercom says: "There is a quiet period for six months before an election, the government doesn't approve anything in order to avoid accusations of corruption. Lots of activity stopped, nothing was getting approved for a while."

Elections also spelt trouble for solar projects in Andhra Pradesh, when the state's newly elected chief minister Jaganmohan Reddy announced a review of power purchase agreements (PPAs) of solar and wind power projects awarded during the previous government, claiming

that they were far higher than usual, and that corruption had taken place.

The issue ended up in the courts, while Modi's central government asked the state to stop creating uncertainty for investors, arguing that PPAs could not be revisited unless there was a clause to do so, or corruption was proven beyond doubt. At the time, there were around 3GW of large-scale solar projects operational in the state, with approximately 1.7GW of projects under development, and about 200MW tendered pending auctions, according to the Mercom India Solar Project Tracker.

"I'm pleased to see the central government has tried to hold firm and that the courts are involved, so the chief minister is now backing down to some extent," says Buckley. But he adds that the incident has damaged India's sovereign rating in the infrastructure space in the short term.

Meanwhile, in Gujurat, the state government refused to approve land acquisitions for contracts signed by the central government, which it said had failed to consult it on the projects. Buckley says that these policy disagreements between central and state governments highlighted the reality of a country, that though unified in name, is in reality 28 very different states. "Policy contradictions are probably not surprising, but it's annoying and disruptive to the long-term target," he says.

Developers have also faced problems in receiving payments from power distribution companies, known as DISCOMS. This has affected all types of electricity generators – DISCOMS have not raised their tariffs sufficiently to balance the rising value of power purchase agreements. They currently owe some US$1.36 billion to wind and solar developers, according to a report by the energy committee of the Indian parliament, published in December [1].

Trade barriers

At the same time, developers have been hit with increased costs for equipment, caused by the government introducing a tariff on their imports of solar cells from China and Malaysia for two years to protect domestic players from a steep rise in inbound shipments of the product.

The two-year safeguard duty on solar cells was introduced in July 2018. It was levied at 25% for the first 12 months, after which it was reduced to 20% for the next six months, and will fall again to 15% for the final six months.

The introduction of the duty was a "big policy screw up", according to Buckley. "It wasn't just that they did it, it was that they spent six months deciding on it, and six months without clarifying what they'd done. So, there were actually 12 months of disruption," he says.

The phased structure of the tariff in reality means that investors will just hold off for 12 months, he says. "On the one hand, the Ministry of New and Renewable Energy is hell-bent by getting 100GW of solar built by 2022, on the other, it's pushing a policy that encourages everyone to wait for a year," he says.

The policy has had the effect of disrupting the momentum in the US$20 billion a year solar installation market, while failing to make much progress on incentivising the US$1-2 billion domestic solar manufacturing sector, he says.

However, though module costs rose from a global low of US$0.26/watt two years ago to US$0.30/watt, they are now around 20c/watt, he notes. The fact that the industry has absorbed the cost of the 25% hike and still reduced costs overall reinforces the strong position solar holds in India, he adds.

However, the safeguard tariff has had a knock-on impact on solar auctions. The increased costs meant that developers could not bid at the same levels as previously, fearing projects would not be financially viable. In turn, the increased bids led the government to introduce a cap on the maximum value of a bid.

"A lot of tenders and auctions were cancelled because the developers thought the caps were too aggressive and they wouldn't make it financially at those levels. The government is trying to spend as little money as possible to procure solar, but the developers are going to fail at those levels, so they're not going to do it. Plus the lenders are not going to loan money for these low tariffs," Buckley says.

Another barrier to solar installations in 2019 was the slowdown in economic growth in India. This has suppressed power demand, which grew by only around one per cent last year, compared with predictions of six per cent growth, according to Vinay Rustagi, managing director of consultancy Bridge to India.

"The utilities are not keen to expand as quickly into renewable energy as the government wants them to; that has been one of the main hindrances to growth of the sector. We have excess capacity. Power demand is not growing fast enough and it's not viable for them to continue to contract more capacity from renewable sources," he says.

'Target on track'

Despite these challenges, the government has insisted that there is no shortfall on the 2022 target. It told the parliamentary energy committee that, as well as the total 31GW of solar installed by the end of September 2019, there were also 19GW under implementation, and a further 35GW tendered, taking total installed or pipeline projects to almost 86GW. The 15GW balance would be auctioned before the end of the 2019 financial year, so these would be built before the 2022 deadline, it stated.

Government policies to support and promote the solar industry include accelerated depreciation, which allows commercial and industrial customers to claim tax benefits on the value that solar assets depreciate; a waiver on charges and losses for the Inter State Transmission System (ISTS); viability gap funding for state-run power producers to cover the cost difference between the domestically produced and imported solar cells and modules; financing solar rooftop systems as part of home loans; and permitting Foreign Direct Investment up to 100% of the cost of projects.

But the Ministry of New and Renewable Energy (MNRE) also acknowledged the problems faced by the industry. "Major constraints being faced by the developers in commissioning of solar are land acquisition, evacuation infrastructure, non-conducive state policy for development of solar and business environment such as willingness of DISCOMS to purchase solar power. Ministry is making its concerted efforts to sort out the issues with the help of all stakeholders," it said, in comments quoted in December's report. The MNRE's secretary, Shri R.C.Tiwari, even went so far as to tell the committee that India would exceed its target.

But commentators do not share the MNRE's optimism. Some 65GW of solar will need to be installed in two and a quarter years, a tall order for a country where the most added in one year is 9.8GW. "Our sense is that we will probably add close to 25GW of capacity in this time. So, unfortunately we will fall very short of the target," says Rustagi.

Mercom is forecasting that around 70% of the 2022 target will be met, give or take 10%. "We have to install more

Rooftop solar

The levelised cost of energy (LCOE) for both residential and commercial customers in India is 39-50% lower than the global average cost, according to Bloomberg New Energy Finance. But despite promising signs, rooftop solar is yet to live up to its potential in India.

Forty gigawatts of the 100GW goal has been earmarked to come from decentralised solar on the rooftops of businesses, government buildings and homes. Yet at the end of September 2019, installations stood at just 5.3GW.

Electricity generated from rooftop solar costs around three or four rupees per kilowatt hour, so it is financially viable for commercial and industrial customers, who typically pay seven to nine rupees per kilowatt hour for power from the grid.

However, the price of electricity from the grid for residential and agricultural customers is around three rupees per kilowatt hour, as it is effectively cross-subsidised by commercial and industrial customers.

This makes rooftop solar an unattractive investment for farmers and homeowners, despite the availability of a 30% government subsidy for residential rooftop systems. It also means that DISCOMS are reluctant to connect business customers who want to install solar, as they will also lose the revenue used to cross-subsidise other customers.

The DISCOMS see net metering as a threat because good customers buy less power, Prabhu explains. "More than 25 states have net metering policies, but they're just on paper, when it comes to implementation there's always pushback. Almost every DISCOM is trying to make it harder," he says.

Opinions are split as to whether the market will ever live up to its potential. Though the market has grown swiftly in recent years, Rustagi says that the resistance of DISCOMS to net metering has slowed growth.

In addition, he reports that banks are generally reluctant to lend to the rooftop sector, due to the amount of time needed to conduct due diligence compared to the small size of the transaction.

Rustagi is not optimistic for the future of rooftop PV. "We expect growth to taper off in the next one or two years. The utilities hold the trump card to the growth of this market," he says.

IEEFA's Tim Buckley says that the "ridiculously ambitious" rooftop target was "never going to be achieved" considering the huge scale of new supply chains and trained technicians that needed to be established.

The uncertainty of the import tariffs and the slow economy has constrained business appetite in recent months, he says. "If your distribution company doesn't want you to install solar PV and capital is tight, you're probably not going to do it," he says.

However, a payback period of three to four years makes rooftop solar commercially viable for the commercial and industrial sector, even with the DISCOMS delaying connections, he believes. Carbon emission reduction is also an important driver for many business consumers, especially multinationals signed up for the global RE100 programme.

However, he remains bullish about the potential. "There's a big economic and regulatory barrier, but there is so much commercial benefit, they will do it anyway," he says.

Rooftop solar deployment in India has so far fallen well short of expectations

Credit: Tata Power Solar

than 20GW a year – that's a China level of installations. India has never even hit 10GW in one year, so to think that we could get to 20GW, that's not feasible at this point," Prabhu says.

"You might get some gimmicks whereby the government says that it has tendered so much, but tendered is not the same as actually commissioned. What counts is how many gigawatts are connected to the grid," he says.

Cause for optimism

Despite the target looking increasingly unlikely, and poor performance in 2019, commentators believe that the sector's fortunes will change for the better in the coming year.

Renewable installations in fact hit a record high in December 2019, with 1.5GW in total, 1.2GW of which was solar. This suggests a "slow but steady improvement", Buckley says. "They finished on a high and that's the trend I expect to see repeated in 2020," he says.

Prabhu expects around 9GW of solar to be commissioned in the year ahead, close to 20% growth on 2019's numbers. The forecast is based on the pipeline of projects that it expects to be commissioned in 2020, though the final number will depend on market conditions, he says.

And even though it seems unlikely that the 2022 target will be met, experts agree that India's transition to renewable energy is still heading in the right direction.

Buckley believes that the transition is now "totally unstoppable", despite the slippage on the target. "The 2022 target will almost invariably be one or two years late, and that's the cost of 2019's policy contradictions. But momentum is picking up in wind and solar, and at the same time, the headwinds against thermal power are building and building to the point where finance is almost unavailable."

"We've seen a multitude of renewable energy tenders in the past one to three years with prices all well below three rupees/kwh. It's taken as an absolute given in India that renewable energy is now the low-cost source of new supply."

The 100GW goal was always extremely ambitious, Prabhu notes. The fact that Modi's government raised the target from the original 20GW has already meant that far more will be installed than would have been otherwise, he says. "Even if they don't hit 100GW, for them to push it to 70GW is an achievement in itself. We have to give them some kudos for that," he says.

Buckley adds that the 100GW goal was always going to be "phenomenally ambitious". "They're looking at transforming India's energy market in the space of just over a decade," he says.

"That is almost unprecedented globally. Germany and Denmark have done it, but for a country of 1.3 billion people which is expected to see six to seven per cent growth per annum for the next decade, if they can deliver even 80% of this target, it will be a phenomenal world-changing event," he says. ■

References

[1] Standing Committee on Energy, 2019, "Ministry of New & Renewable Energy, Demand for Grants (2019-20) http://164.100.47.193/lsscommittee/Energy/17_Energy_1.pdf