



# Eco-Friendly Materials and Environmental Impact in Ugandan Cities: A Three-Year Assessment

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## Abstract

Ugandan cities are experiencing rapid urbanization, leading to increased environmental challenges such as air and water pollution. A mixed-method approach combining surveys, interviews, and empirical analysis of material usage data. Specific statistical models used include regression analysis to predict pollutant levels based on material type and urban population density. There was a significant adoption rate (85%) of eco-friendly materials in new constructions, leading to an average reduction of 20% in particulate matter emissions compared to conventional construction methods. Regression models showed that the presence of eco-friendly materials had a robust coefficient with  $p < 0.01$ . The project demonstrated substantial environmental benefits from adopting eco-friendly materials, though continued monitoring is required to sustain these improvements. Urban planning policies should prioritise the inclusion of eco-friendly construction materials in new development projects and support further research into long-term impacts. The empirical specification follows  $Y = \beta_{0+\beta} X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *Sub-Saharan, African, Sustainable, Building, Materials, Assessment, Eco-friendly*

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