



# **Off-Grid Energy Solutions in Togo: A Qualitative Study of Healthcare Facilities and Schools**

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### **Abstract**

Off-grid energy solutions are increasingly being implemented to address power shortages in healthcare facilities and schools across Togo, a West African country with significant energy challenges. The study employed semi-structured interviews with 30 stakeholders including healthcare workers, school administrators, and local technicians. Qualitative content analysis was used to interpret responses and categorize themes. Healthcare facilities reported a significant increase in reliable power supply (85%) after implementing off-grid solutions, leading to improved medical equipment functionality and patient care outcomes. Schools observed an average of 20% reduction in electricity costs with solar-powered systems, contributing to better learning environments. The findings suggest that off-grid energy solutions can effectively enhance service quality and operational efficiency in both healthcare and educational settings, though challenges related to initial investment and technical maintenance remain. Policymakers should prioritise funding for off-grid projects through grants or subsidies, while stakeholders need to ensure ongoing support for system upgrades and repairs to maximise long-term benefits. The empirical specification follows  $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *Togolese, renewable, sustainable, ethnography, case-study, energy-access, participatory*

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