Indian Renewable Energy Sector

Timely signing of PPAs and augmenting transmission infrastructure remains key to RE capacity addition

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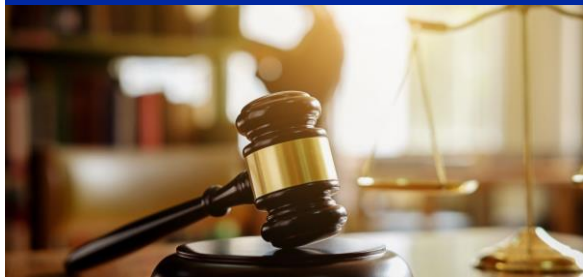

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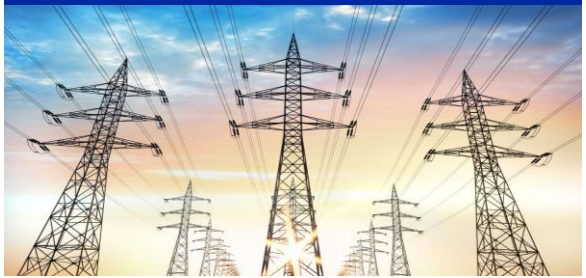

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Highlights

Highlights - I

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RE capacity addition improved to 14.9 GW in 8M FY2025 from 7.5 GW in 8M FY2024 led by a large project pipeline and low solar PV module prices.

While the tendering pipeline remains strong, there is a delay in signing of PPAs/PSAs by the bidding agencies, thereby deferring the project execution.

- **ICRA's outlook for the renewable energy (RE) sector remains Stable**, led by strong policy support, superior tariff competitiveness and sustainability initiatives by large commercial and industrial (C&I) customers. However, challenges remain on the execution front, including land and transmission infrastructure, delays in signing of power purchase agreements (PPAs), exposure to equipment prices and distribution utility finances.
- **The sector saw a capacity addition of 14.9 GW in 8M FY2025,** which was higher by 98% than the 7.5-GW added in the corresponding period of previous year driven by a large project pipeline. Earlier in FY2024, the capacity addition improved to 18.5 GW from 15.3 GW in FY2023, driven by the large addition of 7.1 GW in March 2024. This was supported by a sharp decline in solar photovoltaic (PV) cell and module prices and the exemption from the order on the Approved List of Models & Manufacturers (ALMM) available till March 31, 2024.
- **The tendering pipeline in the RE sector remains large** with 32 GW capacity auctioned in 9M FY2025 so far and another 28 GW under tendering by Central nodal agencies and state utilities as of December 2024. This follows 47 GW auctioned in FY2024, building a strong project pipeline for the sector. However, there are delays in signing of power sale agreements (PSAs) by the bidding agencies with the state distribution utilities in turn delaying the signing of PPAs with the winning developers.
- **RE capacity addition is likely to increase to 26.5 GW in FY2025 from 18.5 GW in FY2024. This will further rise to 32 GW in FY2026,** supported by the large project pipeline of 79 GW, as per the latest status report from the Central Electricity Authority (CEA), favourable module pricing and the impending expiry of waiver on inter-state transmission system (ISTS) charges in June 2025. Timely signing of the PPAs and PSAs along with the augmenting of transmission infrastructure remains key to sustain the scale up in capacity addition.
- **The prices of the mono PERC modules declined to an all-time low of less than 9 cents/watt in December 2024** from the high of 27-28 cents/watt seen in Q4 FY2022 and lower than 23-24 cents/watt seen in December 2022. **The cell prices have also declined to less than 4 cents/watt since September 2024 from the peak of 16-17 cents**/watt in December 2022. This has been led by improved supplies across the value chain, moderation in demand from Europe and restriction on Chinese imports by the US.

Highlights - II

Cell manufacturing capacity in India expected to increase to 50 GW by June 2026, based on the plans announced by key players.

BESS tariffs witnessed a sharp decline over the past nine months led by the decline in battery pack prices.

- With the reinstatement of the ALMM order for solar PV modules from April 1, 2024, **the import of solar cells and modules declined 26% YoY in 7M FY2025, thereby** benefiting domestic OEMs. **The export of solar cells and modules also declined 36% in 7M FY2025** due to increased scrutiny at US ports on sourcing of cells from China by Indian OEMs and growing domestic demand. In this context, the sustainability of the export demand from USA remains to be seen.

- The ALMM order issued by the Ministry of New & Renewable Energy (MNRE) on January 2, 2019, had provisions for List-I of Solar PV Modules and List-II of Solar PV Cells. **The MNRE has now proposed to issue List-II of solar PV cells effective from June 1, 2026**, and thereby restrict the use of imported cells. Hence, a scale-up in domestic cell manufacturing capacity remains important. However, the domestic module manufacturers would remain dependent on imports for wafers, given the lack of backward integration.

- The notification of ALMM for solar PV cells is expected to fast track the expansion of cell manufacturing capacity in India, which is likely to increase to about 50 GW by June 2026 from the current level of ~12.5 GW. **While this is a positive for solar OEMs, the landed cost of modules is estimated to increase by 3-4 cents/watt for solar power developers,** as the cost of PV cell manufactured in India is likely to exceed the landed cost of imported cell (including customs duty) by 1.4-1.5 times.

- **Quoted bid tariffs for battery energy storage systems (BESS) witnessed a significant decline,** with the cost reducing from Rs. 10.84 lakh/MW/month in the first SECI tender in August 2022 Rs. 3.81 lakh/MW/month in September 2024 and further to Rs. 2.26 lakh/MW/month (with viability gap funding) in December 2024. The recent decline in battery prices has improved the cost economics for the BESS projects, which is likely to aid the scale-up in tendering activity for standalone storage projects and improve their adoption.

- **The ratio of upgrades to downgrades remains high** in the RE sector led by solar power IPPs. In 8M FY2025, the sector witnessed 25 upgrades and six downgrades. The upgrades were led by successful project commissioning, favourable change in ownership, healthy generation performance, reduction in receivable position and improvement in parent credit profile.

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