AN APPRAISAL OF SOLID WASTE MANAGEMENT IN EKITI STATE, NIGERIA

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Abstract
Due to rapid urbanization and development in Ekiti State, solid waste management has become a significant challenge that has affected deformed the aesthetic value and affected the healthiness of the inhabitants of the state. The study is a descriptive analysis of the policy framework of solid waste management practice and its implications for human security in Ekiti State. However, there has been a series of inclusive frameworks aimed at curtailing waste disposal. The policies have backslide with a lack of enforceable capability and inadequate physical and technological infrastructure to propel necessary changes to waste reuse in the country. The study adopted a survey design by the administration of one thousand respondents from Ado Ekiti residents. Ado Ekiti has one Local Government Area and three Local Council Development Areas (LCDAs). Respondents were selected purposively based on the four stratifications of Ado Ekiti. Two hundred and fifty copies of the questionnaire were administered in each of the four strata with a total of one thousand copies of the questionnaire retrieved for analysis. This study underpinned infrastructure, poverty, adherent to pit dumping and ignorance as challenges of waste disposal in the state. The findings revealed the poor policy on polluter day principle, biodegrade products and the need to build synergy between waste management and friendly environment. This study recommends among other, the need to integrate waste as a succour emergency to prevent epidemics.

Keywords: Solid Waste, Ecological Problem, Hazardous, and Waste Disposal Method**.**

Introduction

Due to rapid urbanization, solid waste management has become a big crisis. More than 55% of the World's populations are currently living in urban areas with estimation of 68% to be in urban areas by 2050 with increasingly challenges of to manage the wastes generated from the source (United Nations, 2018). This is because of devastation of rural economies and discouragements of agriculture, people migrate to cities with the hope of a better life. Facilities in urban areas such as job opportunities, education and health are the major reasons for rapid urban population growth in developing countries (Imam, Mohammed, Wilson and Cheeseman, 2007). Ekiti State is not exempted as the population of the State is growing rapidly daily. Ado Ekiti being the state capital is not immune from the proliferation and littering of wastes due to urban growth and development. These wastes are generated by households, commercial enterprises such as offices, hotels, supermarkets, shops, schools, institutions and local services such as street cleaning. Although, the State Government makes waste collection and disposal a priority in the state capital leaving other towns and villages unattended to which results in the proliferation of wastes within the state.

Thus, the Ekiti State Waste Management Authority was established by the Law No 7, 2000 and amended by the Law 18, August 21st, 2020 (Ekiti State Waste Management Authority, 2024). The Agency is saddled with the responsibility of keeping the state clean through regular collection of wastes from

individual houses, establishments, institutions, and other designated areas and dispose of wastes to avoid refuse palliation, environmental degradation and epidemic development. Also, the Agency sets guidelines and monitors private sector participation in the collection of wastes and in turn, increase the revenue generated for the state. However, the major challenge of waste collection and disposal by the Agency resources are limited but the towns and cities in Ekiti State are growing rapidly. While there are enough spaces where to dump wastes in Ado Ekiti and Ikere Ekiti, the resources to get to individual houses, establishments and corporation is inadequate.

Despite efforts aimed at reducing wastes through introduction of house to house collection of wastes in Ekiti State, there is no adequate integrated policy aimed at reducing waste generation (Ojeleye, 2021). Although, there is National Policy on Solid Waste Management in Nigeria which considerably annexing the waste reduction through proper maintenance, collection, transportation, reuse and disposal of waste through landfill method but this policy does not adequately address the challenges of wastes disposal at municipal areas. Solid wastes management is complex task that required all hands to be on deck from households, communities, private and public enterprises, industrial and municipal authorities to find appropriate mechanism aimed at handling, sorting, storage, transfer, treatment and reuse of wastes in the country. The country needs an integrated system that would provide holistic approach for improving waste disposal and reducing wastes generation in the country.

Despite several studies conducted on waste management in Nigeria (Onibokun, 1999; Imam et al., 2007; Amuda, Adebisi, Jimoda & Alade, 2014; Ilevbare, 2014; & Adewole, 2021), limited studies have been towards the effectiveness of waste management practices in Nigeria especially Ekiti State. Meanwhile, there is no adequate policy frameworks posited by scholars that addressed the challenges of waste management in Ekiti State and scholars, practitioners and policy makers are deviating from this study. The import of this paper is to unravel the solid waste management policies and its impacts on environmental security in Ekiti State.

Waste Management Practices and Human Security

Giroux (2014) investigated the operation of solid waste management in Canada. They observed that the solid waste management was effective in many states in the country compared to where the private sector and municipalities have options to the recycling services as a contracted service in states such as Ontario (50%), Manitoba (80%), Quebec (100%), BC (100%), and Saskatchewan (75%) (Giroux, 2014).

Study by Ljiljana et al. (2009) investigated the impacts of environmental hazards caused by waste in Serbia; the authors portended that the environmental hazard to the remediation of damages caused by military operations that caused voluminous wastes in the environment. This study analyzed the impact of social tension caused by waste practices on the environment. The research condemned waste management practices in the Republic of Serbia, which posed risk to public health and the environment. The problems identified include lack of a database, pollution (air, water, and surface ground) caused by uncontrolled burning of refuses at dumpsites and landscape, degradation by improper waste disposal, and contamination of soil and water. Most cities affected by improper waste disposal in Serbia include Medredja and Western Balkan and others (Ljiljana et al, 2009).

Agarwal, Chaudhary and Singh (2015) understudied some waste management practices in India; they posited that there was geometric increase in waste generation in India due to increase in population and urban expansion which impacted the economic development of the country. In India, a private sector arrangement initiative was formed in 2004 tagged Special Purpose Vehicle (SPV) by Delhi Waste Management for collection,

segregation, and transportation of landfill site municipal wastes.

Study by Misra, Kaushal, Bhaskarwar and Grover (2021) investigated the waste management practices in India, the study posited that poor waste management practices of Urban Local Bodies (ULBs) are responsible for the solid waste palliations in urban areas in India. The study observed that improper and poor collection system, other waste streams like construction and demolition waste and drain de-silting also gets mixed in the MSW stream. This contributes to the heterogeneous composition and size of waste, which results in further difficulties during the treatment process. The findings of the study attested to the high volume of wastes generated in India with less that 70% of MSW is being collected, 12.45% is being processed or treated and the rest remains untouched.

Imam et al. (2007) attested how solid waste management in Abuja has no adequate policy framework to address the challenges encountered in the management of waste due to unfavourable economic environment, institutional, legislative, technical and operational constraints in the Abuja municipality. Fabiyi, Olatunji and Saadu (2021) interrogated how waste control improved on the wastes derived from the agricultural control, the study emphasised on the need for waste control which would cause for the reuse of the agricultural wastes to have improved fertilizer. However, the study observed generally that farmers recorded financial loss due to agricultural waste which could further cause serious setback because of toxicity for humans and environment (Fabiyi, Olatunji and Saasu, 2021). From these studies above, there is no proper legislation to address waste prevention and reduction from sources (manufacturing industries). There is a general lack of public awareness and concern regarding waste management. Fabiyi *et al.* (2021) argued that various methods adopted in Nigeria for the disposal of waste, were not appropriate and effective. The existing laws aimed at curbing indiscriminate dumping of waste are not functional in many cities in Nigeria such as Kaduna, Kano, Lagos and Port Harcourt, as the existing system suffers from unfavorable economy, weak institutional frameworks, and poor technical and operational capacities.

Amuda, *et al.* (2014) discussed some of the challenges of waste disposal in Nigeria including incoordination and overlapping functions of various agencies handling waste issues; inadequate technical capacities and lack of culture of maintenance for existing waste management facilities very limited private sector involvement lack of political will on the part of the government to facilitate effective collection and disposal methods; absence of voluntary compliance of citizens, poor data availability and assessment techniques. The study focused on the need to rework on the policy guidelines by many states in the country for the management of solid wastes. According to Amuda *et al* (2014), unplanned urban centers with increasing populations of rural-urban migration, if unchecked, would be burdensome to the development of the country. In addition, there is no comprehensive source of data available for the government and private sectors that waited to invest in waste collection to determine the volume of waste generated in both rural and urban communities. Most residential/household waste has been left to the hands of the state government to manage, transport, collect, and dispose of. There are few or no interventions from both the Federal and the Local Governments in solid waste management in Nigeria.

Ojeleye (2021) examined some of the solid waste management in some urban cities in Nigeria such as Kaduna, Abuja, Uyo, and Lagos. He argued that the present solid waste management in Nigeria is very rudimentary, inefficient, and unsustainable, characterized by a shortage of manpower, infrastructural facilities, poor waste collection, and management services with a low quantum of waste collected. Most urban cities are not really planned in Nigeria, while those with

planned smart cities have not been fully implemented.

Ilevbare (2014) linked the improper dumping of wastes to variety of ecological problems like bad odors, the occurrence of flies, attracting insects, and increasing flooding due to blocked drainages, canals, and gullies. In the study, Ilevbare (2014) argued that methane emissions from biodegradable wastes contribute to global warming and local hazards, such as the risk of fires and explosions. In Nigeria, improper waste management also increases greenhouse gas (GHG) emissions, while contributing to climate change planning for implementation of Human activities such as eating, drinking, and running cause a rise in the generation of wastes, and because these wastes are handled carelessly, improper disposal, collection, and storage pose great risks to the environment.

Ojedokun (2012) posited that poor management of waste posed a great risk to environment. He noted that improper waste control is responsible for major outbreaks of diseases through waste pollution from liquor formed as waste decomposes, and even some carbon dioxide (Co_2) may remain in the landfill and not reform to the atmosphere as CO_2 thereby constituting causing great havoc in Nigeria. Although, waste collection, sorting, and picking of solid wastes have generated a lot of works in Nigeria, one of the major challenges is the inordinate behavioral inclination of the scavengers involved in the collection and picking of wastes around the dumping sites, private, and public buildings. Hoodlums are hidden under the canopy of being scavengers to perpetrate evils, such as kidnapping, and hostage taking an armed robbery. For instance, in Bauchi State, Nigeria, scavengers were arrested by villagers for robbery and kidnapping (Sani 2024). In Ondo State Nigeria, a scavenger was arrested for kidnapping an eight-year-old girl in Akure on 12th January, 2024 (Dada, 2024). Several reports of this nature were in newspapers on the activities of the hoodlums, taking advantage of being scavengers to attack people, terrorizing residents, and vandalizing people's properties within the country. It is argued that the scavengers used collection/picking of waste to gather information about households, as has happened in recent kidnapping.

The Federal Ministry of Environment (2015) identified some of the regulations and policy frameworks that governed waste management practices in Nigeria, (i) the FRN 1999 Constitution as amended, (ii) National Policy on Solid Waste Management, 2015 (iii) National Policy on Environment revised, (iv) Federal Environmental Protection Agency Act, 1992 (v) Environmental Impact Assessment Act, 1992 (vi) National Environmental (Sanitation & Waste Control) Regulations, 2012 (vii) The National Policy on Municipal & Agricultural Waste Management, 2012 (viii) National Environmental (Base Metal, Iron & Steel Manufacturing Recycling Industries Sector) Regulations, 2011 (ix) The National Spill Detection and Response Agency Act, 2005 and The National Environmental Standards and Regulations Enforcement Agency Act, 2007. The policy book posited that some of the regulations were ineffective in guiding the waste management practices in the country due to inadequate political will on the part of the government, ignorance of the citizens and inadequate infrastructural facilities of the waste agencies. There is a problem with a population explosion coupled with a lack of proper planning for urban development. This has affected many towns and cities in Nigeria, which have a growing number of people without appropriate plans; for urban explosions and solid waste management. There was no improvement in the lifestyle of the people after they migrated from rural areas to urban centers. With this increasing population, industrialization, and urban development, Nigeria is faced with ingenuity in handling the volume of waste generated from anthropogenic activities.

Theoretical Framework

This study hinges on the coalition advocacy framework popularized by Peter Sabatier in

1980s. This theory predisposes society to understand how the public process works. Research has shown that cultural orientation is a major factor influencing the waste disposal practices of the people of Ekiti and, unless the people's orientation is changed through collective efforts of all the stakeholders involved in the environment, major investments in waste management infrastructure may not achieve the desired outcome. Hence, the program will focus on influencing the attitude and behavior of the citizenry towards proper waste disposal practices. Managing wastes is a general challenge that could be tackled by community engagement and coalition advocacy. This would ensure that a concerted effort value-based tool in planning that would address core concerns of residents and stakeholders in the targeted community. Coalition successively requires an inclusive process that identifies issues and challenges with the aim of reaching consensus on how to address and remediate concerns. Coalition advocacy framework will ensure that there is public participation in waste management. The outcomes of coalition advocacy include enhanced communication and cooperation and shared responsibility between policy makers, stakeholders and the people. This would help hold both the general public and policy makers responsible for action and inaction which will truly reflect the vision and desires of the state.

Research Method

The study area is Ado Ekiti. Ado Ekiti was selected as the target area for government presence in the collection and disposal of waste in Ekiti. In addition, Ado Ekiti has the highest population in Ekiti State, with an unquantifiable volume of waste generated and disposed daily. Ado Ekiti has four strata: a city with one Local Government Area, and three Local Council Development Areas. The four strata were Ado LGA (Odo Ado), Ado Central (Ekute), Ado West (Basiri), and Ado South (Oke Ila). This study adopted a survey-based design. Data were collected through the administration of a structured questionnaire and the collation of their opinion on the effectiveness and challenges of the waste disposal method. These methods were used to obtain accurate data this study. The study adopted purposive sampling technique. One thousand copies of the questionnaire were administered within the selected municipal area of Ado Ekiti. Two hundred and fifty copies of the questionnaire were distributed in each of the four strata, with 1000 questionnaires administered and retrieved for analysis. The questionnaire was analyzed through descriptive analysis.

Results

Table 1: Statistics showing estimated waste in Ekiti State, 2019-2023

Year	Waste Generated	Waste Collected	Waste Recycled	Recycling %
2019	96,000 tons	13,500 tons	675 tons	5%
2020	108,000 tons	21,000 tons	1,470 tons	7%
2021	135,000 tons	27,000 tons	2,450 tons	9%
2022	167,500	33,000 tons	3,300 tons	10%
2023	189,800	45,000 tons	4,950 tons	11%

Source: Ekiti State Waste Management Authority (2024)

From the table 5.1, the capacities of the waste collectors were very small compared to the quantity of wastes generated in the state. From the record from the Agency, only Ado Ekiti out of 136 major towns in Ekiti State was the wastes collected by either government or private sector partners. Some of the types of waste generated and collected include kitchen waste, medical wastes, human waste, dry waste, sanitary pads, furniture, equipment (electronic), tyres and market waste.

Table 2: Types of Waste Generated

Types of Waste Generated	Frequency	Percent (%)
Kitchen waste	410	41
Medical waste	205	20.5
Human Waste	112	11.2
Dry Waste	98	9.8
Other wastes: Sanitary furniture, tyres	72	7.2
Electronic waste	65	6.5
Market Waste	38	3.8
Total	1000	100.0

Source: Field Work (2024)

The results of the descriptive analysis of the types of waste generated showed that 41% of the respondents identified kitchen waste as the highest waste type generated, followed by medical waste (20.5%). A total of 11.2% of the respondents identified human waste as another type of waste, followed by dry waste (9.8%). 7.2% of the respondents identified other wastes, such a sanitary pads, tyres, and furniture. A total of 6.5% of respondents identified market waste, while 3.8% and 15% of the respondents respectively identified to have disposed of electronic waste and medical waste within the Ado Ekiti metropolis.

Table 3: Waste Disposal/Collection

S/N	Description	Effective %	Ineffective %
1	house to house waste collection	36.1	63.9
2	Waste collection during festive season in the market	46	54
3	Waste deposited and collected at transmission station	48	52
4	Dumping waste and collecting from roads' medians	59	41
5	Waste dumping in the drainage canals forest ditches	69	31
6	Open waste burning	71	29
7	Street sweeping		

Source: Field Work (2024)

From the table on the effectiveness of the waste management method, it is clear that, the methods/policies put place by government were underutilized and ineffective for waste collection method. These methods such as house-to-house waste collection (36.1%), selective waste collection in a designated point during the festive season (46%), and waste deposited and collected in the transmission station (48%). While the usual practice of dumping waste by the citizens were considered by them as effective like dumping inside the drainage, canal, forest and distiches (69%) and open waste burning (71%).

Table 4: Challenges Facing Waste Collection

S/N	DESCRIPTION	YES	NO
1	Lack of infrastructure	98	2
2	poor funding of waste collection by Government	80	20
3	Non-compliance of citizens	85	15
4	Ignorance	69	31
5	Poverty	84	16
6	Lack of accessible road network to some buildings & houses	87	13
7	customs adherent of citizens to pit dumping	79	21

Source: Field Work (2024)

From the table above, there were evidences that the waste management in Ekiti State were challenged by lack of infrastructural development (98%), poor funding (80%), non-compliance of citizens to appropriate waste collection (85%), ignorance (69%), poverty (84%), lack of accessible road networks (87%) and adherent to custom of pit dumping and waste burning (79%).

Table 5: Impact of Solid Waste Management

S/N	DESCRIPTION	YES %	NO %
1	Death	85	15
2	unidentified diseases communicable diseases	95	5
3	reduced lifespan	89	11
4	environmental degradation Pollution	92	8
5	Climate Change	85	15
6	Insecurity	77	23
7	increase cost of personal health maintenance	92	8

Source: **Field Work (2024)**

In Table 5, the impacts of inappropriate disposal of waste in the state include death (83%), prevalence of unidentified diseases and communicable diseases (95%), reduced life span (89%), Environmental degradation and pollution (92%), climate change (77%) and increase in the cost of personal health maintenance ((92%).

Discussion of Findings

Though, the table 1 gave the annual estimation of wastes generated from 2019 to 2023, it was keenly observed that the volume of waste generated did not commensurate with the volume of waste evacuated and recycled in the state. A further investigation revealed that, the Agency in charge of waste collection and disposal in the state restricted its activities to the state capital. Even to increase the capacity of waste collection, in 2024, Ekiti State Waste Management Authority registered about 13 private waste collectors and their activities did not go beyond the State Capital and some cities in its environment such as Iworoko Ekiti and Ikere Ekiti leaving the other towns and villages unattended to (Ekiti State Waste Management Authority, 2024). The Local Government and other local council development authorities have no business related to the collection of wastes in the state. From all indication of the budgets of the all sixteen Local Government Councils in Ekiti State, issue related to waste management did not feature since 2019 under referenced. This made the volume of waste generated and collected to be far apart.

To critically understand the method of the waste collection adopted in the state, the effective ones were open waste burning, dumping at the street, canals, drainages and roads medians. This is apposite of death trap and antithetic to proper disposal of wastes in the state. This is in tandem with article published by Ljiljana *et al* (2009) that condemned waste management practices in the Republic of Serbia especially the cities of Medredja and Western Balkan due to uncontrolled burning of refuses at dumpsites and landscape, degradation by improper waste disposal, and contamination of soil and water. There is no legal capacity from various Federal, and State agencies managing wastes to prosecute illegal waste dropping defaulters, even; the pay-day system where people were arrested for dumping waste indiscriminately has not been effective. Most states in the country lack appropriate waste management infrastructure such as equipment, vehicles, disposal sites, treatment sites, incinerators, and other collection and disposal facilities. This makes collection and disposal challenging for both rural and urban slums. This was seriously affected by poor funding from the government. The government does not prioritize the management of waste as key to eradicate ecological problem and diseases-free nation or economic vantages (Amuda, *et al.*, 2014).

Table: 6: Budget Performance of Ekiti State Waste Management Authority, 2019-2022

Year	Budget approved	Actual Expenditure	Performance %
2019	106,400,000.00	79,914,200.00	75.1%
2022	60,400,000.00	0.00	0.00%
2021	137,752,124.00	12,815,599.00	9.3%
2022	80,000,000.00	0.00	0%

Source: Ekiti State Waste Management Authority (2024)

From the findings, it was confirmed that lack of infrastructure facility, poverty, adherent to pit dumping and ignorance are major challenges of waste disposal in the state. From the findings at the office, Ekiti State Waste Management Authority had 12 truck vehicles in which four of the vehicles were in good conditions and two other vehicles fairly used leaving more than 6 truck vehicles at the dying state. Even, most of these heavy truck vehicles could not be used to navigate the interior parts of the state capital let alone travel to a far distance to collect wastes. Most of the towns and villages had no dumping sites. The state has only for dumping sites all situated in Ado Ekiti leaving other towns and village under the mercy of dumping in the dunghill. There is a critical question whether; the state or federal governments make good investment in waste management in Nigeria? From the table 6, it is crystal clear that, Ekiti State Government did not make waste management a priority for a period of four years. Some of the capital budget on solid waste management in the state could not be accessed, and most of these funds were budgeted on infrastructure such as purchase of compactors, bulldozers, recycling machines, wheelie bins and dino bins. This is similar to the discovery of Ojeleye (2021) who argued that the present solid waste management in Nigeria is very rudimentary, inefficient, and unsustainable, characterized by a shortage of manpower, infrastructural facilities, poor waste collection, and management services with a low quantum of waste collected. Amuda, *et al*. (2014) identified some of the challenges of waste disposal including incoordination and overlapping functions of various agencies handling waste issues; inadequate technical capacities and lack of culture of maintenance for existing waste management facilities very limited private sector involvement lack of political will on the part of the government to facilitate effective collection and disposal methods; absence of voluntary compliance of citizens, poor data availability and assessment techniques, and lack of policy guidelines by many states in the country for the management of solid wastes.

From the findings, some of the impacts of the solid waste management practices that were identified include death, prevalence of communicable diseases, climate change, environmental degradation, and increase in cost of personal hygiene maintenance. The findings correlated with the scholarly contribution of Fabiyi et al. (2021) on the toxicity of solid waste to human and environment. Although, wheelie bins and dino bins were distributed by the government agency to strategic locations in Ado Ekiti such as GRA, GRA Extension, Egbewa, Basiri, and Ekute, public and private residential areas to ease waste collection, and disposal. Some of these wheelie bins were selective and separated using the can, paper/cardboard, plastics, and food waste. Most of these places were also assigned to private waste collectors (Williams Neat Nigeria Limited, DEVCOM Nigeria limited, and Waste Masters Integrated Services) for waste collection, transportation, and disposal. This arrangement was inadequately carried out using these disposal methods of house-to-house waste picking and was not collected regularly thereby polluting the environment.

Conclusion

Waste palliation is endemic to the society. Creating awareness for strategic solid waste management will go a long way to minimize the problems of waste collection and disposal. In addition, the government should strengthen the system for solid waste management by providing the necessary equipment, facilities, waste bins, and human resources for regular collection and disposal. Organic waste can be conveniently composted, and the remaining waste that cannot fit into this step can be reduced, reused, recycled, and composted. There is a need for Ekiti State Government to adopt the paradigm shift in policy framework on appropriate waste disposal to enhance the effective management of solid wastes, create a clean and healthy environment, and improve the economic conditions of the developing

nation. There is a need for attitudinal change to waste disposal in drainages, canals, forests, and waste burning in Nigeria, which culminate in erosion and disaster management problem.

Recommendations

This study recommends the need to integrate waste as a succor emergency to prevent the nation from being plugged into epidemics. Therefore, it is being advised in this study that some of ecological funds investment could be channelled towards the causes of the ecological problems and not dredging of the waterways. Many seas, oceans and waterways were encumbered by the deposition of wastes. There is a need for concerted efforts to address the root cause of the problem of the ecological problem which is indiscriminate dumping of waste through public awareness and provision of infrastructure for waste collections mechanism. While many impoverished are often under-served in community development decisions, the numbers of lives lost due to directly or indirectly due to the inappropriate waste disposal from 2019 to 2023 under referenced could be attributed to the carelessness and lack of veritable information on the danger of inappropriate waste disposal. Therefore, there is a need for community engagement on the usage of biodegradable materials, encourage reuse of materials and appropriate waste disposal method. This will align with the submission of Emeribe (2000) that environmental education and public participation is essential for proving environmental sustainability. Government should introduce waste management as subject from the elementary school for people to live a prudent and waste-free life. Also, there is a need for more involvement of local government in the administration and management of solid waste in Nigeria; this would include involving in collection of waste and enacting bye law that would discourage open burning and indiscriminate dumping of wastes.

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