

# Tata Power bets on microgrids for rural power supply in India

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## Tata Power Co Ltd

Group wants to build 10,000 small local arrays in a country where not everyone has reliable electricity from the grid



Manoj Gupta: 'The intention is to have this not as a profit-oriented but as a sustainable organisation'  
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Chloe Cornish and Jyotsna Singh in Lucknow

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Manoj Gupta has spent the past two years bouncing along the dusty roads of rural India, looking at solar panels.

The veteran of 107-year-old Tata Power, one of India's oldest and biggest electricity distributors, is tasked with perfecting a type of solar power installation called a microgrid. Although microgrids are typically used in philanthropic projects, as chief executive of the newly created Tata Power Microgrid (TPMG) subsidiary, Gupta's mandate is to create a commercial enterprise.

"Many would feel that this could only be a corporate social responsibility project," Gupta said. He added that his boss, Tata Power managing director Praveer Sinha, had "stuck his neck out".

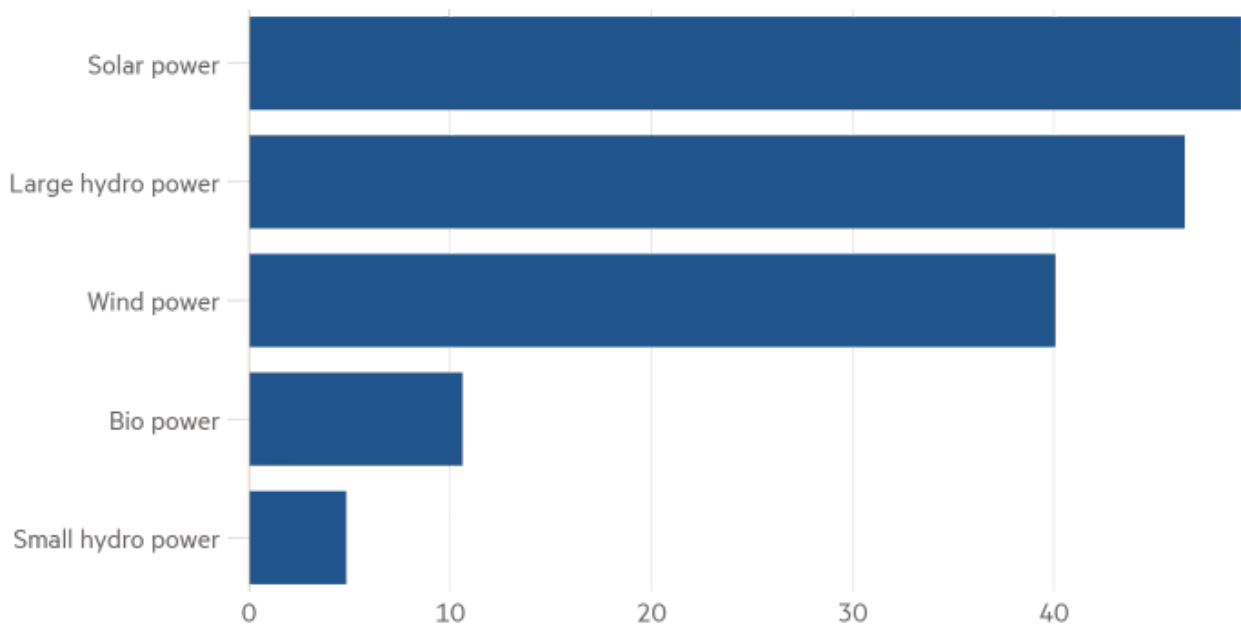
As India hurries to meet ambitious energy transition targets, including generating 500GW of renewable energy by 2030, business empires Adani Group and Reliance Industries are investing billions in huge renewables projects — from factories to make green hydrogen to enormous solar power farms.

There is a long way to go. India relies on coal for 70 per cent of its power generation, and disruption to coal supplies caused blackouts in parts of India during a recent heatwave, underscoring the need for renewable energy to augment India's electricity supply.

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## India's renewable energy breakdown

Total installed capacity (GW)



Source: Invest in India

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Tata Power also has industrial-scale solar projects, but its bet on microgrids sets it apart from rivals. It plans to scale up from 200 to 10,000 microgrids. Gupta said the two microgrids seen by the FT cost Rs5mn (\$65,000) to build, but Tata Power said costs were subject to change and declined to give specific figures on total investment.

Abhishek Jain, a fellow at New Delhi-based Council on Energy, Environment and Water (CEEW) said Tata was “certainly at a much larger scale” than previous initiatives and breaking new ground by focusing “more on the productive applications in rural areas” rather than households. Nonetheless, “this is not going to be the most lucrative investment you can make”.

“The intention is to have this not as a profit-oriented but as a sustainable organisation,” Gupta said. “So we need to have money to run by itself, not hugely earn money out of it.”

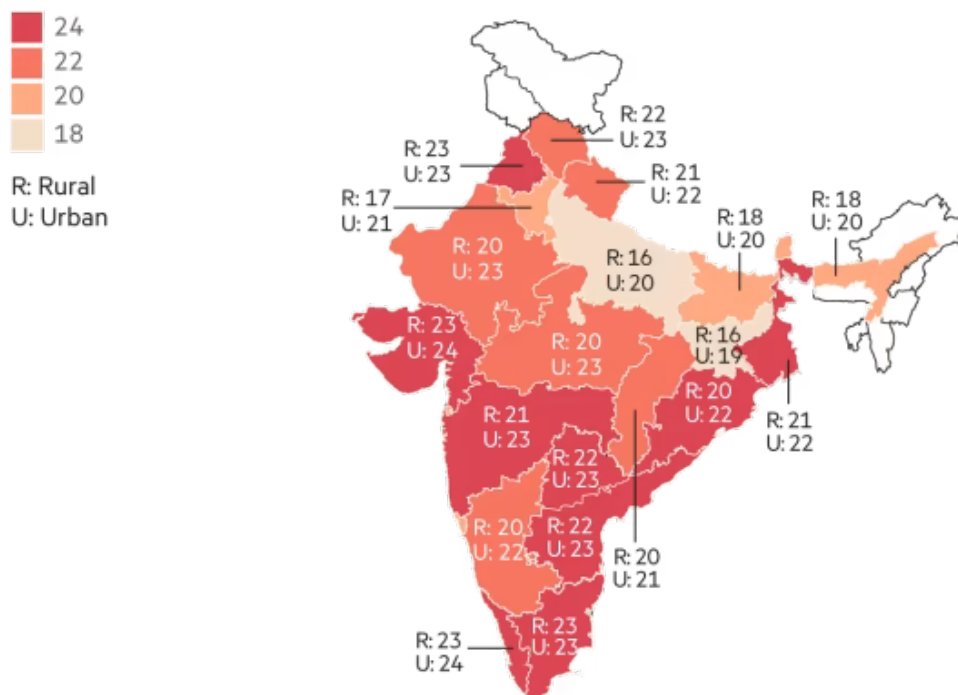
While most of India's villages are connected to the electricity grid, not all receive consistent power — a study by CEEW found that rural households received 19.9 hours per day on average, but this varied widely between states. Uttar Pradesh and Bihar, where TPMG have built microgrids so far, are among the worst.

Access to electricity “should be our fundamental right, like food, water and other basic things”, said Neetu Awasthi, a 30-year-old resident of Uttar Pradesh. “Power is such a big worry for us that if we have electricity here, we feel like it is the kindest act by someone.”

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## Consistent electric power varies in India from state to state

Average daily supply (hours)



Sources: CEEW; authors' analysis  
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Tata Power views this underserved rural market as an opportunity, Gupta said. “And with that idea we went on to this new microgrid concept. We believe that there is a huge opportunity to serve those customer segments because there’s a power shortage.”

TPMG is spending three years experimenting before the major rollout. “We have learnt from failures,” Gupta said. The most dramatic setback came when floods in Bihar nearly drowned five microgrids — Gupta commandeered a boat to rescue valuable batteries. Raised platforms were incorporated into later designs.

The microgrids are installations of nearly 100 solar panels arrayed in a field next to the village they supply, with a diesel generator cell and a hut containing storage batteries and automated remote monitoring and control systems. These smart monitors manage the supply flowing from the panels, batteries and generator, to households and businesses.

Customers can pay bills through an app, and Tata has local employees to take care of the equipment and make sales. Gupta and his team installed CCTV to make the microgrids more theft-proof, and if more customers want to sign up, TPMG can add panels to boost supply.



Neetu Awasthi, left, with her sister-in-law. ‘Power is such a big worry for us that if we have electricity here, we feel like it is the kindest act by someone,’ says Awasthi © Chloe Cornish/FT

Thanks to the batteries and diesel generator, which Gupta wants to replace with a biomass alternative, Tata’s microgrids can supply up to 24/7 electricity. The challenge is convincing locals to spend Rs100-750 (£1-£7.50) a month on it.

In Uttar Pradesh, many potential customers said they were happy to stick with the erratic state-supplied power because it is a fraction of Tata’s price. Prabhunath Gupta, 22, described the government supplied 10-12 hours of power as “very good”.

“It’s a mindset which has to be changed,” Gupta said. India’s per capita electricity consumption is roughly a third of the global average, and Gupta noted that while urban dwellers tend to use 300-500 units per month, people living in rural areas tend to use 10-30 units on basic lighting and a fan.

Small business owners, like baker Shahban Ali, are Tata’s target market. His bakery walls are black from the diesel generator he used to run in the absence of reliable power. Not only were the polluting generators expensive to fuel, “people used to get very sick”. He now pays Rs15,000-Rs18,000 for Tata power 24/7, and he says his profits have doubled.

For its next microgrids, Gupta says he is looking for sites with major economic activity. But TPMG is also trying to steer smaller businesses towards using electrical appliances, such as food mixers, which it can offer on an instalment plan. The more money these businesses generate, the more willing they will be to buy electricity, Gupta reasoned. As income levels go up, so do aspirations for electronic items like televisions.

Awasthi's family, who have also rigged up their own small solar panel, decided to pay for Tata's power. They use it sparingly because of the cost, but now Awasthi's children can study in the evening.

"Maybe rich nations mainly caused [global warming], but if better energy is available now our country should choose that," Awasthi said. "I hope things improve, change for better."