



# Methodological Evaluation of Field Research Stations Systems in Tanzania Using Difference-in-Differences for System Reliability Analysis

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## Abstract

Field research stations play a crucial role in monitoring energy access in Tanzania, but their reliability can vary significantly over time and across different regions. A Difference-in-Differences model will be employed to analyse changes in system reliability over time, with a focus on identifying treatment effects attributable to interventions or policy changes. The study will utilise data from multiple field research stations across Tanzania, including detailed records of energy access and service delivery metrics. The analysis suggests that the DiD method can effectively measure changes in system reliability, although variability exists between different regions and over time. This study provides a robust framework for evaluating the reliability of field research stations in Tanzania using advanced statistical techniques. The findings contribute to the literature by offering empirical evidence on the effectiveness of DiD models in assessing energy access systems. Further research should explore the implications of these findings for policy and practice, with a focus on improving system reliability across all regions of Tanzania. The empirical specification follows  $Y = \beta_{0+\beta} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** Tanzania, Field Research Stations, Energy Access, Difference-in-Differences, Methodology, Evaluation, Reliability Analysis



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