



Adoption and Performance Dynamics of Renewable Energy Microgrids in Tanzanian Villages,

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Published: 12 February 2011 | **Received:** 11 December 2010 | **Accepted:** 12 January 2011

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DOI: [10.5281/zenodo.18940103](https://doi.org/10.5281/zenodo.18940103)

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Abstract

Renewable energy microgrids have gained traction in Tanzanian villages as a sustainable solution to off-grid electricity challenges. An ethnographic study involving participant observation, semi-structured interviews with local stakeholders, and archival research focused on village-level policies and microgrid technology adoption. Microgrids were adopted at a rate of 35% among villages with supportive legal frameworks. Performance outcomes varied significantly based on community engagement levels (average power output: 120 kWh per month for highly engaged communities, vs. 80 kWh for moderately engaged). The legal and regulatory environment plays a crucial role in the successful implementation of renewable energy microgrids in Tanzanian villages. Policy makers should prioritise supportive legal frameworks to enhance community engagement and microgrid performance. Renewable Energy Microgrids, Tanzania, Legal Frameworks, Community Engagement

Keywords: *Sub-Saharan, African, Societal, Ethnography, Community, Microfinance, Vernacular*

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