



Global Summit on
**Smart, Secure &
Sustainable Cities**
OPPORTUNITIES AND CHALLENGES IN INDIA

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Smart Grids in the Era of Low Carbon Economic Growth

India plans to invest billions of dollars into smart grid development over the next ten years as part of its ambitious plans to achieve low carbon economic growth. This would be fuelled by the government's plan of setting up 100 smart cities and 500 smart towns. The challenges of climate change and the continued growth of electricity demand are putting increasing stress on the India's electricity network infrastructure. India is now at the point of transition to a new era where clean energy will be at a premium, networks will need to be flexible to the incorporation of new low-carbon technologies and customers will demand greater insight and control over their own consumption.

Smart grids represent an evolution of the electricity network from generation to consumption in a way that is interactive, flexible and efficient. The challenges include integrating renewable but intermittent power from large-scale plants, often located far from consumers, and from small-scale installations. Smart grids are crucial to some of Indian government's key projects: 100 Smart Cities, 175 GW of renewable energy by 2022, 40% Renewable Energy installed capacity by 2030, electric vehicles (to combat air pollution) and 24x7 power supplies.

The development of a fully-fledged, low-carbon economy will require changes to the core electricity infrastructure. To successfully transition to a fully-fledged low-carbon economy, the core infrastructure for transmission and distribution of electricity needs to be addressed. Smart technologies will be a necessity of this transformation, applying telecommunications and computing technologies developed over the last two decades to the current and future electricity infrastructure.

The existing distribution grid infrastructure is primarily designed for one-way flow of electricity and limited consumption in the home. With the growing implementation of large-scale, intermittent renewable energy generation, distributed generation and electric vehicles, the operational limits of the network as it is currently designed will be reached. To avoid stalling progress towards a sustainable and low-carbon future, necessary investments must be made in power grid and urban infrastructures that will effectively (without significant operational constraints) accommodate these technologies at large-scale deployment.

India is working on several futuristic fronts to find credible solutions to meet its energy needs. Smart Grids are one of the several aspects of the solution in meeting the increasing energy demand of the country and supplying 24x7 reliable power to all citizens.