



RESEARCH ARTICLE

EVALUATING THE IMPACT OF ENVIRONMENTAL PROTECTION POLICIES IN PROMOTING SUSTAINABLE WASTE MANAGEMENT IN OYO STATE

AMIN AMIN, GEETTO AYISHAT AROMOKE, ABIOYE WASIU OLATUNJI

^{1,2&3} Department of Public Administration, Institute of Finance and Management Studies, Kwara State
Polytechnic, Ilorin, Nigeria.

ABSTRACT

The study examined the effectiveness of environmental protection policies on waste management in Oyo State and found that despite existing frameworks, challenges such as poor infrastructure, weak enforcement, and low public awareness persist. The study adopted Polluter Pays Principle (PPP). Using both quantitative and qualitative methods, data were collected from 191 respondents across government ministries, recycling agencies, health professionals, environmentalists, and residents, with 188 valid responses analyzed through SPSS. The findings from the study in Oyo State revealed that a significant majority (89.3%) of respondents agreed that the policies consider the specific needs of different communities with participatory approaches playing a crucial role in enhancing decision-making. Additionally, 79% of respondents recognized that the policies have contributed to a reduction in the overall amount of waste generated in the state. 83% of respondents noted an improvement in cleanliness and overall environmental conditions, partially attributed to the Polluter Pays Principle (PPP), which has helped improve household and community cleanliness. The study recommended that the Oyo State should expand and maintain waste management infrastructure by repairing and increasing the fleet of waste collection trucks and collaborating with local governments to maximize existing infrastructure, overseen by the Oyo State Rural Supply and Sanitation Agency.

Keywords: Environmental protection, Oyo, policies, sustainable, waste

Corresponding Author

Amin Amin

Email Address: aminaminolohunoyin@gmail.com

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INTRODUCTION

Environmental protection policies play a critical role in promoting sustainable development by addressing the growing challenges of waste management. Globally, waste generation has increased significantly due to population growth, urbanization, and rising consumerism, with developing countries bearing a disproportionate burden (World Bank, 2018). In Nigeria, and particularly in Oyo State, these trends have created mounting pressure to manage waste sustainably to safeguard public health, environmental integrity, and economic productivity (Adewuyi & Oyekunle, 2020).

Sustainable waste management entails effective waste collection, treatment, recycling, and disposal while minimizing environmental harm and promoting resource recovery (United Nations Environment Programme, 2019). In Oyo State, environmental protection policies are designed to improve waste management practices, reduce illegal dumping, encourage recycling, and raise public awareness about proper waste disposal methods (Olawale & Adebayo, 2021). Despite these efforts, challenges persist. These include inadequate infrastructure, weak enforcement of regulations, limited public participation, and financial constraints (Adelakun et al., 2018).

Effective waste management is a critical component of sustainable development, yet it remains a significant challenge in many developing regions, including Oyo State, Nigeria. Despite the introduction of environmental protection policies aimed at improving waste management systems, the state continues to face issues such as poor infrastructure, weak enforcement of regulations, and inadequate public awareness (Adelakun et al., 2018; Oyebode & Fakorede, 2022). These challenges have resulted in widespread improper waste disposal, increased environmental degradation, and associated health risks, as seen in cities like Ibadan, where open dumpsites and clogged drainage systems have become commonplace (Adewuyi & Oyekunle, 2020).

Current policies appear to lack the necessary framework for comprehensive implementation, leading to gaps in areas such as recycling, waste treatment, and public participation (Olawale & Adebayo, 2021). For example, despite the establishment of waste collection agencies, the majority of waste generated in Oyo State is neither collected nor treated, often ending up in waterways and open spaces (United Nations Environment Programme, 2019). Financial constraints and limited technical capacity further exacerbate the situation, making it difficult to achieve sustainable outcomes (World Bank, 2018).

While studies have highlighted the importance of environmental policies in addressing waste management issues, there is insufficient empirical evidence on the effectiveness of these policies in Oyo State. This gap in knowledge hinders efforts to refine and enhance policy frameworks to meet the state's unique challenges. This situation underscores the need for a critical assessment of the impact of environmental protection policies on sustainable waste



management in the state. Hence, the general objective of this study is to evaluate the impact of environmental protection policies on sustainable waste management in Oyo State.

EMPIRICAL REVIEW AND THEORITICAL FRAMEWORK

Empirical Review

Samuel and Olamide (2016) worked on an assessment of environmental sanitation and solid waste management in Ibadan North Local Government, Oyo State, Nigeria. The adopted Structural functionalist theory and theory of planned behaviour were used as the theoretical framework. The study employed a descriptive survey design. The sample for the study was 408 respondents selected through a combination of cluster and purposive sampling techniques. The study relied on both primary and secondary data. Findings from the study revealed that environmental sanitation and solid wastes are managed by a combination of agencies at both state and local government levels as well as private agencies.

The study also showed that residents in the Ibadan North local government area have positive attitudes concerning some aspects of environmental sanitation but have negative attitudes towards other aspects of solid waste management. The study recommended that there should be continuous enlightenment of residents, and strict enforcement of sanctions and rewards for good waste management practices to enhance the effectiveness of solid waste management in the Ibadan North local government area.

Onuminya and Nze (2017) worked on an appraisal of waste management in the Lagos metropolis: a case study of the Lagos State Waste Management Authority (LAWMA). The data collected was analyzed using inferential statistics. The study revealed that Lagos State Waste Management Authority (LAWMA) is the body responsible for the collection of waste in Lagos State by keeping plastic refuse bins at designated locations in the metropolis. The finding from the study showed that waste accumulation occurs when waste isn't readily disposed and this leads to filth, diseased conditions and poor aesthetic appeal.

Findings also showed that the respondents are aware of LAWMA activities in Lagos State and they noted that waste is evacuated on the average of once a week by the use of LAWMA truck. The study recommended that the government should ensure the regular maintenance of the trucks used by LAWMA as well as public education, orientation and awareness programs on proper waste handling through the mass media while LAWMA should increase the frequency of waste collection in the state to ensure sustainable environment.

Ogunleye and Uzoma (2018) wrote on solid waste generation and management techniques in Ado-Ekiti, South-West, Nigeria. The work relied on both primary and secondary sources. Findings from the study showed that there was a significant difference in the method of waste disposal adopted in the study area. The study recommended that a reduction in the cost of



waste collection by the waste management companies will encourage people to pay for their services thus giving the waste management companies full control of waste collection and management resulting in sustainable waste management.

Ayodeji, Sunday, Olabisi, Moses, Samson, Olufunmilayo and Solomon (2019) worked on an impact assessment of the current waste management practices in Nigeria. The study revealed that waste management practices differ from nation to nation depending on the waste sources, types, and characteristics. Findings from the study showed that current waste management practices in the nation are fast becoming a national issue and unsustainable, leading to apparent environmental risk. The study showed that the existing waste management methods are ineffective and the demand for an all-inclusive waste management approach, proper execution, and enforcement of environmental regulations and laws.

Ogedengbe and Alohan (2019) evaluated the Oyo State Environmental Protection Agency's activities in the realm of environmental protection. In the relentless pursuit of survival, humanity has historically subjected the environment to various forms of exploitation and exploration. This trend has intensified with technological advancements crucial for industrialization. The biophysical environment is experiencing degradation, occasionally of an irreversible nature, due to the combined pressures of population growth and technological progress. The collected data underwent analysis using straightforward statistical methods, revealing that the Agency grapples with a multitude of challenges primarily stemming from inadequate funding, leading to inefficient program implementation.

Alabi, Kasim and Lasisi (2020) worked on the challenges and opportunities presented by Public-Private Partnership (PPP) in residential solid waste management in Ibadan, Nigeria. The research delves into the dynamics of waste management in Ibadan, drawing data from the Oyo State Solid Waste Management Authority (OYOWMA). The findings underscored that organic wastes were the most commonly generated, revealing a significant gap between waste generation and collection. Over the period from 2012 to 2015, city waste managers handled and transported 2,411,145.78 metric tonnes of waste to four sub-optimally located dumpsites in Ibadan. However, despite this intervention, the practice of indiscriminate dumping persisted as a cost-effective means of waste disposal, posing implications for drainage systems and flooding. The study advocates for a shift towards waste sorting, recycling, and conversion, emphasizing the need to integrate informal waste managers into the urban waste management framework. This multifaceted approach aims to address the challenges and unlock the opportunities associated with PPP in residential solid waste management in Ibadan.

Jenny and Tim (2021) explored how the positive feeling associated with recycling, known as the warm glow, can paradoxically lead to increased wasteful behaviour. Findings indicated that when individuals are presented with alternatives such as transforming plastic packaging into clothing or repurposing unused bread into beer, which have gained widespread



popularity; the populace may psychologically perceive their waste creation as a positive contribution to the collective good, generating a sense of personal satisfaction (referred to as a warm-glow effect). The study contended that these potential 'wasteful contribution' effects should be taken into account when evaluating the genuine sustainability benefits of specific recycling initiatives.

Van Zanten and Van Tulde (2021) underscore the critical role of companies in achieving the Sustainable Development Goals (SDGs) by adopting integrated and systemic approaches to sustainability. The study highlights the "nexus approach," which encourages companies to manage both positive and negative interactions with the SDGs in an interconnected manner. Instead of treating SDGs as separate entities, the nexus approach emphasizes creating "co-benefits" by advancing multiple SDGs simultaneously and mitigating "trade-offs" that may arise when progress in one SDG hinders another. This strategy provides companies with a robust framework for enhancing their societal and environmental contributions while avoiding superficial practices like SDG-washing.

The study employed an interdisciplinary analysis rooted in social-ecological systems, corporate sustainability, and sustainability sciences. The study recommended that companies should integrate the nexus approach into their sustainability strategies to effectively address the interconnections between various SDGs and advance multiple goals simultaneously. Organizations should create comprehensive sustainability strategies that align with broader societal and environmental objectives, ensuring progress towards the SDGs is both substantive and balanced. Firms should commit to genuine, measurable contributions to sustainable development to maintain credibility and avoid superficial or misleading practices.

Christia Tonni, Adipandang & Surjono (2022) studied on community-based waste management model in optimizing waste reduction. The concept of collect-transport-and-dump of waste in Indonesia has changed into reduce, reuse, and recycle (3R) since it causes environmental consequences that the Government of Indonesia (GoI) has banned including the open dumping practices since 2013. Goal targets 30% waste reduction by 2030, and some policies have been introduced to achieve the target including promoting a waste bank. The waste bank is an implementation of 3R involving the community. The number of waste banks is increasing since waste banks offer many benefits. Currently, there are 7600 waste banks nationwide. Through waste banks, the community learns to sort the waste. It also raises public awareness about waste issues and the importance of 3R. It becomes an innovation program at the grassroots level to increase income and support the local governments to improve the performance of waste management.

Letycja and Adam (2022) studied natural environment protection strategies and green management styles. The study adopted a Systematic Literature Review (SLR) supported by a bibliometric study performed in VOSviewer software. The study revealed that green integrity between the researched elements (the GMS and NEPS) influence organizations' decision-



making processes related to development path directions, social and environmental responsibility, workers' engagement, strategy communication, and organizational performance. Findings from this study showed that management style elements visible to employees and their understanding of the context in which an organization operates influence their expectations, actions, and commitment to work.

Yusuf, Adewoye and Sawyer (2022) investigated the opinions of Ilorin metropolis residents regarding the central storage of solid waste in the Kwara state of Nigeria. The findings highlighted significant concerns among stakeholders about inefficient waste collection and unsafe disposal practices in Nigeria. The study underscored the escalating nature of the waste problem in Ilorin, as daily waste generation outpaces evacuation efforts. Consequently, the situation of central storage for solid waste in Ilorin is increasingly distressing, emphasizing the pressing need for effective waste management strategies.

Mekonnen, Amanuel, and Terje (2022) explored the evaluation of stakeholder roles in community projects with a focus on the environmental security and livelihood improvement of impoverished rural societies. The study revealed that involvement of stakeholder participation enhances environmental security and uplifts the livelihoods of the impoverished in a rural Ethiopian community. The study recommended that non-governmental organizations adopt a grassroots approach to community projects to garner acceptance and trust as well as ensure project sustainability.

Amin, Raji and Salawu (2023) investigated the effects and obstacles associated with public policy in waste management for environmental security in Kwara State. Utilizing the Risk Society theory, the study encompassed a population of 3,259,613, with a sample size of 400. Among the distributed questionnaires, 361 were retrieved and analyzed. The findings indicated that public policies on waste management contribute to the efforts of officials to deter fraudulent activities. The study revealed that most respondents expressed that waste management regulations streamline staff operations. Financial constraints and security concerns emerged as significant challenges hindering the effective implementation of waste management in Kwara State. The paper recommended that the State Ministry of Environment and Forestry increase the deployment of environmental personnel to the State Environmental Protection Agency and allocate more capital to enhance its capabilities.

Salawu and Amin (2023) scrutinized Kwara State's environmental protection policies and strategies aimed at establishing sustainable waste management systems, adopting the theory of sustainable development. Utilizing both primary and secondary data, the study encompassed a population of 1207 individuals, including personnel from Ministries, Agencies, Associations, and the House of Assembly Committee on Health and Environment in Kwara State. The sample size was 400, and after distributing questionnaires, 365 were retrieved and analyzed using Statistical Package for Social Sciences version 21. The findings indicated a notable public awareness regarding the significance of environmental protection



and waste management in Kwara. The study unveiled the presence of a single approved dumpsite in the state and highlighted concerning low compliance with environmental and sanitation laws. The conclusion drawn was that although the Kwara state government creates awareness and enforces laws against violators, there exists stubborn resistance among many individuals. The study recommended the establishment of recycling and treatment plants by the Kwara State government. Additionally, there was a suggestion to augment the allocated funds for environmental conservation.

Amin, Moshood and Abdulrasheed (2023) focused on environmental protection policy trust on waste management in Kwara State, utilizing both primary and secondary data sources. The study involved a population and sample size of 32, with data analyzed using the Statistical Package for Social Sciences (SPSS) version 21.0 for efficient analysis. The study's findings highlighted that the Kwara State Environmental and Protection Agency (KWEPA) struggled to implement its policies due to financial constraints and insecurity in the state. Amin, Ambali, and Ishaq (2024) assessed strategies for the implementation of environmental protection regulations towards sustainable waste management in Oyo State, Nigeria. The study had a population of 369, with a sample size of 191, determined using the Krejcie and Morgan (1970) formula. To complement the quantitative data, an in-depth interview was conducted to gather additional insights from respondents. The findings revealed that Oyo State has approved the establishment of dumpsites, as well as launched awareness campaigns and educational programs focused on environmental conservation. Additionally, the study found that penalties and fines for improper waste disposal are being implemented. The study recommended that the Oyo State Government establish a recycling plant to convert waste into valuable resources and enhance public awareness and education campaigns. It also suggested strengthening and enforcing waste management regulations with strict penalties to deter illegal dumping and improper disposal.

Amin, Abdullahi, and Abdulrasheed (2024) investigated the effectiveness of environmental protection policies on sustainable waste management in Kwara and Oyo States, Nigeria, using Marxian Political Ecology theory. The study encompassed a population of 11,170,478, with a sample size of 400. Out of the 400 distributed questionnaires, 363 were completed, returned, and analyzed. Both primary and secondary data were utilized, and SPSS version 21 was employed for data analysis. The study found a notable lack of effective strategies for implementing environmental protection measures aimed at sustainable waste management in both Kwara and Oyo States. Additionally, most studies agreed that the state government and NGOs collaborate on joint activities and that the dumpsites are officially approved. The article recommended that the governments of Kwara and Oyo States establish recycling and treatment facilities and create additional dumpsites. It also suggests prioritizing environmentalists in hiring and placement decisions and advocating for the implementation of landfills instead of merely relying on dumpsites.



Amin, Ambali and Amin (2025) studied on an appraisal of regulatory frameworks on environmental protection policies and waste management in Kwara State, Nigeria. The study employed both primary and secondary data. The study population comprised 280 respondents, from which a sample size of 172 was determined using an appropriate statistical formula. Out of the 172 questionnaires distributed, 154 were duly completed and analyzed. Findings revealed that most respondents disagreed with the view that the frameworks neglected the principles of waste reduction, reuse, and recycling. Instead, they affirmed that clear guidelines exist for the safe handling and disposal of hazardous waste.

Additionally, the study showed that the regulatory frameworks have encouraged public participation and increased awareness of waste management practices within the state. The study recommended that policymakers strengthen collaboration with communities to design context-specific strategies that leverage local infrastructure, resources, and behavioral patterns to minimize waste and promote recycling. Regular monitoring and enforcement mechanisms should be enhanced to ensure compliance, while existing rules and policies should be revised to promote active stakeholder engagement in waste management services.

Theoretical Framework

The Polluter Pays Principle (PPP), propounded by the Organisation for Economic Co-operation and Development (OECD) in 1972. The principle assumes that those responsible for generating pollution should bear the costs of preventing, mitigating, or managing it, rather than transferring such burdens to the public or the government (OECD, 1972; Pearce, 1991). By internalizing environmental costs into production and consumption decisions, PPP encourages efficiency in resource utilization, fosters accountability, and stimulates innovation in cleaner technologies (Baumol & Oates, 1988). Its relevance to this study on environmental protection policies in Oyo State lies in its emphasis on accountability, as sustainable waste management requires holding individuals, households, and industries financially responsible for the waste they generate.

The study's findings support this theoretical perspective, as improved sanitation practices and waste reduction are closely tied to effective enforcement of polluter-focused policies. Several scholars have emphasized that PPP provides a strong framework for linking economic incentives with environmental outcomes by ensuring that the true cost of pollution is borne by its generators (Pearce, 1991; Baumol & Oates, 1988). However, critics have argued that PPP faces implementation challenges in developing countries where institutional capacity is weak, regulatory enforcement is inconsistent, and compliance costs may be unfairly shifted onto poorer communities (Panayotou, 1994; Whittington et al., 2015). For instance, Dasgupta et al. (2001) observed that in many low-income countries, weak environmental governance and lack of monitoring mechanisms undermine the effectiveness of PPP. Similarly, Blackman (2010) noted that informal sectors, which dominate waste generation in urban Africa, often operate outside the regulatory net, making it difficult to apply PPP uniformly.



To Turner et al. (1994), while PPP is theoretically efficient, its practical success depends on transparent institutions and strong political will conditions often absent in developing contexts. Despite these critiques, other scholars argue that PPP remains a valuable principle, as it can be adapted to local contexts through community-based monitoring, public-private partnerships, and gradual cost-sharing mechanisms (Barde, 1994; Sterner, 2003). This adaptability makes PPP highly relevant to Oyo State, where waste management challenges require not only regulatory enforcement but also inclusive strategies that ensure equity and sustainability.

METHODOLOGY

The study adopts thematic analysis. The population of this study was 380 drawn from the staff of Mottainai Recycling Ibadan, Oyo State Ministry of Environment and Natural Resources, Oyo State Ministry of Health, environmentalists, medical practitioners and residents. The sample size was 191 determined by Krejcie and Morgan's (1970) formula. A total of one hundred and ninety-one questionnaires (191) were distributed while one hundred and eighty-eight questionnaires (188) were returned correctly and analyzed using Package for Social Sciences (SPSS) Statistical software version 21. To complement the descriptive analysis, a key informant interview was also conducted.

$$X^2NP(1 - P) \div e^2(N - 1) + X^2P(1 - P) \dots \dots \dots 1$$

$$n = 3.841 \times 380 \times 0.5 \times 0.5$$

$$(0.05)^2 \times 380 - 1 + (3.841 \times 0.5 \times 0.5)$$

$$n = 364.895 \div 1.90775$$

$$n = 191$$

RESULT AND DISCUSSION

The impact of environmental protection policies in promoting sustainable waste management in Oyo State descriptively evaluated and the results presented in Table 1 differ based on the selected indicators. From the results, it is clear that 58.5 and 30.8 of the respondents, making a total of 89.3 percent in the sequence agreed that the environmental protection policies take into account the specific needs and challenges of different communities. The finding is similar to the previous study by Coenen (2009) who stated stakeholder participation enhances the quality and legitimacy of decision-making, ultimately yielding improved outcomes for environmental and livelihood challenges in rural society, which has been expressed by advocates of participatory approaches. The table also shows that 59 and 17, making a total of 79 percent of the respondents also agreed that the implementation of environmental protection policies has contributed to a reduction in the overall amount of waste generated in the State.



The table reveals that $46.3\% + 34\% = 80.3\%$ of the respondents agreed that the implementation of environmental protection policies has facilitated the development of sustainable waste management practices, such as composting and organic waste management. This result is similar to Joakim and Ingemar (2021) stated that public support for environmental policies is crucial for governments to enact effective environmental protection measures. According to Ahmed et al. (2022), the Federal Environmental Protection Agency (FEPA) Act serves as the legal foundation for waste management in Nigeria, and regulations have been implemented to ensure the promotion of a healthy environment.

Table 1: Analysis of Impact of Environmental Protection Policies in Waste Management

STATEMENTS	SD	D	U	A	SA	Total	Aggregate
The environmental protection policies take into account the specific needs and challenges of different communities.	5 (2.7%)	5 (2.7%)	10 (5.3%)	110 (58.5%)	58 (30.8%)	188 (100%)	Agreed
The implementation of environmental protection policies has contributed to a reduction in the overall amount of waste generated at the state.	12 (6.4%)	6 (3.2%)	7 (3.7%)	111 (59%)	32 (17%)	188 (100%)	Agreed
The implementation of environmental protection policies has facilitated the development of sustainable waste management practices, such as composting and organic waste management.	10 (5.3%)	24 (12.8%)	3 (1.6%)	87 (46.3%)	64 (34%)	188 (100%)	Agreed
Environmental protection policies have led to an improvement in cleanliness and overall environmental conditions.	17 (9%)	13 (6.9%)	2 (1.1%)	96 (51.1%)	60 (31.9%)	188 (100%)	Agreed
The environmental protection policies have encouraged collaboration between government agencies, private sector entities and civil society organizations for effective waste management.	6 (3.2%)	23 (12.2%)	10 (5.3%)	97 (51.6%)	52 (27.7%)	188 (100%)	Agreed
Environmental protection policies have encouraged the adoption of recycling initiatives and the establishment of recycling facilities.	15 (8%)	82 (43.6%)	14 (7.4%)	61 (32.4%)	16 (8.5%)	188 (100%)	Disagreed
The waste management infrastructure and facilities in the state are sufficient to handle the waste generated.	38 (20.2%)	71 (37.8%)	1 (.5%)	34 (18.1%)	44 (23.4%)	188 (100%)	Disagreed
The implementation of environmental protection policies has improved waste management practices.	25 (13.3%)	27 (14.4%)	4 (2.1%)	61 (32.4%)	71 (37.8%)	188 (100%)	Agreed
The environmental protection policies have raised public awareness about the importance of waste management and its impact on the environment.	26 (13.8%)	36 (19.1%)	9 (4.8%)	80 (42.6%)	37 (19.7%)	188 (100%)	Agreed
The State government has provided sufficient resources and support for the implementation of waste management policies.	8 (4.3%)	17 (9%)	5 (2.7%)	102 (54.3%)	56 (29.8%)	188 (100%)	Agreed

Source: Researcher's Field Survey (2023).



The Table also reveals that 51.1 percent and 31.9 percent, making a total of 83 percent of the respondents agreed that the environmental protection policies have led to an improvement in the cleanliness and overall environmental conditions. The result is similar to respondent 3 from Mottainai Recycling Limited that: The Polluter Pay Principles (PPP) introduced in the state helped the residents to improve cleanliness in their household and the entire environment. However, evacuation of household waste is not free. It attracts tokens based on the agreement with the waste contractor. Lishan, Bo, Tong, Liang and Ouwen (2023) demonstrated that the implementation of waste separation policies contributes to increased satisfaction and willingness to participate among residents in waste management.

Respondent 9 states that tackling refuse disposal in Ibadan has become problematic as it often brews one issue or the other for the government as well as those at the helm of affairs. From the time of the late Otunba Adebayo Alao Akala to the late Senator Abiola Ajimobi, it has always been a war between the government agents in charge on one side and contractors on the other side leading to abandoned heaps on major streets. Furthermore, Table 1 indicates that 51.6 and 27.7 percent, making a total of 79.3 percent of the respondents admitted that the environmental protection policies have encouraged collaboration between government agencies, private sector entities and civil society organizations for effective waste management.

The finding is in line with Ogungbuyi (2013) who confirmed that the private sector has been involved in solid waste collection in Ibadan for over 40 years. Business Day (2016) reported that the former Governor of Oyo State, Senator Abiola Ajimobi commended Sterling Bank Plc for partnering with the state government to make the state one of the most environmentally friendly states in the country. Governor Ajimobi accepted a uniform donation from Sterling Bank for Oyo State Waste Management Authority in Ibadan. The discovery aligns with Graham et al.'s (2003) assertion that the interactions and collaboration between government and non-governmental entities, along with established mechanisms and normative frameworks, play a direct or indirect role in influencing the utilization, management, and regulation of the environment.

On the basis of Oyo State Association of Waste Collectors, our assessment from the waste contractors revealed that the consultant provided Motainai Recycling company tickets for our services' monetary collection, with contractors bearing 100 percent of the operational costs. They characterized this arrangement as modern-day slavery, expressing concern that the governor might be unaware and that certain individuals were hindering direct communication. The contractors criticized the consultant for contributing nothing to their operations, leaving all operational expenses, including wages, maintenance, fees, and other costs, to be covered by them. They questioned why a government perceived as a friend of the masses would tolerate such conditions.



Respondent 6_{Oy} from the Oyo State Association of Waste Collectors states that: Such ugly practice of reducing the number of waste contractors from 500 to 700 to less than 200 in an attempt to minimize monthly obligations and increase revenue is counterproductive, resulting in more litter on roads and medians. Similarly, **respondent 6** from the Oyo State Association of Waste Collectors states that: The waste contractors, who have been silent in hopes of improvement, express growing frustration with the deteriorating situation under the Makinde-led government's commitment to a clean environment. They cite issues such as high-handedness, indebtedness, unreasonable charges, and job insecurity, alleging that the waste consultant, Mottainai Recycling Company, is hindering their efforts. Urgent concerns include direct payments to Mottainai's account and alleged exploitation, as contractors await payments for months despite substantial operational costs. The contractors criticize the consultant's lack of contribution to operations, labelling the situation as "modern-day slavery," and question the government's support for such practices.

The table also indicates that $43.6\% + 8\% = 51.6\%$ of the respondents disagreed that environmental protection policies have encouraged the adoption of recycling initiatives and the establishment of recycling facilities. Hashim et al. (2011) argue that initiating an awareness program to educate groups of people is crucial for implementing the 3Rs initiative. The table shows that $37.8\% + 20.2\% = 58\%$ of the respondents disagreed in Oyo state that the waste management infrastructure and facilities in the state are sufficient to handle the waste generated. The result is in line with **respondent 2** from Oyo State Rural Supply and Sanitation Agency says that: This agency is working in synergy with the local governments. It was around March this year that we held a meeting with the heads of the local governments that they have to bring their vehicles to us to complement the ones that we are making use of presently. The ones we inherited from the past government have gone down. Some are out of use. Local governments have 3 fords and 1 goliath vehicles each and we have 11 local governments in Oyo State. So we said that all of them should bring those vehicles. We are fuelling it and repairing it. The result aligns with Pellow's (2000) emphasis on the necessity for a fair distribution of waste management facilities and associated benefits. Abayomi (2022) recommends an increase in the recruitment of officers by state and local governments, emphasizing the potential employment opportunities for individuals who have received training but remain unemployed.

The table shows that $37.8\% + 32.4\% = 70.2\%$ of the respondents strongly agreed that the implementation of environmental protection policies has improved waste management practices. The findings corroborate a previous investigation conducted by Marti and Puertas (2021), indicating that environmental policies wield a significant influence on waste treatment practices. The table also shows that $42.6\% + 19.7\% = 62.3\%$ of the respondents agreed that the environmental protection policies have raised public awareness about the importance of waste management and its impact on the environment. The result is similar to Coenen (2009) who established that participation can educate citizens about environmental issues and empowers



them to advocate for their interests, fostering a more engaged and informed citizenry. The table also reveals that $54.3\% + 29.8\% = 84.1\%$ of the respondents agreed that the State government has provided sufficient resources and support for the implementation of waste management policies. **Respondent 9** states that heaps of refuse abound within neighbourhoods, capable of posing serious threats to the health and vitality of residents, if unchecked. The current poor state of our environment now that heavy rains have commenced provides an expose of the Makinde Government's cosmetic management of the waste disposal and attendant poor execution of road contracts, across the State.

Respondent 1 from Oyo State Ministry of Environment and Natural Resources states that: From time immemorial, in any government organisation, there is no way you cannot encounter financial challenges but we have been able to manage it one way or the other. If we run short of funds, we go to the head of the agency who will meet up with the Governor's office to source for money. For example, presently, we are suffering from a cash crunch. Money is no longer coming in. Our General Manager is trying anyway but the counterpart fund and the one coming from the government have been a great problem for us. Before, we made use of very many trucks in Ibadan Metropolis but now hardly can we get 10 trucks that function. And it is not that we don't have the competency or the expertise to handle the maintenance of the trucks and waste management but there is no money. Money is not forthcoming. That is why you can see refuse around. However, even when funds are approved, it may take months for the release because of the bureaucratic arrangements on the ground. This emphasizes one of the deficits associated with bureaucracy and can be very frustrating and could hamper the effective operations of the officials involved in environmental sanitation in the state (OYOWMA. 2014).

The improper collection and disposal of municipal wastes have resulted in various environmental challenges, including the obstruction of sewers, and drain networks, and the pollution of water bodies (Nwosu & Chukwueloka, 2020). Mafara and Magami (2017) noted that the careless disposal of solid waste has resulted in the blockage of sewers, and drainage networks, and the choking of water bodies. As observed by Kofoworola (2007), there is a lack of waste treatment, and as a result, collected waste transported to dumpsites is often burned to reduce volume, leading to air pollution and the release of harmful gases into the atmosphere.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study concluded that the implementation of environmental protection policies has had a significant impact on fostering sustainable waste management in Oyo State, Nigeria. These policies have contributed to notable improvements in cleanliness, reductions in waste generation, and the development of sustainable practices such as composting and organic



waste management. However, challenges such as insufficient infrastructure, operational conflicts, and inadequate funding persist, hindering the full realization of policy objectives.

Recommendations

First, policies should be tailored to address the unique needs and challenges of different communities while strengthening participatory approaches by actively involving community members and stakeholders in policy formulation and decision-making, with the Oyo State Ministry of Environment and local government authorities taking the lead. Public awareness and education programs should be intensified by educating residents about proper waste management practices, emphasizing environmental and health impacts, and promoting the adoption of the "3Rs" (Reduce, Reuse, Recycle), with the Oyo State Environmental Protection Agency (OYOWMA) and NGOs spearheading these efforts. Oyo state government should provide incentives for private sector investments in recycling facilities, establish accessible centres, and implement waste separation policies. These efforts should involve the Oyo State Ministry of Environment and private sector entities. Public-Private Partnerships (PPPs) should be strengthened by optimizing resource allocation and addressing conflicts between waste contractors and consultants through open communication and equitable agreements, led by the Ministry of Environment and private waste management contractors.

Additionally, adequate resources must be allocated for policy implementation by increasing funding for waste management agencies and expediting the disbursement of approved funds, a responsibility of the Oyo State Government and the Ministry of Finance. Institutional conflicts and operational challenges must be addressed through roundtable discussions among stakeholders and by reviewing contractual arrangements to ensure fairness and efficiency, with the Ministry of Environment and the Association of Waste Collectors playing central roles. The Oyo State should expand and maintain waste management infrastructure by repairing and increasing the fleet of waste collection trucks and collaborating with local governments to maximize existing infrastructure, overseen by the Oyo State Rural Supply and Sanitation Agency. Sustainable practices such as composting and organic waste management should be promoted through training and technical support for households and businesses, led by OYOWMA and community-based organizations. Regulatory enforcement must be strengthened by ensuring strict adherence to policies, introducing penalties for non-compliance, and supporting community efforts to comply, with the Ministry of Environment and law enforcement agencies taking charge. Finally, the performance of environmental protection policies should be monitored and evaluated regularly, with independent evaluators and researchers engaged to provide objective insights. This task should involve the Ministry of Environment and academic institutions.



Competing Interest

The authors have declared that no conflicting interest exist in this manuscript.

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