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Renewable energy storage systems are the missing link in India's power transformation. A growing market and incentives for new technologies will smoothen the transition from fossil fuels to a stable clean energy supply.

ESS will attract the highest investment of all emerging sectors as renewable energy's penetration of the electricity grid ramps up.

New demand-driven firm and dispatchable renewable energy (FDRE) tenders will help reduce India''s reliance on coal and other conventional power sources.

India''s policymakers have recognised the importance of energy storage systems (ESS) to the country''s evolving power landscape and have already awarded more than 8 gigawatts (GW) of such tenders, allocating 60% of these in 2023 alone, according to a new joint report by the Institute for Energy Economics and Financial Analysis (IEEFA) and JMK Research & Analytics.

Examining India's burgeoning ESS sector in depth, the report finds it poised to boom in the coming years, in line with the exponential growth of the renewable energy sector.

"Globally, power systems across different regions are undergoing a pivotal phase of development," says the report"s contributing author, Vibhuti Garg, Director, South Asia, IEEFA.

"The exponential surge in renewable energy installations within the past decade has exposed the grid infrastructure to increased risks arising from renewables" intermittent and variable nature,

especially solar and wind. ESS is crucial in overcoming this intermittency and enabling a continuous energy supply when needed. Thus, for sustainable renewable energy addition, a concurrent growth of ESS capacity is also imperative," she adds.

Battery-based ESS (BESS) and pumped hydro storage (PHS) are the most widespread and commercially viable means for implementing energy storage solutions in India, with green hydrogen expected to gain a greater share of the renewable energy mix in coming years.

The Central Electricity Authority estimates India will need about 42GW of BESS and 19GW of pumped hydro storage (PHS) capacity by 2030.

Large, grid-scale ESS projects will be crucial in meeting these future energy needs. To this end, the latest demand-driven Firm and Dispatchable Renewable Energy (FDRE) tenders offer the ideal model for India.



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"FDRE tenders, first issued in 2023, are demand profile-driven tenders to ensure firmness and dispatchability of renewable energy, and create a win-win scenario for power developers and offtakers," says the report"s co-author, Jyoti Gulia, Founder, JMK Research.

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Web: https://kary.com.pl/contact-us/ Email: energystorage2000@gmail.com WhatsApp: 8613816583346

