African Conservation Biology (Environmental Science)

Methodological Evaluation of Off-Grid Communities Systems in Nigeria: Multilevel Regression Analysis for Measuring Cost-Effectiveness

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Abstract

Off-grid communities in Nigeria rely on various renewable energy systems for power supply. Multilevel regression analysis was employed to assess the impact of socioeconomic factors at both individual and community levels, accounting for heterogeneity in data structure. The analysis revealed that per capita energy consumption significantly varied across communities (mean $difference = 25\,kWh)$, $indicating\ significant\ disparities \in resource\ utilization$. The multilevel regression model provided robust insights into the cost-effectiveness of off-grid systems, with implications for policy and future investments. Investment strategies should be tailored to address specific community needs identified by this analysis. Off-Grid Communities, Nigeria, Multilevel Regression Analysis, Cost-Effectiveness

Keywords: *Nigerian, renewable, multilevel, regression, analysis, energy, socioeconomic*

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