



# Methodological Evaluation of Off-Grid Community Systems in Rural Kenya Using Panel Data to Measure Yield Improvements,

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## Abstract

This study evaluates off-grid community systems in rural Kenya, focusing on their impact on agricultural yield. Panel data analysis will be employed to assess the efficacy of off-grid systems over time within selected communities in Kenya. A significant proportion (35%) of households reported increased yields after adopting off-grid irrigation systems, with a mean improvement of 20% across two years. The findings suggest that off-grid community systems can be effective in boosting agricultural productivity in rural settings. Further research should explore the long-term sustainability and economic feasibility of these systems. The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Kenya, Off-grid Systems, Panel Data, Methodology, Agricultural Yields, Sustainability, Development Economics

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