

# ASSESSMENT OF PUBLIC PARTICIPATION IN SUSTAINABLE WASTE MANAGEMENT PRACTICES IN WUSE ABUJA

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Abstract: Sustainable waste management is critical for maintaining environmental health and public well-being, particularly in urban areas. This study, titled Assessment of Public Participation in Sustainable Waste Management Practices in Wuse, Abuja, aimed to evaluate household perceptions and practices regarding sustainable waste management. Employing a quantitative research design, the study utilized a structured questionnaire administered to 350 households in Wuse, Abuja, with 311 valid responses collected through random sampling. The questionnaire, designed on a 5-point Likert scale, measured variables related to sustainable waste management practices. Data analysis involved frequency analysis and the Relative Importance Index (RII) technique to assess the performance and perceptions of households. Key findings revealed that respondents prioritized daily waste disposal and promoting reuse practices, with high RII values for indicators such as "removing waste bags daily" (0.784) and "encouraging reuse" (0.779). Eco-friendly consumption and reducing single-use plastics also scored highly, while practices like compositing (0.684) and repairing items (0.677) were less emphasized, indicating gaps in awareness or accessibility. The study concludes that while households in Wuse prioritize daily waste management and eco-friendly consumption, there is a need for increased focus on composting and repair initiatives. Recommendations include enhancing public education and awareness campaigns to promote these underutilized practices, alongside strengthening infrastructure to support sustainable waste management. Community engagement and incentives for recycling and waste separation could further improve participation.

**Keywords:** Sustainable waste management, public participation, household waste practices, waste reduction, recycling, composting, eco-friendly consumption, Wuse Abuja, waste management strategies..

# 1.1 Background of the Study

Globally, solid waste generation is on the increase. Cities around the world in the year 2012 generated 1.3 billion tons of solid waste, amounting to 1.2 kg/capita/day of solid waste Gundupalli, Hait and Thakur, 2017). With the rapid increase in population and urbanization, and other factors such as improved standard of living with its attendant effects on consumption patterns, municipal waste generation is expected to increase by about seventy percent to 2.2 billion tons by 2025 (Gundupalli, Hait & Thakur 2017). Management of municipal solid waste in developing countries has come under much criticism, as most cities and municipalities cannot cope with the accelerated

level of waste generated (Nanda, S., & Berruti, 2021). According to United Nations (2011), the rate of waste collection is not matching the generation, as more often than not, less than 70 percent of the waste generated is collected in most low income countries; and more than 50 percent of the collected waste is usually disposed of through uncontrolled landfilling.

According to Abila and Kantola (2018), about 25 million tons of municipal solid waste is generated annually in Nigeria and the waste generation rates range from 0.66 kg/capita/day in urban areas to 0.44kg/capita/day in rural areas. While states in Nigeria have stateowned environmental protection agencies, with one of its primary tasks being the management of municipal waste; various studies (Bako, 2018; Ezeah, 2015) have shown that they largely collect and transport waste from dumpsites and street sides to landfills. And as is prevalent in most lowincome countries, Bakare (2020) Observed that in Nigeria less than half of the solid waste generated is collected, because of the inefficient waste management system. The increase in urban waste generation, coupled with the decrease in available landfill space, necessitates the implementation of comprehensive and costeffective waste diversion programs like reducing, reusing, and recycling (Robinson, Riley, Metcalfe, Barr, & Tudor 2015; Lakhan, 2015).

Recycling is the process of collecting and processing materials that would otherwise be thrown away as trash and turning them into new products. According to the United States Environmental Protection Agency (2016), recycling could be defined as the recovery of useful materials (such as paper, glass, plastic, metals, construction and demolition material) and organics from the waste stream (e.g. municipal solid waste), along with the transformation of the materials to make new products to reduce the amount of virgin raw materials needed to meet consumer demands. Recycling, in addition to being one of the strategies for managing solid waste, has other benefits. It promotes the conservation of natural resources such as timber, water, and mineral resources; and saves energy, which would otherwise have been used in the production of new goods from scratch. It creates jobs and also reduces greenhouse gas emissions, which harms the climate (Kofoworola 2017; BuchmannDuck, & Beazley, 2020). While there is growing global awareness of recycling practices (Anyasia & Atagana, 2017), comparatively, recycling activities are higher in developed nations than in developing nations. For instance, in the United States, over 30% of the solid waste generated is recycled while very low rates have been reported for developing nations, as only 15 percent of solid waste generated is recycled (Wright & Boorse, 2017).

In Nigeria, solid waste refers to the unwanted or discarded materials in a solid state that result from human activities and are disposed of by society. According to Vergara and Tchobanoglous (2012), municipal solid waste (MSW) typically encompasses all waste generated within a community, excluding industrial and agricultural waste. Common sources of MSW include residential, commercial, institutional, construction and demolition activities, municipal services (excluding treatment facilities), and municipal incinerators. Solid waste management (SWM) involves the organized and systematic handling of waste through pathways that ensure disposal in a manner that adheres to public health and environmental standards. As emphasized by Kofoworola (2017), effective waste management cannot be achieved without a wellstructured waste management plan.

Waste management is a significant challenge in Nigeria, with its environmental and health impacts being particularly pronounced in urban areas. SWM is a critical component of urban and environmental management in cities across the country (Latifah et al., 2018). However, municipal solid waste management (MSWM) remains a pressing issue, especially in rapidly growing cities

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like Abuja, due to its adverse environmental effects (Latifah et al., 2018; Adekunle et al., 2016). Human survival is inherently dependent on the environment, yet solid waste is one of the three major environmental problems in Nigeria, posing a threat not only to developing countries but also to developed nations (Ogu, 2020; Latifah et al., 2018).

In Wuse, Abuja, sustainable waste management practices are essential to address these challenges. Wuse, as a bustling commercial and residential district, generates significant amounts of waste daily, necessitating efficient and sustainable waste management systems. The area faces issues such as inadequate waste collection, improper disposal methods, and limited public awareness, which intensify environmental and health risks. Implementing sustainable waste management practices in Wuse, such as waste segregation, recycling, and community engagement, is critical to mitigating these challenges and promoting environmental sustainability in the study area.

### *Methodology*

The study employed a quantitative research design, utilizing a questionnaire survey approach to collect data. A total of 350 questionnaires were administered to households in Wuse, Abuja, using a random sampling strategy to ensure a representative sample. Out of these, 311 questionnaires were retrieved, valid, and usable for analysis. The questionnaire was structured in a 5-point Likert scale format, where a score of 5 was assigned to the most preferred descriptor and 1 to the least preferred descriptor, enabling the measurement of the study's variables. To analyze the data, the study adopted frequency analysis and the Relative Importance Index (RII) technique, which were used to assess the performance and perceptions of households regarding sustainable waste management practices. This methodological approach provided a systematic and reliable means of evaluating the study's objective.

#### Result

Table 1 presents a series of statements related to sustainable waste management practices. Each statement is associated with a set of values under the columns VL (Very Low), L (Low), M (Medium), H (High), and VH (Very High). These values represent the level of agreement or disagreement with the statement. The RII (Relative Importance Index) column provides a numerical score that indicates the relative importance of each statement.

 Table 1: Sustainable Waste Management Practices

Sustainable Waste Management Practices	VL	L	Μ	Η	VH	RII
I am keen to watch documentaries on environmental issues	19	30	57	119	86	0.743
I am careful to guide others to throw the waste in the allocated places only	19	34	74	98	86	0.727
I am currently separating household waste components into special containers or bags at home (food, plastic, glass, paper,)	14	27	67	110	93	0.755
I use some of my food waste to feed animals or fish	16	42	65	100	88	0.730
I use some food waste by turning it into fertilizer for agriculture	18	26	77	87	103	0.749
I reuse some waste components (empty plastic cans, etc.) in useful things	15	24	70	100	102	0.761
When I go on trip to places, I remove all the waste to allocated containers	18	51	29	95	118	0.757
Be sure to attend and participate in environmentalrelated events	21	46	38	84	122	0.754

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I encourage others to reuse some waste components to take its advantage	15	24	48	116	108	0.779
I buy environmentally friendly products (eg reusable water)	14	29	47	106	115	0.779
Make sure to remove the waste bags from my house daily at a specific time	12	33	46	97	123	0.784
I regularly participate in recycling programs.	23	33	53	95	107	0.748
I often reduce my consumption of singleuse plastics.	19	30	32	110	120	0.781
I Minimize waste generation through reducing consumption	19	36	49	110	97	0.748
I Minimize waste generation through practices like reusing items	19	26	60	111	95	0.752
I avoid waste through practices like composting	28	50	76	78	79	0.684
I avoid waste through practices like repairing items.	26	52	83	77	73	0.677



Fig. 1. Frequency of Sustainable Waste Management Practices

The Table presents the Relative Importance Index (RII) for various sustainable waste management indicators based on survey responses. The RII values range from 0 to 1, with higher values indicating greater perceived importance or frequency of the practice. Among the indicators, "Make sure to remove the waste bags from my house daily at a specific time" and "I encourage others to reuse some waste components to take its advantage" have the highest RII values, at 0.784 and 0.779, respectively. This suggests that respondents place significant importance on daily waste disposal and promoting reuse practices among others. Additionally, "I buy environmentally friendly products (e.g., reusable water)" and "I often reduce my consumption of singleuse plastics" also scored highly, with RII values of 0.779 and 0.781, indicating a strong preference for ecofriendly products and reducing plastic waste.

Practices such as "I am currently separating household waste components into special containers or bags at home," "I use some food waste by turning it into fertilizer for agriculture,"

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and "I regularly participate in recycling programs" fall into a moderately important category, with RII values of 0.755, 0.749, and 0.748, respectively. These practices are considered important but are slightly less prioritized compared to the top indicators. Similarly, "I Minimize waste generation through reducing consumption" and "I Minimize waste generation through practices like reusing items" also show moderate importance, with RII values of 0.748 and 0.752, reflecting a balanced focus on waste reduction strategies.

On the other hand, "I avoid waste through practices like composting" and "I avoid waste through practices like repairing items" have the lowest RII values, at 0.684 and 0.677, respectively. This suggests that composting and repairing items are less commonly practiced or perceived as less critical compared to other waste management strategies. The results highlight a strong focus on daily waste management and ecofriendly consumption, with moderate attention to recycling and waste separation. However, practices like composting and repairing items are less emphasized, suggesting a need for increased awareness and infrastructure to promote these sustainable waste management strategies.

# **Result Discussion**

The results of the study align with existing literature on sustainable waste management practices, which emphasize the importance of daily waste disposal, reuse, and ecofriendly consumption. Vergara and Tchobanoglous (2012) highlight that municipal solid waste management (MSWM) is a critical issue globally, particularly in urban areas, where daily waste disposal and proper segregation are essential for maintaining public health and environmental sustainability. The high RII values for daily waste disposal and reuse practices in this study reflect findings by Kofoworola (2017), who stresses that effective waste management requires systematic and organized approaches, including regular waste removal and promoting reuse among communities. Similarly, the emphasis on ecofriendly products and reducing singleuse plastics resonates with Adekunle et al. (2016), who note that sustainable consumption habits are increasingly recognized as vital for reducing waste generation in developing countries.

However, the lower RII values for composting and repairing items suggest a gap in awareness or implementation, which is consistent with observations by Latifah et al. (2018). They argue that while composting and repair initiatives are effective waste reduction strategies, they are often underutilized due to limited knowledge, cultural preferences, or lack of infrastructure. Ogu (2020) further supports this, noting that sustainable waste management in Nigeria faces challenges such as inadequate public awareness and insufficient support for innovative practices like composting.

# Conclusion

The findings highlight that respondents prioritize daily waste disposal, reuse practices, and ecofriendly consumption, as evidenced by the high RII values for these indicators. However, practices such as composting and repairing items are less emphasized, indicating a gap in awareness or accessibility. To enhance sustainable waste management, it is recommended to increase public education and awareness campaigns focused on composting and repair initiatives, while also strengthening infrastructure to support these practices. Additionally, promoting community engagement and providing incentives for recycling and waste separation could further improve sustainable waste management efforts.

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