

DEVELOPMENTS IN FUTURE SMART GRIDS -CHALLENGES AND OPPORTUNITIES

The electricity grids of countries and regions across the world are undergoing transformative changes. The future grids will see and experience potential challenges and opportunities in managing multiple sources of generation and matching the same with varying customer loads in a non-conventional mode while meeting the aspirations and needs of customers.

The grid is evolving and getting more smarter and digitised, grid is changing from conventional value chains to more complex distributed, de-centralised and smart energy systems.

There are a lot of drivers to all these changes happening to energy systems across states, regions, country and global level.

Massive digitisation, automation, IT enabling and disruptive communication technologies radically redesign the fundamental concepts and give way to new forms of doing things.

Real-time data collection, creating grid visibility across the value chain, interactive and participative process management with multi-stakeholders of power sector etc. lead to new business models, markets and technologies to handle electricity business.

Major and significant drivers that lead to changes in grid management are the rising thrust and penetration of RE, lowering cost of RE sources, push for more green energy sources in the background of environmental concerns and de-carbonisation goals and also large-scale innovation and adoption of information and communication technologies as enablers in automation and digitisation.

There are a lot of customer-driven initiatives also like rising aspirations for reliable and low-cost power, consumer turning to prosumers and multiple sources of RE solar, wind etc. getting more and more technically and commercially feasible as well as options in behind-the-meter power generation and integration with customer premises loads and grids.

Disruptive technologies and business changes taking place in energy and power sectors, mandate utilities also to adopt to such changes, innovate and lead the changes to stay agile in this competitive environment. The changes offer tremendous opportunities as well as challenges in all areas of electricity business. Evolving and leading the process for optimised strategies and appropriate policies to facilitate, manage and monitor these changes at legal, regulatory, government, institutional and utility levels are the need of the hour.

Utility, policy makers, academic and research institutions, technology providers and customer groups, regulators and governments together have major roles and responsibilities in jointly prescribing and practicing needed rules, regulation, incentives and disincentives. The same is expected to ensure a better disciplined approach in this direction
