African Physical Chemistry (Pure Science)

Methodological Evaluation of Off-Grid Communities Systems in Kenya: A Multilevel Regression Analysis for Yield Improvement Assessment

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Abstract

In recent years, off-grid communities in Kenya have adopted various renewable energy systems to meet their electricity needs. A multilevel regression model will be utilised, accounting for both individual household-level data and community-level factors that influence system performance. This methodological approach provides a robust framework for assessing and enhancing the efficiency of off-grid renewable energy systems in Kenyan communities. The findings suggest that integrating both individual and collective strategies can significantly boost system performance, warranting further empirical research to validate these insights. The empirical specification follows $Y = \beta_{0+\beta}^{\rightarrow} p\, X + varepsilon$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *Sub-Saharan, Africa, Growth, Hierarchical, Multilevel, Mixed-Methods, Contextual, Empowerment*

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