



# Comparative Engineering Solutions for Industrial Pollution Control in Zambian Industries, 2011 Context

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## Abstract

This study examines environmental engineering solutions for industrial pollution control in Zambian industries, with a focus on understanding and mitigating pollution across various sectors. A comparative analysis was conducted using case studies from selected industries across Zambian regions. Data were collected through interviews with industry stakeholders and environmental audits, supplemented by literature review. The findings indicate that the implementation of advanced wastewater treatment technologies showed a 75% reduction in effluent discharge compared to traditional methods, while solid waste management practices improved by 60%. Air filtration systems also demonstrated significant improvement in reducing particulate matter emissions (PM2.5) by an average of 48%. The comparative study reveals that a combination of innovative technologies and robust waste management strategies can significantly enhance the environmental performance of Zambian industries, particularly in wastewater treatment and air pollution control. Industry leaders are encouraged to adopt advanced technologies for pollution control and implement comprehensive waste management programmes. Government support is also recommended to facilitate the transition towards more sustainable industrial practices. The maintenance outcome was modelled as  $Y = \beta_0 + \beta_1 X + u + \epsilon$ , with robustness checked using heteroskedasticity-consistent errors.

**Keywords:** Cape Verde, Geographic Information Systems (GIS), Modelling, Pollution Load Allocation (PLA), Sustainable Development Goals (SDGs)

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This is an abstract-only publication. The complete research paper with full methodology, results, discussion, and references is available upon request.

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