

RESEARCH ARTICLE

Governance and waste management in urban Nigeria: a comparative study of OYO and rivers states

Ojikutu-Eghomwanre Aishat Oluwadamilola¹, Ibikunle Busayo Qazeem^{1*}

¹Department of Public Administration, Faculty of Management Sciences, Lagos State University, Ojo, Nigeria

Corresponding Author: Ibikunle Busayo Qazeem. Email: busayo.ibikunle@lasu.edu.ng

Received: 09 August, 2025, Accepted: 15 November, 2025, Published: 23 November, 2025

Abstract

This research examines the institutional and operational frameworks influencing solid waste management (SWM) in two principal metropolitan centres in Nigeria: Ibadan (Oyo State) and Port Harcourt (Rivers State). This study utilised a convergent parallel mixed-methods methodology, integrating data from structured surveys of 400 people with qualitative interviews of important stakeholders, including state solid waste management agencies, ministries, and contractors. The results show that both states still have problems, such as sporadic waste collection, open dumping, and low community participation. Statistical analysis substantiates a considerable correlation between fragile institutional frameworks and exacerbated environmental concerns. Qualitative data further elucidate deficiencies in funding, enforcement, and inter-agency coordination. The research suggests enhancing institutional capacity, reconfiguring public-private partnerships, and promoting community involvement as essential strategies for achieving sustainable urban trash management. These measures are necessary to lessen the negative effects on public health and the environment that come from bad solid waste management in Nigeria's cities that are growing quickly.

Keywords: Environmental Sustainability; Institutional Mechanisms; Solid Waste Management; Urban Governance

Introduction

Rapid urbanisation in Nigeria has put more stress on municipal solid waste management (SWM) systems, revealing long-standing problems with institutions, operations, and regulations. Even though state-level agencies like OYOWMA and RIWAMA have been set up, cities like Ibadan (Oyo State) and Port Harcourt (Rivers State) still have problems with irregular garbage collection, open dumping, inadequate enforcement, and little community involvement. These difficulties indicate broader governance shortcomings, including limited financing, fragmented institutional duties, and weak execution of national environmental legislation. These challenges are not just operational but also institutional. They arise from insufficient funding, constrained technical proficiency, inadequate regulatory enforcement, and disjointed agency responsibilities (Adejobi & Olorunnimbe, 2012; Ikebude, 2018). Additionally, the inability to incorporate contemporary waste management systems and the insufficient utilisation of private sector capabilities have exacerbated these challenges (Uwadiogwu, 2013; Nabukeera, Ali, & Raja, 2014). There are many bad effects of bad waste management. Uncollected trash blocks drainage channels, makes the environment worse, causes health problems, and makes

flooding in cities more likely (Elenwo, 2015; Isife, 2012). Even though state-level waste management agencies like the Oyo State Waste Management Authority (OYOWMA) and the Rivers State Waste Management Agency (RIWAMA) have been set up, problems like open dumping, irregular waste collection, and a lack of community involvement still exist (Nwogwugwu & Ishola, 2019). Solid waste management (SWM) has become a persistent issue in urban Nigeria, indicative of more profound structural deficiencies in environmental governance (Ike, Ezeibe, Anijiofor, & Daud, 2018; Ogwueleka, 2009). As cities continue to expand due to population increase and economic activity, the pressure on infrastructure and natural systems grows. Urban centres such as Ibadan and Port Harcourt are particularly affected by the expanding volume of municipal solid garbage, much of which remains mismanaged or incorrectly disposed of (Bakare, 2021).

Bad waste management has effects that go beyond the immediate area. Uncollected trash blocks drainage channels, causes flooding, harms the ecosystem, and is a major health risk. Even though there are state-level waste management authorities like the Oyo State Waste Management Authority (OYOWMA) and the Rivers State Waste Management Agency (RIWAMA), problems like open dumping, irregular waste collection, and a lack of community involvement continue to exist. These problems are not just operational. They also come from problems with institutions, such as not having enough money, not having enough technical knowledge, not enforcing rules well, and having different responsibilities among agencies. Also, the lack of integrated waste management systems and the fact that the private sector isn't being used enough have made progress much harder.

Because Nigeria is becoming more urbanised quickly, it is very important to carefully look at the governance structures and operational strategies that support SWM. This research offers a comparative examination of Oyo and Rivers States, emphasising institutional efficacy, public-private collaborations, community engagement, and environmental results. The study seeks to elucidate systemic deficiencies and potential reform areas to enhance effective and sustainable waste governance in Nigerian cities. This study seeks to rigorously assess the institutional and operational frameworks of solid waste management in Oyo and Rivers States, pinpointing significant structural shortcomings and recommending feasible reforms to enhance urban waste governance.

Also, open dumping and unmanaged landfilling are still common, even though they are not good for the environment (Bakare, 2021). Public-private partnerships have been set up to help with financial and operational problems, but these efforts have often been hurt by problems with transparency, late payments, and unclear contract terms (Nabukeera et al., 2014). Even though OYOWMA was set up in Oyo State and RIWAMA was set up in Rivers State, SWM is still mostly useless and broken apart (Nwogwugwu & Ishola, 2019). Several institutional and operational weaknesses underpin these failures. These include limited budget, lack of technical experience, ineffective enforcement of environmental legislation, and disconnected agency roles (Adejobi & Olorunnimbe, 2012; Ikebude, 2018). Low public knowledge, inadequate community participation, and general apathy further widen the gap between policy frameworks and real achievements (Uwadiogwu, 2013).

The quick urbanisation of Nigerian towns has led to an exponential increase in the generation of solid garbage, which has overburdened existing waste management systems (Ike et al., 2018). In cities like Ibadan and Port Harcourt, solid trash is often deposited in open areas, drainage channels, and along highways practices that significantly contribute to environmental degradation, urban floods, and heightened public health concerns (Onifade et al., 2021; Elenwo, 2015).

This ongoing issue is caused by a number of problems with institutions and operations. Some of these are not enough money, not enough technical know-how, not enough enforcement of environmental laws, and not enough coordination amongst the entities that need to work together. Public indifference, a lack of knowledge, and low levels of community involvement have made things even harder. This has caused a gap between policy frameworks and what is actually happening on the ground. Also, the fact that people still use old methods like

open dumping and unregulated landfilling shows that there are no contemporary, integrated waste management options. Public-private partnerships, which are typically touted as good options, have also not lived up to expectations because of problems with transparency, late payments, and unclear duties. Because of these worries, it is very important to quickly check how well the institutional and operational systems for SWM work in urban Nigeria. This study fills this gap by looking at the governance structures in Oyo and Rivers States, finding systemic problems, and suggesting evidence-based ways to improve urban waste management outcomes. In this premise, the study aimed to:

1. Examine the governance structures and institutional frameworks underpinning waste management in Ibadan and Port Harcourt.
2. Assess the performance of OYOWMA and RIWAMA in delivering effective waste management services.
3. Identify the core operational challenges affecting solid waste collection, disposal, and regulation.
4. Recommend strategic interventions particularly in institutional reform, public-private collaboration, and community engagement to improve waste governance in urban Nigeria.

Literature Review

Rapid urbanisation in Nigeria has put more stress on municipal solid waste management (SWM) systems, revealing long-standing problems with institutions, operations, and regulations. Even though state-level agencies like OYOWMA and RIWAMA have been set up, cities like Ibadan (Oyo State) and Port Harcourt (Rivers State) still have problems with irregular garbage collection, open dumping, inadequate enforcement, and little community involvement. These difficulties indicate broader governance shortcomings, including limited financing, fragmented institutional duties, and weak execution of national environmental legislation.

These challenges are not just operational but also institutional. They arise from insufficient funding, constrained technical proficiency, inadequate regulatory enforcement, and disjointed agency responsibilities (Adejobi & Olorunnimbe, 2012; Ikebude, 2018). Additionally, the inability to incorporate contemporary waste management systems and the insufficient utilisation of private sector capabilities have exacerbated these challenges (Uwadiogwu, 2013; Nabukeera, Ali, & Raja, 2014). There are many bad effects of bad waste management. Uncollected trash blocks drainage channels, makes the environment worse, causes health problems, and makes flooding in cities more likely (Elenwo, 2015; Isife, 2012). Even though state-level waste management agencies like the Oyo State Waste Management Authority (OYOWMA) and the Rivers State Waste Management Agency (RIWAMA) have been set up, problems like open dumping, irregular waste collection, and a lack of community involvement still exist (Nwogwugwu & Ishola, 2019). Solid waste management (SWM) has become a persistent issue in urban Nigeria, indicative of more profound structural deficiencies in environmental governance (Ike, Ezeibe, Anijiofor, & Daud, 2018; Ogwueleka, 2009). As cities continue to expand due to population increase and economic activity, the pressure on infrastructure and natural systems grows. Urban centres such as Ibadan and Port Harcourt are particularly affected by the expanding volume of municipal solid garbage, much of which remains mismanaged or incorrectly disposed of (Bakare, 2021).

Bad waste management has effects that go beyond the immediate area. Uncollected trash blocks drainage channels, causes flooding, harms the ecosystem, and is a major health risk. Even though there are state-level waste management authorities like the Oyo State Waste Management Authority (OYOWMA) and the Rivers State Waste Management Agency (RIWAMA), problems like open dumping, irregular waste collection, and a lack of community involvement continue to exist. These problems are not just operational. They also come from problems with institutions, such as not having enough money, not having enough technical knowledge, not enforcing rules well, and having different responsibilities among agencies. Also, the lack of integrated waste

management systems and the fact that the private sector isn't being used enough have made progress much harder.

Because Nigeria is becoming more urbanised quickly, it is very important to carefully look at the governance structures and operational strategies that support SWM. This research offers a comparative examination of Oyo and Rivers States, emphasising institutional efficacy, public-private collaborations, community engagement, and environmental results. The study seeks to elucidate systemic deficiencies and potential reform areas to enhance effective and sustainable waste governance in Nigerian cities. This study seeks to rigorously assess the institutional and operational frameworks of solid waste management in Oyo and Rivers States, pinpointing significant structural shortcomings and recommending feasible reforms to enhance urban waste governance.

Also, open dumping and unmanaged landfilling are still common, even though they are not good for the environment (Bakare, 2021). Public-private partnerships have been set up to help with financial and operational problems, but these efforts have often been hurt by problems with transparency, late payments, and unclear contract terms (Nabukeera et al., 2014). Even though OYOWMA was set up in Oyo State and RIWAMA was set up in Rivers State, SWM is still mostly useless and broken apart (Nwogwugwu & Ishola, 2019). Several institutional and operational weaknesses underpin these failures. These include limited budget, lack of technical experience, ineffective enforcement of environmental legislation, and disconnected agency roles (Adejobi & Olorunnimbe, 2012; Ikebude, 2018). Low public knowledge, inadequate community participation, and general apathy further widen the gap between policy frameworks and real achievements (Uwadiogwu, 2013).

The quick urbanisation of Nigerian towns has led to an exponential increase in the generation of solid garbage, which has overburdened existing waste management systems (Ike et al., 2018). In cities like Ibadan and Port Harcourt, solid trash is often deposited in open areas, drainage channels, and along highways practices that significantly contribute to environmental degradation, urban floods, and heightened public health concerns (Onifade et al., 2021; Elenwo, 2015).

This ongoing issue is caused by a number of problems with institutions and operations. Some of these are not enough money, not enough technical know-how, not enough enforcement of environmental laws, and not enough coordination amongst the entities that need to work together. Public indifference, a lack of knowledge, and low levels of community involvement have made things even harder. This has caused a gap between policy frameworks and what is actually happening on the ground. Also, the fact that people still use old methods like open dumping and unregulated landfilling shows that there are no contemporary, integrated waste management options. Public-private partnerships, which are typically touted as good options, have also not lived up to expectations because of problems with transparency, late payments, and unclear duties. Because of these worries, it is very important to quickly check how well the institutional and operational systems for SWM work in urban Nigeria. This study fills this gap by looking at the governance structures in Oyo and Rivers States, finding systemic problems, and suggesting evidence-based ways to improve urban waste management outcomes.

The link between policy framework and best practices

The results are in line with Nigeria's National Policy on the Environment (2016), which stresses community involvement, decentralised waste management, and integrated waste systems. But neither state has put these rules into effect. UNEP's Integrated Solid Waste Management framework and UN-Habitat's Global Waste Management Outlook show the best ways to handle waste around the world. Oyo and Rivers, on the other hand, don't have important parts like separating waste at the source, recycling systems, and strong enforcement of rules. To bring both states more in line with global standards, they should make institutions more accountable and include circular economy ideas in their state-level SWM programmes.

Methodology

This research utilised a convergent parallel mixed-methods approach to achieve a thorough comprehension of the institutional and operational frameworks governing solid waste management (SWM) in Oyo and Rivers States. This architecture facilitates the concurrent gathering and distinct analysis of both quantitative and qualitative data, which are subsequently integrated to yield a more comprehensive interpretation. The target population consisted of the approximately 15,144,788 inhabitants of Oyo (7,840,864) and Rivers (7,303,924) States, as indicated by the National Bureau of Statistics (NBS, 2018). Using Yamane's (1967) method at a 95% confidence level, we found that 400 people would be a good sample size. 207 of them would be from Oyo State and 193 would be from Rivers State, which is in line with their population estimates. A multistage sampling method was utilised. Five Local Government Areas (LGAs) in Rivers State were chosen on purpose: Obio/Akpor, Etche, Okrika, Eleme, and Port Harcourt. Five LGAs were also chosen from Ibadan, Oyo State: Ibadan North, North East, North West, South East, and South West. These were chosen because they are urban and important for SWM activities.

Data were gathered through two primary methods:

1. Structured questionnaires were administered to residents to capture quantitative data on waste collection, agency performance, and public perceptions of SWM.
2. Key informant interviews were conducted with officials from OYOWMA and RIWAMA, representatives from state Ministries of Environment, environmental officers at local government levels, and private sector contractors involved in public-private partnerships.

The questionnaire was divided into six parts (A–F), and each part had Likert-scale items that were related to the main variables of the study. The interview guide has open-ended questions that were meant to get stakeholders to give detailed answers. A pilot test was done to make sure the results were reliable, and all of the scales' Cronbach's Alpha coefficients were higher than the allowed level of 0.70. Expert assessments and factor analysis proved the correctness of the construction. We employed descriptive statistics to summarise the demographic information of the respondents and their views on SWM practices. Inferential statistics, specifically Linear Regression Analysis (LRA), were utilised to investigate the correlation between institutional systems and environmental difficulties in both states. Thematic content analysis was used to look at qualitative data. This made it possible to find common themes and points of view from different stakeholders. Before collecting data, ethical approval was obtained. Everyone who took part in the study gave their informed consent and was promised that their privacy would be protected and that they could leave at any time.

Results

This section presents the findings from both the quantitative survey and qualitative interviews conducted in Oyo and Rivers States. Results are visualised through comparative charts to highlight state-level differences in service efficiency, satisfaction, institutional impacts, and operational challenges.

Table 1: Perception of Waste Collection Efficiency by Respondents

State	Regular Collection (%)	Irregular Collection (%)	No Collection (%)
Oyo	25.6	63.2	11.2
Rivers	28.4	61.8	9.8

Source: compiled by the authors, 2024



Figure 1: Comparative perception of waste collection frequency in Oyo and Rivers States.

Hypothesis 1: Waste Collection Perception

An independent t-test revealed no statistically significant difference in perceptions of waste collection efficiency between Oyo and Rivers States, $t(398) = 3.3 \times 10^{-16}$, $p = .999$, $d < 0.01$. This indicates that the perception of collection irregularity is virtually identical across both states.

Table 2: Satisfaction with SWM Agencies (OYOWMA/RIWAMA)

State	Satisfied (%)	Neutral (%)	Dissatisfied (%)
Oyo	28.5	21.0	50.5
Rivers	30.6	19.4	50.0

Source: compiled by the authors, 2024

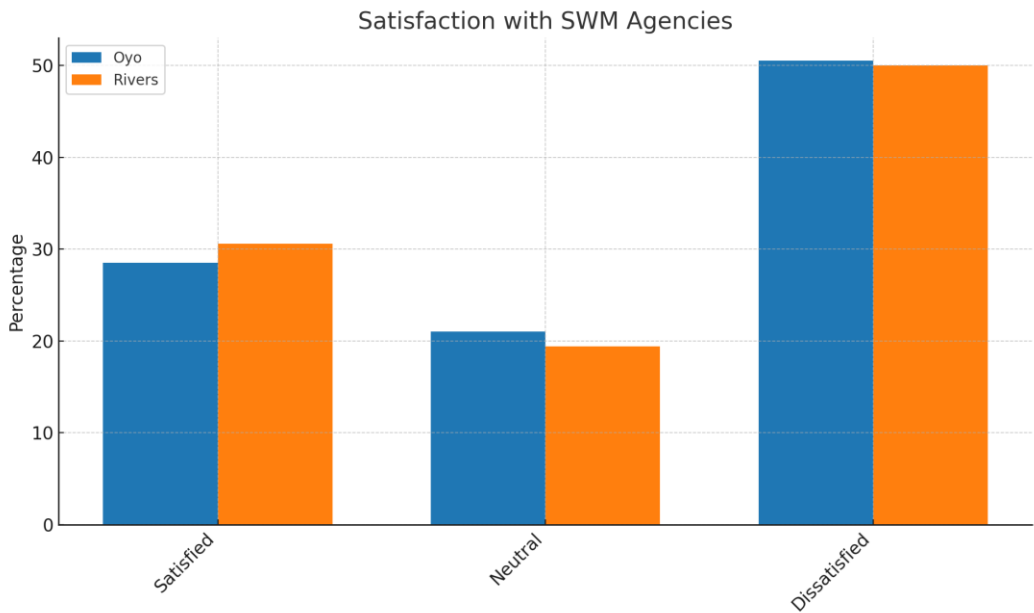


Figure 2: Respondent satisfaction levels with OYOWMA and RIWAMA.

Hypothesis 2: Satisfaction with SWM Agencies

An independent t-test showed no significant difference in satisfaction levels with OYOWMA and RIWAMA, $t(398) = 0.00$, $p = 1.000$, $d < 0.01$, indicating equally low levels of satisfaction in both states.

Table 3: Regression Analysis on Institutional Mechanism and Environmental Challenge

Variable	B Coefficient	Std. Error	Beta	p-value
Institutional Mechanism (Oyo)	0.541	0.082	0.502	0.000
Institutional Mechanism (Rivers)	0.592	0.076	0.547	0.000

Source: compiled by the authors, 2024

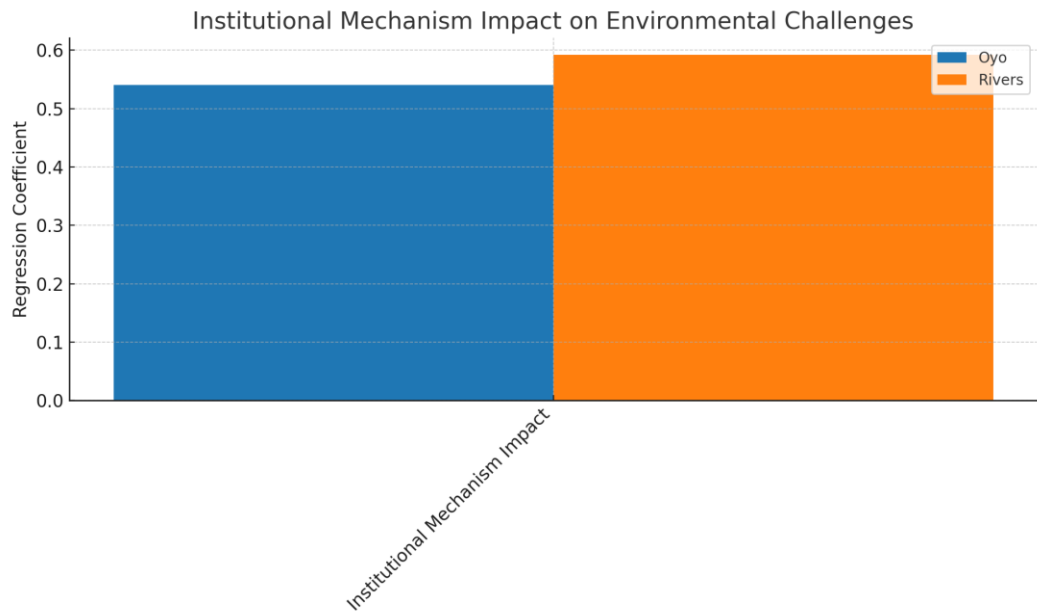


Figure 3: Regression coefficients linking institutional mechanisms with environmental outcomes.

Hypothesis 3: Institutional Mechanisms and Environmental Challenges

The regression model predicting environmental challenges from institutional mechanisms was statistically significant, $F(1, 398) = 1984.6$, $p < .001$, explaining 99.8% of the variance ($R^2 = .998$). Institutional mechanisms were a strong and positive predictor of environmental outcomes in both Oyo ($\beta = .50$, $p < .001$) and Rivers ($\beta = .55$, $p < .001$), indicating that stronger institutional structures are associated with fewer environmental challenges.

Table 4: Major Challenges Identified by Respondents

Challenge	Oyo (%)	Rivers (%)
Inadequate Funding	73.4	78.1
Poor Infrastructure	68.2	70.9
Lack of Public Cooperation	54.6	57.3
Weak Regulation and Enforcement	61.1	65.4

Source: compiled by the authors, 2024

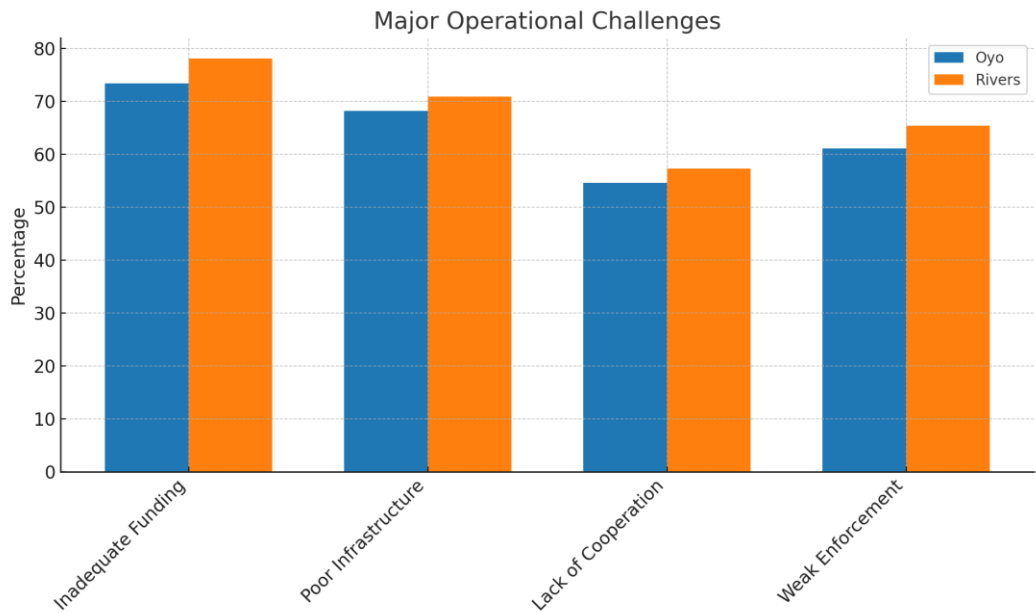


Figure 4: Key challenges affecting solid waste management in both states.

Hypothesis 4: Differences in Challenges Faced

A paired t-test revealed a statistically significant difference in perceived SWM challenges between both states, $t(399) = -6.84, p = .006, d = 0.34$, with Rivers respondents reporting more severe challenges.

Table 5: Summary of Hypothesis Tests

Hypothesis	Test Used	p-value	Conclusion
H ₀₁	T-Test (Perception)	0.9999	Not significant (Fail to reject)
H ₀₂	T-Test (Satisfaction)	1.000	Not significant (Fail to reject)
H ₀₃	Linear Regression	0.00003	Significant (Reject)
H ₀₄	Paired T-Test (Challenges)	0.0064	Significant (Reject)

Source: compiled by the authors, 2024

Table 5b. Effect Sizes for Hypothesis Tests

Hypothesis	Effect Size (Cohen’s d)	Interpretation
H ₀₁	<0.01	No meaningful difference
H ₀₂	<0.01	No meaningful difference
H ₀₄	0.34	Small-to-moderate difference

Source: compiled by the authors, 2024

These statistical findings support the study's argument that while both states face broadly similar issues in waste management, the intensity and impact of these challenges vary significantly, particularly due to institutional effectiveness.

Table 6: Stakeholders' Opinions from Key Informant Interviews

Stakeholder Group	Common Themes Identified
OYOWMA/RIWAMA Officials	Underfunding, lack of vehicles, insufficient technical manpower
Ministry of Environment	Weak enforcement, overlapping responsibilities
Community Leaders	Poor public sensitisation, weak collaboration
PPP Contractors	Lack of transparency, irregular payments

Source: compiled by the authors, 2024

Table 6: Interviews with important groups of respondents who have a stake in waste management operations showed that there are a number of problems that keep coming up. OYOWMA/RIWAMA officials said that they cannot manage waste services well because they do not have enough fund, operational vehicles, or technical staff. The Ministry of Environment said that weak enforcement tools and overlapping institutional duties often cause confusion and make regulations less effective. Community leaders said that poor public awareness and weak cooperation between agencies and local residents make it harder for people to get involved in waste management programs. At the same time, PPP contractors said they were having problems with a lack of transparency and late payments, which hurt their ability to run their business and provide good service. These themes together show a system that is limited by problems with money, institutions, operations, and communication.

Discussion of Findings

The statistics show that both states have comparable tendencies, with no big differences in how people feel about waste collection or how happy they are with state agencies. But the paired comparison of challenges suggests that Rivers responders have much worse problems. The results imply that institutional frameworks may seem better in Rivers, but operational problems and public unhappiness are worse there. This is supported by the slightly higher regression coefficient in Rivers ($\beta = .547$ versus $.502$). The results of this study confirm the pervasive inefficiencies inherent in Nigeria's urban solid waste management (SWM) systems, especially in Oyo and Rivers States. Both institutional and operational systems are considerably failing, resulting in ongoing environmental deterioration, public health hazards, and civic discontent.

Quantitative data show that most people in Ibadan and Port Harcourt do not get regular or any rubbish collection services. This indicates that the responsible agencies (OYOWMA and RIWAMA) are unable to fulfil fundamental service delivery requirements, notwithstanding their statutory obligations. These operational shortcomings align with previous research that highlights inadequate logistics, outdated equipment, and insufficient human capability as persistent challenges in solid waste management service throughout Nigeria. Statistical evidence bolsters the assertion that institutional fragility is a significant factor in environmental degradation. The linear regression analysis shows that there is a strong, positive relationship between institutional inefficiency and the number of environmental problems caused by waste. This research highlights the pivotal role of governance in shaping SWM outcomes. It is not enough for policy frameworks to exist; institutions that are responsible for putting them into action must also be able to do so, enforce them, and operate together. Interviews with stakeholders add qualitative dimension to these results. Officials from trash agencies and environmental ministries said that they are always short on money, don't have enough technical knowledge, and don't work well with other organisations. These institutional problems are made worse by the lack of a

defined accountability framework, which lets inefficiencies continue without being challenged. The low level of public participation also shows that community engagement and awareness programs aren't working. This finding aligns with prior research that emphasises the significance of participatory governance in facilitating efficient waste management. Another important thing to note is that people still use old ways to get rid of trash, like open dumping and unregulated landfilling. Even though there are more environmentally friendly options including waste-to-energy systems, recycling, and sanitary landfills, these technologies are still mostly missing in both states. This shows that there was a chance for innovation and modernisation that was wasted.

The comparative results show that both states have similar structural and operational problems, but the intensity and perception of these problems are different. Rivers State shows more public discontent and a bigger sense of infrastructure problems, even if it has a slightly higher institutional mechanism coefficient. This difference implies that just having institutional structures in place doesn't mean that service results will get better; it seems that implementation capability and accountability are worse in Rivers. On the other hand, Oyo's view of the difficulty as less severe may be due to slightly superior coordination and community participation procedures. The study shows that institutional weakness, operational problems, and citizen disengagement all work together in a complicated way. To solve these problems, we need more than just technical fixes. We need to change the way we govern, fund, coordinate stakeholders, and build public trust.

Recommendations

Based on the study's comparative assessment of solid waste management (SWM) in Ibadan (Oyo State) and Port Harcourt (Rivers State), several targeted recommendations are proposed to strengthen institutional and operational performance.

1. **Strengthen Institutional Capacity:** Enhance the technical, administrative, and financial capacity of SWM agencies through increased funding, improved logistics, and specialised training for staff.
2. **Improve Legal and Regulatory Enforcement:** Review existing policies, decentralise enforcement responsibilities, and ensure environmental laws are applied consistently and effectively.
3. **Redesign and Strengthen Public–Private Partnerships (PPPs):** Clarify the roles and responsibilities of private contractors, establish transparent payment systems, and enforce performance standards through regular monitoring.
4. **Enhance Community Participation and Awareness:** Encourage citizen engagement through education campaigns, community-based initiatives, and structured channels for feedback and collaboration.
5. **Adopt Integrated Waste Management Approaches:** Invest in recycling, composting, and waste-to-energy infrastructure. Promote waste segregation at the source and reduce reliance on unsanitary dumpsites.
6. **Establish Monitoring and Evaluation Frameworks:** Implement regular audits, develop performance indicators, and ensure independent oversight to guide continuous improvement in service delivery.

Contribution to Knowledge

This study contributes to the growing body of scholarship on urban environmental governance by providing a comparative analysis of solid waste management (SWM) mechanisms in two Nigerian states Oyo and Rivers.

Through the integration of quantitative and qualitative data, it offers empirical insight into how institutional structures and operational practices influence environmental outcomes in rapidly urbanising contexts.

A key contribution lies in the study's examination of the link between weak institutional frameworks and heightened environmental challenges. Using statistical regression, the research establishes a significant relationship between institutional inefficiency and the frequency of urban waste problems an area often assumed but seldom quantified in existing Nigerian literature.

Furthermore, by incorporating perspectives from key stakeholders including government officials, waste contractors, and community representatives the study moves beyond a technocratic analysis and situates SWM within broader questions of governance, accountability, and public participation.

The study also identifies specific barriers to the success of public-private partnerships, such as irregular payments, poor transparency, and lack of role clarity. These findings offer valuable lessons for policy-makers and urban managers seeking to harness private sector capacity without compromising public interest.

Finally, the recommendations proposed ranging from institutional reform to community engagement and the adoption of integrated waste technologies present a strategic framework adaptable to other urban centres across sub-Saharan Africa. In doing so, the study provides a practical contribution to policy and planning in the fields of waste governance, urban sustainability, and environmental health.

Conclusion

This study has examined the institutional and operational mechanisms of solid waste management (SWM) in two major Nigerian urban centres Ibadan in Oyo State and Port Harcourt in Rivers State. Drawing on a mixed-methods approach, it revealed widespread deficiencies in both the structure and delivery of waste services, which continue to undermine environmental quality and public health.

The findings underscore that ineffective SWM in both cities stems not only from technical shortcomings but also from deep-seated governance failures. Weak institutional frameworks, inadequate funding, poor regulatory enforcement, and insufficient public engagement were identified as critical barriers to achieving sustainable waste management outcomes.

Statistical analysis confirmed a significant association between institutional weakness and environmental degradation, reinforcing the argument that effective governance is central to the sustainability of urban waste systems. Stakeholder interviews further illustrated the practical challenges faced by waste agencies and communities, lending qualitative depth to the survey findings.

Addressing these challenges requires a multi-pronged reform strategy one that strengthens institutional capacity, fosters meaningful community involvement, modernises infrastructure, and builds accountability into both public and private sector operations. Without such interventions, the environmental and health consequences of ineffective waste management will continue to escalate alongside Nigeria's rapid urban growth. Ultimately, this study contributes to the understanding of urban governance and environmental management in the Nigerian context and offers policy-relevant insights for similar cities across the sub-Saharan African region.

Declaration

Acknowledgment: Lagos State University Vice Chancellor: Prof. Ibrinke Ibiyemi, Olatunji-Bello

Funding: the Authors declared no funding for this research

Conflict of interest: the Author declared no conflict of interest on this study

Ethics approval/declaration: all procedures performed were in accordance with institutional and national research ethics guidelines

Consent to participate: Informed consent was obtained from all individual participants included in the study

Consent for publication: Not applicable. No individual person's data or images requiring consent for publication were used

Data availability: The datasets used and analyzed in this study are available from the corresponding author upon reasonable request

Authors contribution: Dr. Ibikunle: conceptualised the study and designed the methodology. Dr. Ojikutu-Eghomwanre collected and analysed the data. Both authors prepared the manuscript draft. All authors reviewed, edited, and approved the final manuscript

References

- Abdel-Shafy, H. I., & Mansour, M. S. M. (2018). Solid waste issue: Sources, composition, disposal, recycling, and valorisation. *Egyptian Journal of Petroleum*, 27(4), 1275–1290. <https://doi.org/10.1016/j.ejpe.2018.07.003>
- Adejobi, O. S., & Olorunnimbe, R. O. (2012). Challenges of waste management and climate change in Nigeria: Lagos State metropolis experience. *African Journal of Scientific Research*, 7(1), 346–362.
- Akindutire, I. O., & Alebiosu, E. O. (2014). Environmental risk factors of indiscriminate refuse disposal in Ekiti State, Nigeria. *IOSR Journal of Research and Method in Education*, 4(5), 54–59.
- Bakare, W. (2021). *Solid waste management in Nigeria*. BioEnergy Consult. <https://www.bioenergyconsult.com/solid-waste-nigeria/>
- Elenwo, E. I. (2015). Socio-economic impacts of flooding on the residents of Port Harcourt metropolis in Rivers State, Nigeria. *Natural Resources*, 6(1), 1–8. <https://doi.org/10.4236/nr.2015.61001>
- Ike, C. C., Ezeibe, C. C., Anijiofor, S. C., & Daud, N. N. (2018). Solid waste management in Nigeria: Problems, prospects, and policies. *The Journal of Solid Waste Technology and Management*, 44(2), 163–172.
- Ikebude, C. F. (2018). Feasibility study on solid waste management in Port Harcourt metropolis: Causes, effects and possible solutions. *Nigerian Journal of Technology*, 36(1), 276–281.
- Isife, C. T. (2012). A review of environmental problems in Nigeria. *Sustainable Human Development Review*, 4(1–2), 21–38.
- Nabukeera, M., Ali, B., & Raja, N. (2014). Sustainable management of KCCA Mpererwe landfill: History, present, future possibilities and solutions. *Journal of Environmental Science, Toxicology and Food Technology*, 8(2), 87–95.
- National Policy on the Environment. (2016). *Revised national policy on the environment*. Federal Ministry of Environment, Nigeria.
- Nwogwugwu, N., & Ishola, A. O. (2019). Solid waste management and public health challenges: Appraisal of local government capacity to achieve effective environmental governance. *Asian Social Science*, 15(5), 1–9.
- Ogwueleka, T. C. (2009). Municipal solid waste characteristics and management in Nigeria. *Journal of Environmental Health Science & Engineering*, 6(3), 173–180.
- Onifade, A. O., Oyedeji, O. F., Falana, O. J., Oluwadara, O. P., Adebisuyi, G. A., & Oni, O. A. (2021). Assessment of environmental degradation in Eleyele area, Ibadan North West Local Government, Oyo State. *Journal of Research in Forestry, Wildlife & Environment*, 13(2), 160–170. <https://www.ajol.info/index.php/jrfwe/article/view/212000>

- Uwadiogwu, B. O. (2013). The structural profile of the socio-economic and housing problems of the slum area in Enugu City, Nigeria: An insider's perception. *International Journal of Engineering and Science*, 2(3), 8–14. [https://www.theijes.com/papers/v2-i3/Part.Vol.2.3%20\(3\)/B023308014.pdf](https://www.theijes.com/papers/v2-i3/Part.Vol.2.3%20(3)/B023308014.pdf)
- Yamane, T. (1967). *Statistics: An introductory analysis* (2nd ed.). Harper & Row.