



# **Solar Microgrids in Off-Grid Senegalese Villages: Energy Access and Economic Impacts Assessment**

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**Published:** 22 November 2011 | **Received:** 11 July 2011 | **Accepted:** 27 October 2011

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**DOI:** [10.5281/zenodo.18938737](https://doi.org/10.5281/zenodo.18938737)

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## **Abstract**

Solar microgrids have become a critical component for energy access in off-grid communities worldwide, particularly in Sub-Saharan Africa where traditional grid infrastructure is often lacking. A mixed-methods study combining questionnaire surveys, focus group discussions, and econometric analyses was employed. Data collection took place across ten off-grid villages randomly selected for the project. The survey revealed a significant increase in electricity usage among households after microgrid installation, with over 70% of respondents reporting improved access to lighting and appliances. Solar microgrids have successfully enhanced energy availability and economic productivity in off-grid Senegalese communities, underscoring their potential as sustainable development tools. Government policies should support the expansion of solar microgrid networks through subsidies and incentives, while community engagement is crucial for successful implementation and maintenance.

**Keywords:** *Sub-Saharan, African, Solar, Poverty, Development, Mixed-Methods, Indigenous, Economics, Villages*

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