Onshore Wind Power

Tamil Nadu has traditionally been the one of the frontrunners in harnessing wind power in India. The State had an installed wind power capacity of ~7.8 GW at the end of 2015 with plans to reach 11.9 GW by 2022. Tamil Nadu has been endowed with a rich wind power potential, which has been estimated by NIWE to be ~34 GW at 100 m hub height. Tamil Nadu has a long-standing history of supporting wind energy. The state is planning to incentivize re-powering of existing wind sites, to enable higher wind capacity addition with investment-grade zoning of wastelands, to rationalize tariffs according to wind zones and to pursue alternate and competitive models for project allocation. TNERC also came out with regulations for Forecasting, Scheduling and Deviation settlement framework for solar and wind generation in Tamil Nadu which would provide a mechanism for integrating the RE capacity addition. This lever provides choices for selecting four different levels of wind power development in the state.

Level 1

Level 1 assumes that capacity addition will be lower than the target set by MERC. Going forward, large-scale grid integration of wind energy can become a big challenge hindering growth. The State's will achieve an installed capacity of 16.8 GW only by 2030. Thereafter, the capacity will grow at sub-par rates and reach a cumulative figure of ~19.5 GW by 2050.

Level 2

Level 2 assumes that some of transmission constraints could be remove due to additional investments for evacuation systems and development of Green Transmission Corridor. In this scenario, Tamil Nadu will achieve its target to add 11.9 GW capacity 2022. Subsequently, installed capacity will grow moderately culminating in a cumulative capacity of 24 GW by 2050.

Level 3

Level 3 assumes that significant investments could be made to overcome transmission constraints. Tamil Nadu will exceed its target of 11.9 GW capacity addition by 2022. The State will continue to aggressively add wind power and achieve an installed base of ~14.8 GW by 2025 and ~21.8 GW by 2035. Thereafter, growth rate will slow down slightly resulting in an installed capacity of ~28.6 GW by 2050.

Level 4

Level 4 assumes that cumulative installed capacity will reach up to 15.9 GW by 2025 and thereafter attaining a maximum of 33.8 GW by 2050. This could be because there are no technical or economical constraints for wind power development. Transmission constraints might get resolved and development of ancillary services market will help in removing large scale grid integration issues.