

# Tata Says Microgrids May Trump Main Grid in Niches: BNEF

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The world's largest green microgrid project is being rolled out by TP Renewable Microgrid, a unit of Tata Power, and is aimed at feeding electricity to India's rural businesses. The company plans for an initial 10,000 microgrids, and is experimenting with a strategy of displacing existing grid lines rather than offering just an interim solution until the grid arrives.

"We are planning to experiment in 10-15 villages in Orissa [state] where there is already supply from the distribution company. I will be able to share detailed results in a year's time but, prima facie, it looks like we will be in a much better position if microgrids cater to the local requirement," Tata Power CEO and Managing Director Praveer Sinha told BloombergNEF in an interview.

Instead of yanking out an existing grid line, wouldn't it be better to use the grid power as backup? Sinha said that in Orissa's remote areas on the sea coast and in dense forests, maintenance of the old network entails huge cost for the distribution company. "Supply through microgrids makes more sense," he said.

Tata Power's expanding power distribution portfolio may partly explain this thinking. It now serves about 9 million customers in the state of Orissa, and over 11 million customers across India. The company intends to expand its distribution business footprint even further.

Tata's microgrids are small generation and supply networks of about 30 kilowatts each, aimed at providing reliable power at a competitive price. The 10,000 microgrids plan would thus total about 300 megawatts. These are commercial ventures for which The Rockefeller Foundation's India unit is the implementation partner.



**Praveer Sinha**

"Building out microgrids is a tough business anywhere in the world. It is through our expertise that we managed to have 161 grids in about a year. We are now the number one microgrid company in the country," Sinha said. All these microgrids have a solar power component.

The tariff for power from microgrids is about 20% lower than that from diesel power, which is the only other option available for commercial and industrial users. Sinha declined to share with BNEF a per-unit tariff estimate. However, The Rockefeller Foundation, in an interview with Bloomberg News in 2018, said tariffs for power from mini-grids it had funded could be as high as 28 rupees (\$0.39) per unit. Typical grid power charges range from 3 rupees per unit to over 10 rupees in some states.

Microgrids and mini-grids are terms used interchangeably within the sector. As of March 2020, there were over 5,500 such grids operational around the world, according to BNEF.

Rural electrification in India does not require a license or an approved tariff, Sinha said.

Takehiro Kawahara, BNEF lead analyst on microgrids, said: "This can reduce the time and complexity for microgrid development, hence, project capex, in India. In Eastern and Southern Africa, site development cost (ie, licensing, environmental impact assessment, land lease, contract and legal) is 17% of capex on average."

The key aspects of Tata's microgrid plan are as follows:

**1. Timeline:** The original plan was to have 10,000 microgrids running by 2026, and expand the target further to 50,000, but the pandemic will push back the completion date.

"We started a new business in February 2020 [just ahead of the pandemic]. It was a very challenging time to start, with Covid-19 related lockdowns, shipment delays, a rise in shipping costs and a steel price hike," said Sinha. He declined to give a new target date to reach 10,000 microgrids, given the uncertainty on the pandemic.

Feedback from the consumers is positive, and there is demand for the service, he said.

**2. Grid substitution:** While typical microgrid projects focus on providing access until the grid line reaches there, Tata Power is looking at green microgrids as a long-term, cost-competitive solution for electricity supply in rural areas. It is looking at displacing the grid.

A pilot program is to be rolled out in Orissa, where Tata Power is now the licensed distributor of electricity to over 9 million customers. Tata Power's microgrids so far are in the states of Bihar and Uttar Pradesh.

"If microgrids become successful, many of the distribution companies will switch to them instead of having their own line because the cost incurred for bringing power over long distances, maintaining the line, managing billing and collection locally, is prohibitively high. They can let microgrids service these areas in a better way, and at a more competitive tariff," Sinha said.

**3. Micro-enterprise focus:** The business user is the target customer for microgrids being set up by Tata

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Power. As the pandemic forced many people to return from the cities, they are looking to set up small business units, which can be powered by microgrids, with the electricity supplied being cheaper.

"Energy access for households in villages has happened. Access to energy for commercial and industrial users is still a challenge. They are still dependent on diesel generator sets. We are not just giving them electricity but also supporting them in arranging financing and equipment. We are supporting the entire ecosystem for micro-enterprises," he said.

Users include shops, medical clinics (for refrigeration), electric mobility providers, telecom towers, teaching centers, and roadside eateries.

**4. Cost of power:** Tata Power says the cost of power from a microgrid is about a fifth lower than diesel power, which is the only source of supply to these micro-enterprises.

Rockefeller is the "implementation partner". Through its Smart Power India subsidiary, it helps Tata Power in identifying potential villages for microgrids, and in setting up the market system. "At some stage, we may discuss some other [partnership] opportunities with them, but right now, that is the role they have," Sinha said.

**5. Technology:** Various options are being used to keep costs low. BioCNG derived from local animal waste is being added to the fuel mix to reduce the reliance on the diesel generator as back-up for the microgrid. This has "drastically" reduced costs, Sinha said.

“We will be scaling up the use of BioCNG. This can be used for power generation, and for cooking. Natural manure is produced as a by-product. If we are able to make this a cost-viable solution, it can become a *game-changer*,” he said.

Clustered smart meters are being used, so that one meter is able to measure and monitor consumption of six consumers. This patented product has been developed by Tata Power and its partner, Institute of Transformative Technology, or ITT.

**Outlook:** Is it becoming cheaper to set up these microgrids as more are rolled out? Are there lessons that can be shared with other countries struggling to provide access to electricity? In the three parts of the microgrid – solar, storage, other – where is the most potential for cost savings? Sinha says he would be able to provide answers after some time, when there is enough data to crunch: “The next 6-9 months would give us a clear picture.”

“I would say this project is very unique. I work in many parts of Sub-Saharan Africa with Rockefeller [Foundation], with MIT [Massachusetts Institute of Technology], with the World Bank and also with the Asian Development Bank. There is no program which is as big as this. I would be keen to partner and pass on the technology and the learnings to other players who want to use it in other parts of the world,” he added.

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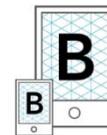
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