

## **Sustainable Energy Supply through the Microgrid Concept: A Case Study of University of Nigeria, Nsukka**

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**Abstract :** The ability to generate power and achieve energy security is one of the driving forces behind the emerging 'microgrid' concept. Traditional power supply often operates with centralized infrastructure for generating, transmitting and distributing electricity. The inefficiency and the incessant power outages associated with the centralized power supply system in Nigeria has alienated many users who frequently turn to electric power generator sets to power their homes and offices. Such acts are unsustainable and lead to increase in the use of fossil fuels, generation of carbon dioxide emissions and other gases, and noise pollution. They also pose significant risks as they entail random purchases and storage of gasolines which are fire hazards. It is therefore important that organizations rethink their relationships to centralized power suppliers in order to improve energy accessibility and security. This study explores the energy planning processes and learning taking place at the University of Nigeria Enugu Campus as the school lead microgrid feasibility studies in its community. There is need to develop community partners to deal with the issue of energy efficiency and also to create a strategic alliance to confront political, regulatory and economic barriers to locally-based energy planning. Community-based microgrid can help to reduce the cost of adoption and diversify risks. This study offers insights into the ways in which microgrids can further democratize energy planning, procurement, and access, while simultaneously promoting efficiency and sustainability.

**Keywords :** microgrid, energy efficiency, sustainability, energy security

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