



Navigating Mini-Grid Uncertainties in Rural Kenya



EIMAS
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Introduction

In Sub-Saharan Africa, over 600 million people lack formal electricity. Private mini-grids are a promising decentralized solution but face significant uncertainties that hinder their scalability and effectiveness. This research investigates the regulatory, financial, and socio-political challenges within Kenya's market-oriented electrification regime, focusing on their impact on human capabilities and energy justice in Kisii County.



Objective

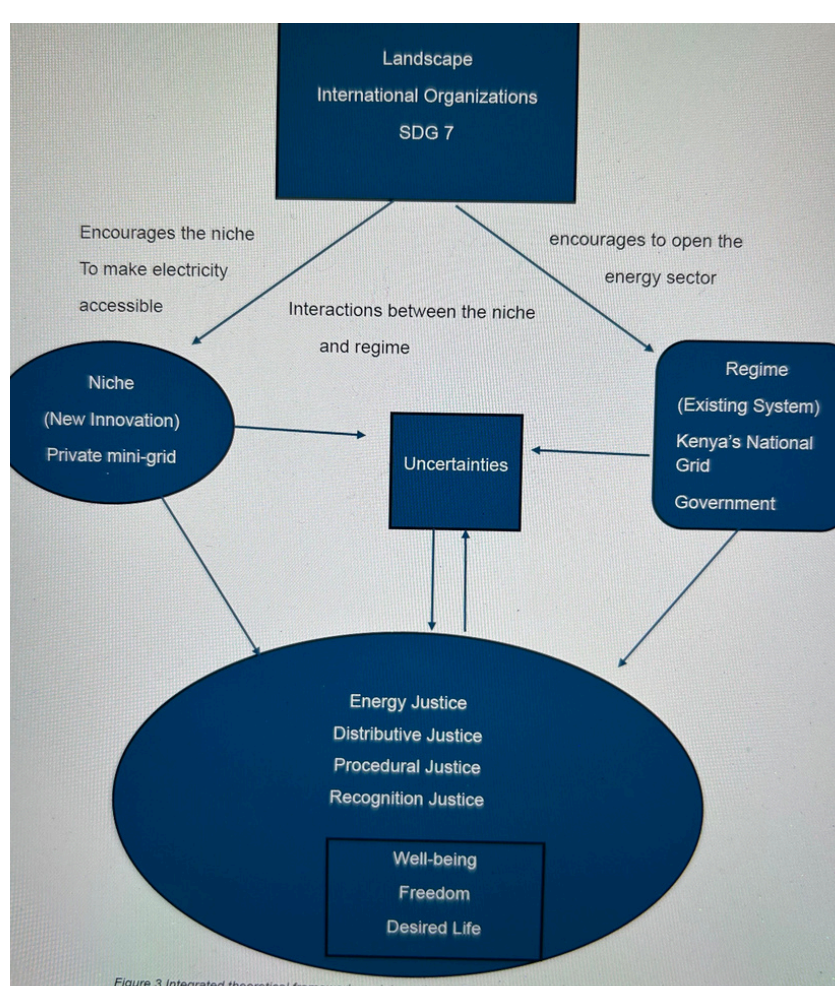
1. Analyze the systemic factors that entrench uncertainties in Kenya's mini-grid transition.
2. Assess the extent to which private mini-grids and the national grid enhance energy access and human well-being through the Capability Approach.
3. Propose a capability-based framework to navigate these uncertainties and promote a just, sustainable energy transition

Results

1. Key Uncertainties Entrenched by:
 - Regulatory Ambiguity: Opaque, costly, and overlapping licensing processes from multiple agencies (EPRA, NEMA, REREC). The Energy Act (2019) lacks specific provisions for private mini-grids.
 - Grid Encroachment: Kenya Power (KPLC) expands the national grid into mini-grid zones without compensation, causing financial losses and bad debt for private operators.
 - Financial Instability: High upfront costs, lack of subsidies, and low rural purchasing power threaten sustainability. Operators resort to prepaid bundles to survive.
 - Political Interference: Grid expansion is used as a political tool for votes, undermining confidence in decentralised solutions.
2. Impact on Capabilities & Well-Being:
 - Private Mini-Grids enable transformative capabilities: nighttime studying, small businesses (milling, refrigeration), and safer cooking. However, high costs exclude the poorest, and unreliability during rainy seasons limits use.
 - The National Grid supports education, health, and connectivity but is plagued by frequent and prolonged outages in rural areas, high and unclear tariffs, and a lack of community voice in governance, leading to frustration.
3. Policy Gaps:
 - Policies like the PPP Act (2021) encourage private investment but lack specific mechanisms for mini-grids (e.g., anti-encroachment measures, tariff autonomy).
 - A significant gap exists between policy objectives and on-the-ground implementation



Theoretical Perspectives



- Multi-level Perspective
- Energy Justice
- Capability Approach

Methodology & Analysis

- Purposive
- Stratified random
- Snowball

- Interviews
- Observation
- Documents review

DATA ANALYSIS

- Thematic Analysis
- Hybrid Approach

Conclusion & Recommendations

Navigating Kenya's mini-grid transition requires moving from technical connection to human empowerment. Key uncertainties—regulatory ambiguity, grid encroachment, and financial exclusion—stem from institutional resistance and policy gaps.

A Capability-Based Framework is essential:

- Policy Reform: Create a distinct mini-grid category and grant tariff autonomy.
- Financial Justice: Provide targeted subsidies and a fund for operators displaced by grid expansion.
- Inclusive Governance: Involve communities in planning and invest in reliable, weather-resilient systems.

Conclusion: Centring energy justice and human capabilities is crucial to transform mini-grids into pillars of equitable and sustainable rural electrification.

CONTACT

