



Microgrids in India: Status and Future

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India's electricity supply is predominantly centralised and based on fossil fuel, (mainly coal). As a part of India's commitments in the Paris agreement, the Nationally Determined contribution commits to having 40% of power installed capacity from non-fossil sources by 2030. The renewable targets involve 100 GW of solar PV, 65 GW of Wind and 10 GW of biomass by 2022. In order to attract investments, these renewables are being planned as large centralised plants.

Several parts of the country continue to have unreliable power supply and load shedding (outages). An analysis of the power outage data from select locations reveals the potential for improved reliability through microgrids. There have been a number of isolated power systems (mainly PV) in islands and remote areas. We review the status of microgrids in India. We examine different contexts of renewable based microgrids in urban and rural areas and analyse the factors that affect their viability. Several innovative models have been attempted by companies like DESI Power, SELCO and Husk Power for village electrification. Some of these installations have not been able to compete when the villages received a grid connection. The emphasis on smart cities and intelligent power systems

We examine alternative contexts for microgrids in India (isolated, grid back-up, grid connected) A methodology is proposed for sizing PV and hybrid storage for isolated microgrids. Cost and life cycle energy analysis are used to assess the viability of different storage options (Lead acid, Lithium ion, Sodium sulphur batteries, hybrid storage). We comment on the challenges to the widespread adoption of microgrids in India

About the speaker

Rangan Banerjee is the Forbes Marshall Chair Professor and Head of the Department of Energy Science and Engineering – a Department that he helped start at IIT Bombay in 2007. His areas of interest are energy efficiency, energy systems analysis, renewable energy, energy planning and policy. He has been the Dean(R&D) at IIT Bombay from 2009-12.