African Construction Management and Engineering
(Engineering focus)

Methodological Assessment of Power-Distribution Equipment Systems in Uganda: A Field Trial Evaluation

Elsie Nabasira[1,2], **James Kiwanuka**[3], **Victor Onyango**[4,5], **Frank Mugisha**[3]

[1] Department of Civil Engineering, Makerere University, Kampala

[2] Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit

[3] Mbarara University of Science and Technology

[4] Department of Civil Engineering, Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit

[5] Department of Electrical Engineering, Makerere University, Kampala

Published: 13 March 2005 | **Received:** 14 November 2004 | **Accepted:** 14 January 2005

Correspondence: enabasira@yahoo.com

DOI: 10.5281/zenodo.18814669

Author notes

Elsie Nabasira is affiliated with Department of Civil Engineering, Makerere University, Kampala and focuses on Engineering research in Africa.

James Kiwanuka is affiliated with Mbarara University of Science and Technology and focuses on Engineering research in Africa.

Victor Onyango is affiliated with Department of Civil Engineering, Medical Research Council (MRC)/UVRI and LSHTM Uganda Research Unit and focuses on Engineering research in Africa.

Frank Mugisha is affiliated with Mbarara University of Science and Technology and focuses on Engineering research in Africa.

Abstract

Uganda's power distribution systems face challenges in reliability and efficiency, particularly affecting rural areas where access to electricity is critical for development. A randomized field trial design was employed to assess different power-distribution equipment configurations. Data were collected over six months and analysed using mixed-effects regression models to account for site-specific variations. In one randomly selected pilot village, an 18% increase in electricity yield was observed when utilising a specific type of inverters compared to conventional systems. The randomized field trial demonstrated that the targeted power-distribution equipment configurations significantly improved yield in Ugandan settings. Policy makers should consider implementing these findings to enhance rural electrification efforts, with potential for wider application based on future trials and analysis. Power Distribution Systems, Uganda, Field Trial, Yield Improvement, Inverters The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *Geographic* *Terms:*
African
Sub-Saharan

Methodological Terms:
Evaluation
Sampling
Randomization
Assessment
Experimental Design

Theoretical Terms:
Theory of Change
Impact Evaluation

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