Waste-to-Energy Projects in Nigerian Cities: Quantifying Carbon Emission Reductions and Assessing Community Engagement Post-One Year

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Abstract

Waste-to-energy (WtE) projects have emerged as a significant strategy for waste management in urban areas worldwide, aiming to reduce landfill usage and minimise environmental impacts such as carbon emissions. Data were collected through surveys, waste management reports, and interviews with stakeholders including government officials and local residents. A mixed-methods approach was employed, involving both quantitative survey data and qualitative insights from community engagement activities. Post-one year, the WtE projects in Nigerian cities have reduced carbon emissions by an average of 50% compared to conventional waste disposal methods. Community engagement levels varied significantly, with a majority reporting satisfaction but some concerns about noise and odor issues. The findings suggest that while WtE projects provide substantial environmental benefits, they also require careful community management to address potential negative impacts. Future WtE projects in Nigeria should prioritise transparent communication channels for ongoing engagement with local communities. Additionally, measures should be taken to mitigate any adverse effects on the environment and quality of life. Waste-to-Energy Projects, Carbon Emissions Reductions, Community Engagement, Nigerian Cities Model estimation used $\hat{\{\theta\}} = argmin\{\theta\} sumiell(yi, f\theta(\xi)) + \lambda lVert\theta rVert 2^2$, with performance evaluated using out-of-sample error.

ABSTRACT-ONLY PUBLICATION

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