African Mining Engineering

Structural Integrity Assessment of Aging Infrastructure in Uganda

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Abstract

Uganda's infrastructure, particularly bridges and buildings, is aging, posing significant structural integrity risks. The study employs a probabilistic risk assessment model to evaluate the probability and impact of potential failures in selected structures. A preliminary analysis suggests that bridges constructed before are at an increased risk, with a failure probability estimated between 25% and 35%. The probabilistic risk assessment model provides insights into the structural health of aging infrastructure in Uganda. Immediate remediation should be prioritised for bridges older than to mitigate risks. Structural Integrity, Aging Infrastructure, Probabilistic Risk Assessment, Ugandan Bridges The maintenance outcome was modelled as $Y\{\} = beta\,0 + beta\,1\,X\{\} + ui + varepsilon\{\}$, with robustness checked using heteroskedasticity-consistent errors.

Keywords: *African geology, probabilistic risk assessment, structural durability, finite element analysis, asset management, seismic vulnerability, material fatigue*

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