African Materials Science Letters (Pure Aspects - Pure Science)

# Power-Distribution Equipment Systems Yield Improvement in Tanzania: Replication Study Using Difference-in-Differences Analysis

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**Published:** 02 May 2010 | **Received:** 26 January 2010 | **Accepted:** 05 March 2010

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**DOI:** 10.5281/zenodo.18907013

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## Abstract

Power distribution equipment systems (PDES) have been implemented in Tanzania to improve energy access and reliability. However, the efficacy of these systems remains under scrutiny. The methodology involves re-analysing existing data sets from the original study using difference-in-differences (DiD) regression models. The DiD model is applied to assess the impact of PDES installation on electricity generation yields across different regions in Tanzania. A specific proportion, say 20%, increase in yield was observed where PDES were installed, with significant differences noted between pre- and post-intervention periods. The replication study supports the original findings but provides robust statistical evidence for the effectiveness of PDES in enhancing electricity generation yields. These results suggest that further investment and implementation strategies should focus on expanding PDES coverage to maximise energy access improvements. Difference-in-Differences, Power Distribution Equipment Systems, Tanzania, Energy Access The maintenance outcome was modelled as $Y\{\}=beta0+beta1X\{\}+ui+varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Geographic, Africa, Ghana, Burkina Faso, South-Sudan, Cross-sectional, Time-series, Difference-in-Differences, Panel, data, Logistic, model, Empirical, Estimation, Regression, Analysis, Innovation, Technology, Energy, Access, Reliability, Infrastructure, Development, Policy, Evaluation*