# ICT in Power Sector

With evolving Smart Grid Architecture, the Information and Communication Technology (ICT) becomes the backbone for establishing reliable control functionality for secure operation of large interconnected Grid. The current research areas of Energy Storage and Smart Grids scores high in timeliness and appropriateness.Advances in energy storage systems are crucial if renewable energy has to progress from being aside-player in the electricity arena to becoming a more central contributor. RE technologies basedon solar and wind energy suffer from poor Plant Load Factor (PLF) because of intermittency in generation and the asynchronous relationship between demand and supply. Current energy storage technologies, especially in the electrochemical category, suffer from low energy density and therefore, are not cost effective options above a certain scale. Therefore, there is a compelling-need for cutting-edge research in energy storage options. The current proposal seeks to further research on energy storage technologies in a manner that addresses three important dimensions –Technology, Economics and Practical Implementation. The potential of renewable energy technologies as decentralized solutions for underserved segments as well as important substitutes for fossil fuels can be realized only when they are integrated with the grid through appropriate technologies and a web of interconnected devices, sensors and digital communication. Smart grids, as these are collectively called, if implemented well, can result in step advances in GHG emission reductions, avoidance of new power infrastructure builds through better demand response and supply matching, more choices for customers and significant economic savings for utilities and consumers. The promise of smart gridsis still a few years away from being realized to the full and therefore, the proposed research areas can play a critical role in advancing knowledge and accelerating action. It thus scores high in timelines sand appropriateness.