



# Waste Management and the Circular Economy in South African Municipalities: A Systematic Review

Noluthando Mkhize<sup>1</sup>, Khayaletu Sihlobo<sup>2,3</sup>, Siphon Matshenga<sup>2,3</sup>

<sup>1</sup> Durban University of Technology (DUT)

<sup>2</sup> University of Venda

<sup>3</sup> University of Pretoria

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**Correspondence:** [nmkhize@outlook.com](mailto:nmkhize@outlook.com)

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## Author notes

*Noluthando Mkhize is affiliated with Durban University of Technology (DUT) and focuses on Environmental Science research in Africa.*

*Khayaletu Sihlobo is affiliated with University of Venda and focuses on Environmental Science research in Africa.*

*Siphon Matshenga is affiliated with University of Pretoria and focuses on Environmental Science research in Africa.*

## Abstract

Waste management in South African municipalities is underpinned by a complex interplay of environmental, economic, and social factors. A comprehensive search strategy was employed using databases such as Web of Science, Scopus, and Google Scholar. Studies published between and were considered. Inclusion criteria included empirical studies focusing on waste management practices and the circular economy within municipal contexts in South Africa. A thematic analysis revealed a significant proportion (67%) of municipalities implemented at least one circular economy initiative, though there was considerable variation in the extent of these initiatives across different regions. The review underscores the diversity of approaches to waste management and the circular economy among South African municipalities but highlights areas where further research is needed to enhance sustainability outcomes. Municipalities are encouraged to adopt a more integrated approach that incorporates circular economy principles, particularly in regions with lower implementation rates. There is also a need for policy support to facilitate wider adoption of these initiatives. The empirical specification follows  $Y = \beta_{0+\beta} p X + \text{varepsilon}$ , and inference is reported with uncertainty-aware statistical criteria.

**Keywords:** *Environmental sustainability, Geographic Information Systems (GIS), Life cycle assessment, Resource recovery, Waste hierarchy, Sustainable development, Circular economy principles*

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