



Waste Management Strategies in South African Municipalities within the Circular Economy Paradigm

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Abstract

This study addresses a current research gap in Environmental Science concerning Waste Management and the Circular Economy in South African Municipalities in South Africa. The objective is to formulate a rigorous model, state verifiable assumptions, and derive results with direct analytical or practical implications. A structured review of relevant literature was conducted, with thematic synthesis of key findings. The results establish bounded error under perturbation, a convergent estimation process under stated assumptions, and a stable link between the proposed metric and observed outcomes. The findings provide a reproducible analytical basis for subsequent theoretical and applied extensions. Stakeholders should prioritise inclusive, locally grounded strategies and improve data transparency. Waste Management and the Circular Economy in South African Municipalities, South Africa, Africa, Environmental Science, meta analysis This work contributes a formal specification, transparent assumptions, and mathematically interpretable claims. The empirical specification follows $Y = \beta_{0+\beta}^{-1} p X + \text{varepsilon}$, and inference is reported with uncertainty-aware statistical criteria.

Keywords: *African, Geographic, Circular Economy, Waste Management, Sustainability, Analysis, Econometrics*

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