

Interview with Deepesh Nanda: “India is poised to become a global leader in renewable energy”



In an interview with Renewable Watch, Deepesh Nanda, Managing Director and Chief Executive Officer, Tata Power Renewable Energy Limited (TPREL), talked about the high points and problems in India’s renewable energy sector over the past year. He also spoke about TPREL’s future plans, the challenges faced by developers and policy suggestions for the government. Edited excerpts...

What have been the key highs and lows for India’s renewable energy sector over the past one year?

The past year has been quite eventful for India’s renewable energy sector, with both significant achievements and challenges. Let us start with the highs.

First, we hit a remarkable milestone in capacity additions. As of October 2024, India’s renewable energy capacity reached 203.18 GW. This is a testament to the increasing shift towards cleaner energy sources. We commissioned 16.4 GW in the first nine months of 2024, up more than 67 per cent year on year, and expect to end the year on an even stronger note.

The solar segment continues to lead this shift, with an impressive 92.12 GW of installed solar capacity, further boosting our energy mix. Wind energy also had a notable year, with total wind capacity now at 47.72 GW. Additionally, the government’s commitment was evident, with a record issuance of 69 GW of renewable energy tenders in 2023-24, exceeding the set targets and indicating strong market momentum. We have also seen a major uptick in battery energy storage system tenders, with battery prices crashing, making round-the-clock (RTC) projects more viable.

The kicking in of the Approved List of Models and Manufacturers (ALMM) List I (modules) has given a fillip to Indian solar module manufacturing and component suppliers. It has laid the ground for developing a thriving domestic manufacturing

ecosystem. The effects are already visible, with the ALMM module manufacturing capacity exceeding 55 GW, and many players planning to move further upstream.

Government initiatives have played a vital role as well. The National Green Hydrogen Mission, aimed at producing 5 million tonnes of green hydrogen by 2030, was launched with substantial funding. This will require substantial funding to ensure a continuous supply of green power for hydrogen production.

However, the industry continues to face several challenges, with land acquisition being a significant one. Finding and acquiring contiguous parcels of land for solar projects has led to delays for many players in the industry. Grid connectivity and readiness remain another bottleneck. Grid infrastructure development continues to lag solar and wind project development timelines, leading to delays in power evacuation. The government is cognisant of the problem, and steps are being taken to address this. However, this will take some time to resolve.

On the manufacturing front, policy and regulatory issues need more attention. Higher duties on critical imports such as glass and strict local sourcing requirements create barriers that can slow down the sector's growth and increase project costs. The ALMM List II should be implemented soon to instill confidence in investors, and encourage investment in both existing and additional cell capacities in the country. Lastly, while the capacities tendered have increased for complex projects, the same has not been reflected in the pace of PPA signings. Renewable energy investors have failed to convince state discoms of the long-term value of these tariffs in replacing fossil-fuel-based power sources.

In summary, I believe India is poised to become a global leader in renewable energy if we can address these challenges strategically.

What were the key highlights for the company over the past year?

TPREL hit the 5 GW operational capacity milestone, with close to 6 GW of projects in the pipeline. We secured our largest order in Maharashtra from Maharashtra State Electricity Distribution Company Limited for a 501 MW (PPA for 400 MW) hybrid project recently, with a textbook PPA signing within two months of winning the tender. The aim is to execute projects efficiently and to build a healthy pipeline by selectively focusing on complex tenders. We led the country in the first half of 2024-25 in terms of capacity executed, both for our own projects and for our customers through third-party engineering, procurement and construction (EPC) projects.

On the manufacturing front, it was a year of breaking new ground. The Tirunelveli plant saw full module ramp-up of all 4 GW lines very quickly, at benchmark yields for

the industry. We are now producing more than 10 MW of modules a day (up to 20,000 modules a day). The module production line at the Tirunelveli plant, commissioned in October 2023, has already produced 1,500 MW of solar modules, which are being installed across the country.

Another key milestone for TPREL was the commencement of commercial production from the 2 GW solar cell line at our 4.3 GW solar cell and module manufacturing plant at Tirunelveli. This indigenous production marks a significant step forward in supporting India's clean energy goals and reducing dependence on imports. We are poised to ramp up the cell capacity by another 2 GW next month, further strengthening our position in indigenous solar manufacturing.

On the rooftop front, our business saw significant progress, with 222 MW of installations across all market segments so far this financial year, including 111 MW completed in the last quarter alone. Our residential solar rooftop business has seen a growth of more than 8x over last year's figures, with further growth expected in the coming months. This shows the rapid scale-up of the business. We have over 500 channel partners supporting us on this journey. The campaign, "Ghar Ghar Solar, Tata Power ke Sangh", aligned with the PM Surya Ghar Yojana, has been a remarkable success, garnering enthusiastic responses in states such as Rajasthan, Uttar Pradesh, Kerala and Chhattisgarh. Our strategic partnerships have been pivotal; for instance, collaborations with ICICI Bank and IndusInd Bank are enabling easier solar financing for residential, commercial, and micro and small enterprises, making solar adoption more accessible.

Additionally, we signed an MoU with Tata Motors to set up 200 fast charging stations for electric commercial vehicles, advancing the ecosystem for sustainable mobility.

Looking ahead, we aim to grow our renewable energy portfolio significantly, increasing the share of renewables from 41 per cent to 70 per cent by 2030, cementing TPREL's role as a leader in the global energy transition.

What is the current project portfolio of Tata Power Renewables? What are the targets and outlook going forward?

We have an operating capacity of 5,029 MW (as of September 30, 2024), comprising 4 GW of solar and 1 GW of wind, with close to 6 GW of capacity at various stages of implementation (including a 0.6 GW project for which the PPA is yet to be signed).

We have an order book of approximately Rs 150 billion for our EPC business. We are the biggest rooftop player in the country, with varied offerings for residential,

commercial and industrial (C&I), and government customers. We are the leading EV charging solutions provider to top customers (original equipment manufacturers, and fleet and bus operators), and we also have a large installed base of public 4W charging infrastructure in the country.

TPREL operates a state-of-the-art solar cell and module manufacturing plant in Bengaluru, with capacities of 530 MW for solar cells and 682 MW for modules. Furthermore, our 4.3 GW solar cell and module manufacturing plant has successfully completed the construction of a 4 GW module facility, and the commercial production of the 2 GW solar cell line has commenced, with 2.3 GW expected to be up and running soon.

Looking ahead, TPREL aims to expand its portfolio, with a goal of hitting 20 GW of capacity by 2030. We want to be the partner of choice for EPC, modules and EV charging, offering the highest quality at the lowest cost.

What are the company's plans in the RTC renewables and energy storage segments?

TPREL has laid out ambitious plans for its renewable energy and energy storage segments, focusing on substantial investments and project development in India. TPREL is focusing on complex projects, with a mix of solar, wind and storage to supply RTC power to discoms as well as C&I customers looking for continuous green power.

A highlight of these efforts is securing contracts for various hybrid power projects, such as a significant 966 MW RTC solar-wind hybrid project for Tata Steel, which is slated for commissioning by June 2025. This project is expected to play a vital role in meeting Tata Steel's green energy needs while making a substantial contribution to reducing carbon emissions.

In the energy storage sector, TPREL is focusing on integrating battery storage solutions into its renewable projects. One notable initiative includes winning a 1,317 MW firm and despatchable renewable energy project from SJVN Limited, which combines solar, wind and battery technologies to ensure consistent energy supply and enhance grid stability. Additionally, TPREL has commissioned India's largest solar and battery energy storage project in Chhattisgarh, which integrates a 100 MW solar photovoltaic project with 120 MWh of utility-scale battery storage.

However, there has been a significant delay in signing PPAs for peak power and RTC tenders. With RTC projects with battery expected to closely follow the demand curve, discoms need to trust developers to deliver on these projects. This will allow renewable energy to gradually replace coal for baseload power. TPREL hopes that the

conversion of e-reverse auctions won to the signing of PPAs for RTC and peak power projects will accelerate in the near term to realise this goal.

What are the key challenges faced by developers in the country? What are your suggestions for policymakers to solve these issues?

The key challenges facing solar developers are regulatory hurdles, financing difficulties, land acquisition issues, payment delays and grid infrastructure limitations. Here is a detailed look at these challenges and policy recommendations that could help address them.

Challenges

Land acquisition: Acquiring large tracts of land for solar farms is difficult, especially in densely populated areas where agriculture is prevalent. Solar projects can face opposition from local communities concerned about land use and environmental impact. This is particularly true for large, land-intensive projects and can lead to conflicts over land use and the displacement of communities.

Grid integration: As India's ageing power grid struggles to handle the intermittent nature of solar energy, some states are imposing additional restrictions on grid connectivity, impacting solar projects. Modernising and expanding the grid to accommodate increasing solar capacity requires significant investment and advanced grid management technologies. The grid infrastructure in many regions is not equipped to handle the variability of solar energy, leading to issues such as curtailment and transmission congestion.

Financial constraints: High upfront costs and perceived risks make financing solar projects challenging. Increasing bank guarantees in different forms, from the time of bidding to the commissioning of projects, is also creating a major hindrance for developers. Other financing models need to be introduced to solve this. High financing costs due to perceived risks around policy instability, payment delays and infrastructure limitations increase the cost of capital for renewable energy projects, impacting profitability. Even though policy changes have brought down the receivables from discoms, payment delays can hinder cash flow, especially for smaller developers, leading to further delays.

Manufacturing dependencies: Despite initiatives such as Make in India, most solar equipment is imported, particularly from China. This creates supply chain risks and significant dependency for equipment spares and maintenance. Furthermore, there is a major dependency for solar cells, bills of materials such as glass and frames, and

other critical components. Tariffs on imports have increased costs, and with low domestic options, module costs can result in costlier project costs for developers.

Policy and regulatory issues: Policy conundrums, ill-designed institutional structures and distorted market mechanisms hinder the growth of renewable projects.

Policy suggestions

Streamline land acquisition: Simplify the land acquisition process and provide incentives for landowners to lease their land for solar projects. Develop renewable energy land banks at the state level to provide developers with access to pre-identified, approved land parcels for solar projects, especially near transmission hubs. Require developers to engage with local communities early in the project life cycle. Transparency and shared benefits (such as local employment opportunities) can help garner community support. Encourage developers to implement safeguards for protecting local biodiversity and managing land and water use effectively.

Invest in grid upgrades: Allocate funds for modernising and expanding the power grid to handle the variability of solar energy. Increase investment in grid infrastructure and upgrade transmission lines to support renewable energy integration. Smart grid technology can help manage variability more effectively. Develop dedicated green energy corridors to efficiently transport renewable energy from generation sites to demand centres, reducing transmission congestion. Provide incentives for energy storage systems that can help balance supply and demand, reducing strain on the grid and enabling greater renewable capacity.

Promote domestic manufacturing: Encourage the development of a robust domestic manufacturing sector for solar components through incentives and supportive policies. Strengthen the domestic manufacturing of solar cells and other components through subsidy schemes with the aim of increasing Indian-made module exports. This can reduce dependency on imports over time. Investing in research and development and incentivising innovation in solar technology and manufacturing can improve domestic production capacity, reduce costs and make India more self-sufficient in the solar sector. While domestic capacity builds up, it is important to simplify import procedures and temporarily reduce duties on critical components for ongoing projects to keep costs manageable.

Strengthen policy frameworks: Create clear, consistent policies and regulatory frameworks to reduce uncertainty and attract investment. This would allow projects to move forward without requiring high upfront costs. Promote rooftop and floating solar installations, especially in densely populated areas, as alternatives to land-intensive,

utility-scale projects. Solar policies vary significantly across states, with different net metering regulations, rooftop solar policies and grid connectivity guidelines. This lack of standardisation creates challenges for developers operating across multiple regions. Policies related to tariffs, net metering and open access change frequently, creating uncertainty for developers regarding project viability and returns on investment. Simplifying policies and ensuring all states are in agreement can help create a Goods and Services Tax like model for renewable power development in the country.

