

Decentralised Renewable Energy Mini-Grids and SME Profitability

A Qualitative Exploration from the Niger Delta

Hadiza Sani¹|Aminatou Moussa¹|Boubacar Diallo²
Idrissa Alassane³

National Institute of Agricultural Research of Niger (INRAN) • Department of Research, Abdou Moumouni University, Niamey • Abdou Moumouni University, Niamey

Correspondence: hsani@yahoo.com

Received: 16 September 2023 | Accepted: 14 December 2023 | Published: 15 January 2024 | DOI:

[10.5281/zenodo.18944045](https://doi.org/10.5281/zenodo.18944045)

ABSTRACT

{ "background": "Persistent energy poverty and unreliable centralised grid supply constrain economic activity in many African regions. Decentralised renewable energy mini-grids are promoted as a sustainable solution, yet qualitative evidence linking their operation directly to SME financial performance in complex, resource-rich environments like the Niger Delta remains sparse.", "purpose and objectives": "This study explores the perceived relationship between decentralised renewable mini-grids and SME profitability in the Niger Delta, aiming to understand the mechanisms through which energy access influences business outcomes from the entrepreneurs' perspective.", "methodology": "A qualitative, exploratory design was employed. Data were collected via in-depth, semi-structured interviews with SME owners and managers across multiple sectors, supplemented by focus group discussions. A purposive sampling strategy ensured participants were all connected to operational solar-hybrid mini-grids. Thematic analysis was conducted on the transcribed data.", "findings": "A dominant theme was that enhanced energy reliability, rather than mere access, was the critical driver of increased profitability. Specifically, over three-quarters of participants reported a reduction in operational costs by eliminating expenditure on diesel generators. A concrete result was that several manufacturing SMEs extended operating hours by an average of 35%, directly increasing production volume and revenue.", "conclusion": "The study concludes that decentralised mini-grids can significantly enhance SME profitability in the Niger Delta, primarily by providing a more reliable and cost-effective power source that enables operational expansion and reduces energy-related overheads.", "recommendations": "Policymakers should integrate dedicated, reliable energy access for SMEs into regional development plans. Mini-grid developers should design tariff structures that support productive use and offer tailored technical support to business clients.", "key words": "decentralised energy, mini-grids, SME profitability, renewable energy, Niger Delta, qualitative research", "contribution statement": "This paper provides novel, context-specific evidence on the operational and financial mechanisms linking energy reliability to SME performance, filling a gap in qualitative literature from a region characterised by both energy poverty and economic informality

Keywords: *decentralised energy, renewable energy mini-grids, small and medium enterprises, Niger Delta, energy poverty, qualitative case study, sustainable development*

Article Highlights

- Reliable power reduced SME operational costs by eliminating diesel generator expenditure.
- Manufacturing SMEs extended operating hours by 35%, increasing production volume.

Methodological Note

Qualitative exploration using in-depth interviews and focus groups with SME owners connected to operational solar-hybrid mini-grids in the Niger Delta.

This study provides context-specific evidence from a region

<ul style="list-style-type: none">• Mini-grids enabled business expansion through stable, cost-effective energy supply.• Tailored tariff structures and technical support are crucial for SME success.	<p><i>characterised by both energy poverty and economic informality.</i></p>
---	--

ABSTRACT-ONLY PUBLICATION

This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

REQUEST FULL PAPER

 **Email:** info@parj.africa

Request your copy of the full paper today!

SUBMIT YOUR RESEARCH

Are you a researcher in Africa? We welcome your submissions!

Join our community of African scholars and share your groundbreaking work.

 **Submit at:** app.parj.africa



Scan to visit app.parj.africa

Open Access Scholarship from PARJ

Empowering African Research | Advancing Global Knowledge