

INDIAN POWER SECTOR

Annual transmission line addition of 20,000 cKM required till 2030 for renewable integration

JANUARY 2025



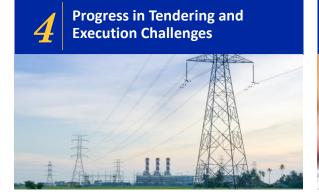
Agenda















Agenda









Highlights

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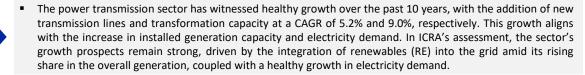


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Integration of the growing share of renewables with the grid necessitates large investments in the power transmission sector.

Implementation delays remain a key risk for power transmission projects, with median delays of over seven months observed for projects awarded through the bidding route.







■ The National Electricity Plan (NEP), notified by the Government of India (GoI) for the power transmission segment proposes to raise the transmission line length from 486 [1000 circuit kilo metres (ckm)] as of March 2024 to 648 (1000 ckm) by March 2032, and the substation capacity from 1,218 GVA as of March 2024 to 2,345 GVA by March 2032. The inter-regional transmission capacity is expected to rise to 168 GW by March 2032 from 119 GW as of March 2024. This expansion aims to integrate over 600 GW of RE capacity by 2032.



■ The progress in transmission capacity addition has remained lower over the past three years compared to the period until 2019. The annual line addition stood at 14,000-15,000 cKM for FY2022-2024 over 20,000 cKM prior to 2020. This slowdown is due to project awards decline over 2020-22 and execution challenges. Nonetheless, the pick-up in project awards over the past 30 months is expected to scale up execution.



Power transmission projects face execution risks, mainly due to delays in acquiring the right of way (RoW) and forest clearances. Projects awarded by Central nodal agencies through the tariff based competitive bidding (TBCB) route have faced execution delays, with only 16% commissioned within the scheduled timeline. The remaining projects faced delays ranging from two months to three years, with the majority experiencing delays of 6-12 months and a median delay of over seven months.



■ ICRA expects the transmission line length to increase to 600 (1000 cKM) by March 2030, entailing an annual addition of 19,000-20,000 cKM. Also, the substation capacity is projected to increase to 1,850 GVA as of March 2030, necessitating an annual addition of 100 GVA against average addition of ~70 GVA over the past few years. Investments of Rs. 4.5 trillion are required to achieve the target over FY2025-FY2030. Such significant scale-up in capacity addition requires the need to address challenges related to RoW and clearances effectively.



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