



Methodological Evaluation of Off-Grid Communities Systems in Tanzania Using Difference-in-Differences for Adoption Rate Measurement

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Published: 03 February 2012 | **Received:** 31 August 2011 | **Accepted:** 16 December 2011

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DOI: [10.5281/zenodo.18949593](https://doi.org/10.5281/zenodo.18949593)

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Abstract

Off-grid communities in Tanzania face challenges in accessing reliable energy sources, necessitating innovative solutions. A mixed-methods approach combining quantitative DiD analysis with qualitative interviews to assess system adaptability, user satisfaction, and socio-economic impacts in selected communities. The DiD model indicated an adoption rate of 35% for off-grid systems across the study area, with significant variation among different socioeconomic groups. Off-grid systems show promise but require tailored interventions to enhance adoption rates and sustainability. Develop community-led initiatives that address financial barriers and improve system reliability to support wider deployment of off-grid solutions in Tanzania. off-grid communities, energy access, adoption rate, Difference-in-Differences (DiD), mixed methods study The empirical specification follows $Y = \beta_{0+\beta}^{-} p X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: Tanzania, Off-Grid, Energy Access, Methodology, Quantitative Analysis, Qualitative Research, DiD Model

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