

# A Quasi-Experimental Evaluation of Municipal Infrastructure Asset Management Systems for Risk Reduction in Uganda

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Julius Okello<sup>1,2</sup> | David Kigozi<sup>1,3</sup> | Aisha Nalwoga<sup>1,4</sup>

Patience Nakimera<sup>2</sup>

<sup>1</sup> Busitema University

<sup>2</sup> Department of Mechanical Engineering, Kyambogo University, Kampala

<sup>3</sup> Department of Civil Engineering, Kyambogo University, Kampala

<sup>4</sup> Kyambogo University, Kampala

Correspondence: [jokello@hotmail.com](mailto:jokello@hotmail.com)

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## ABSTRACT

**Background:** Municipal infrastructure asset management systems (AMS) are promoted as essential for risk reduction in low-resource settings, yet robust empirical evidence of their effectiveness in sub-Saharan Africa is scarce. Existing evaluations often lack methodological rigour, relying on descriptive case studies.

**Purpose and objectives:** This study aimed to provide a quasi-experimental evaluation of the causal impact of formalised AMS implementation on technical risk metrics for municipal water and road infrastructure.

**Keywords:** *Municipal infrastructure, Asset management systems, Risk reduction, Quasi-experimental design, Sub-Saharan Africa*

### Article Highlights

- A difference-in-differences design compared 12 intervention and 12 control municipalities.
- Structured AMS frameworks significantly reduced technical risk for water and road assets.
- The effect was more pronounced for water infrastructure than for road networks.
- Findings were robust to sensitivity analysis for potential unobserved confounders.

### Methodological Note

The core impact was estimated using a difference-in-differences model with municipality and time fixed effects, clustering robust standard errors at the municipal level.

*This study provides causal evidence for the effectiveness of asset management systems in a sub-Saharan context.*

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