



# Methodological Evaluation of Municipal Infrastructure Assets Systems in Ethiopia Using Quasi-Experimental Design

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## Abstract

This study focuses on evaluating municipal infrastructure assets systems in Ethiopia, a developing country with significant urbanization challenges. A quasi-experimental design was employed to analyse municipal infrastructure data from selected cities in Ethiopia. Statistical models were used to estimate treatment effects and quantify uncertainty around these estimates. The analysis revealed a significant reduction (35%) in service delivery times for critical infrastructure repairs, indicating potential gains in operational efficiency. This study provides evidence that the quasi-experimental design can effectively measure efficiency improvements in municipal infrastructure systems. The findings suggest substantial room for enhancing asset management practices and cost-effectiveness. Recommendations include implementing comprehensive maintenance schedules, training staff on best practice asset management, and integrating technology to improve data collection and analysis. The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u_i + \text{varepsilon}$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** *Ethiopia, Quasi-experimental, Asset Management, Evaluation Methodology, Urbanization, Infrastructure Efficiency, Resource Allocation Studies*

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