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Challenges and opportunities for improving power transmission to enable evacuation of renewable energy

ECONOMY

Challenges and opportunities for improving power transmission to enable evacuation of renewable energy

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The role of energy in India's resilient economic growth story remains important. In view of India's clean energy ambitions, there is an immense opportunity in low-carbon and zero-carbon businesses. While the government is undertaking several steps to improve the transmission and distribution infrastructure, among other factors to upscale energy availability in the country, private players will continue to invest in low-carbon growth areas such as renewable energy, power transmission and distribution.

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Challenges to improving power transmission

Building power transmission lines has been a challenge, across the world, including India, on account of various factors such as remote or sensitive terrain, Rights of Way, manpower, weather conditions, etc. Construction timelines were also a huge challenge with most initial projects facing serious delays.

The problem becomes especially pronounced for projects passing through eco sensitive areas with limited specific/detailed information and demarcation of such areas and non-availability of explicit construction guidelines for such projects coupled with the specter of Public Interest Litigation. Many projects have faced significant delays on the back of inadequate information/data available during the pre-bid stage. Comprehensive advance planning for evacuation of upcoming RE capacity will help address this issue to an extent as this will help stakeholders in identifying and resolving such issues ahead of time.

However, in due course, the government and its agencies undertook many positive initiatives to help the transmission service providers (TSP) overcome some of these difficulties. Many of these were policy changes, guidelines, and amendments to

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the Standard Bidding Guidelines to support the sector and enable more private sector participation. Most recent bids have seen as many as 8-10 active bidders even as the project completion timelines have been drastically reduced to an average of 18-21 months from the earlier 30-36 months. Moreover, the government has already notified an evacuation plan for integration of 500 GW by 2030 – while this is a step in the right direction, implementation of GATISHAKTI portal may also help in coordination between federal and state government agencies and expedite approval processes.

Furthermore, government and planning agencies' immediate attention is needed to meet the ambitious targets for integration of 500GW RE capacity by 2030. For instance, developing in-country manufacturing capabilities for major equipment required in the substations such as GIS, STATCOM, 765kV transformers, for which the lead time is concerningly high. Then there is a need to streamline ROW acquisition processes with uniformity across the country. Finally, the Stage II approval process for forest clearances continues to be time-consuming.

Opportunities enabling strong transmission systems

Several opportunities are available to private sector entrepreneurs in becoming developers of power transmission lines, under the TBCB (tariff-based competitive bidding) route. With an ambitious target of integrating 500GW of RE in the system by 2030, the transmission sector requires investments of upwards of INR 5 lakh crores. Considering this immense opportunity and with the easing of qualification criteria thresholds for projects awarded through competitive bidding, the number of players in the sector has witnessed a surge.

Engineering, Procurement and Construction (EPC) Contractors, on the back of their construction experience, can now qualify to bid for projects. We have seen many construction companies entering the transmission sector, which augurs well for the industry.

A new age of growth with technology

Technology is enabling power developers/contractors to build transmission systems safely and with lower gestation periods. Given the challenging environment with gestation period of 18 – 21 months, technology deployments such as helicopter stringing, helicopter cranes, artificial intelligence, drone cameras have provided key support during the construction and O&M of transmission lines. In recent times, these

technologies have helped in commissioning transmission projects in the hilly terrains of J&K, Ladakh, Uttarakhand, north-eastern parts of India.

Monitoring of transmission lines with the help of drones has become effective with minimal human involvement; it has also helped in locating the faults quickly and resolving them. Similarly, AI based SCADA systems are helping in efficient operations of substations with minimal human intervention.

In order to change the way India produces and consumes energy, we need to usher in a new age of growth through greener initiatives and meaningful action. India's ambitions of providing clean and sustainable energy to all in the development of a low-carbon nation is an ambitious, yet a mindful target which calls for dedicated efforts for long-term results. Undeniably, how energy is generated, transmitted, distributed, and consumed, will have significant ramifications on the environment as well as the global economy.

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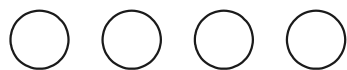
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