Published by

British Journal of Contemporary Research

BEXFORD PUBLISHING

Improper Domestic Waste Collection and Disposal Activities in the FCT-Abuja: Implications for Environmental Health and Social Wellbeing of the Residents of Bwari Area Council, Abuja

Original Research Article | Volume 1 | Issue 6 | 2026 | Article Number: 005

Accepted: 12 October 2026 | Published: 10 November 2026 | ISSN: 2979-8582 (Online)

Crossref : **https://doi.org/10.67693/BJCR-Z8G2HX2N**

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Abstract

Improper waste collection and disposal practices have become both social and environmental problems in Nigeria. Indiscriminate refuse dumps are found by roads, rivers and many open spaces in cities and towns, resulting in environmental health hazards to the people. Despite various government efforts in the waste sector, it has been a sour story of ineffective waste management services. This study therefore, investigates the domestic waste storage collection and disposal practices, and consequences of improper waste activities in Bwari Area Council, one of the six (6) area councils in the FCT. A statistical research design was adopted using a structured questionnaire in data collection from 384 sample sizes attained from Freud and Williams statistical formula. However, a return rate of 95% was achieved with 365 respondents through a stratified and systematic random sampling techniques. This study found that there is lack of usage of approved government waste disposal receptacle (waste bins); waste collection and disposal practices are done majorly through the informal sector (mai boola or mai sharra) in contravention of the rules and regulations guiding the solid waste management system in FCT; and, improper waste disposal activities lead to social and environmental health risks for the public. Therefore, the study recommends the provision of approved waste receptacle to residents of the FCT with a two years repayment plan; formalised the activities of the informal waste collectors (mai boola or mai sharra); and privatise the business of waste collection and disposal in the FCT.

Keywords: Environment, Disposal, Health, Hazards, Waste

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1. INTRODUCTION

Today, one of the greatest problems facing humanity is waste management. In all cities and rural areas, waste disposal poses challenging social and environmental health problems. The rate at which waste is generated surpasses the rate at which it is evacuated. Improper waste disposal simply means the inappropriate or indiscriminate or careless disposal of waste materials such as rubbish, recyclables, or hazardous substances. It includes a range of actions, from tossing rubbish on the roadside to dumping of toxic into water bodies. Waste management and disposal are critical to the environment's long-term viability and climate change, especially when improper waste management results in increased pollution and makes waste disposal more challenging (Ola-Adisa et al., 2015). Poor handling poses severe health and environmental risks, undermining sustainability that threatens the health of the people (Faridah et al., 2024; Ali & Yusuf, 2021; Ogwueleka, 2019; Yusuf et al., 2019). The negative effect of uncontrolled waste accumulation fosters disease transmission and health risk to public health (World Health Organisation 2021; Odum & Odum, 2010; World Bank, 2023; Agunwamba, 2019; Singh et al., 2014; Abila et al., 2013; Guerrero et al., 2013). The escalation of ecological deterioration can be attributed to a lack of effective solid waste management policies and ineffective enforcement of existing regulations (Adefemi & Awokunmi, 2019; Omuta, 2018; Ibrahim et al., 2021). Ineffective waste management can be as a result of inappropriate facilities, inadequate policies for waste disposal, and low public awareness of the implications of poor waste management. To date, refuse dumpsites abound in the city centre and satellite towns of the FCT, posing serious social and environmental health challenges to the residents.

The FCT Abuja grapples with solid waste management challenges which can be linked to rapid urbanisation, population growth and inadequate infrastructure. The waste management system is constraint by operational inefficiencies, and informal dumping practices. Areas like Kubwa, Garki, Bwari, Mabushi, Jabi, Utako, Kado, Gwarinpa and other satellite towns are littered with visible heaps of refuse. Abuja's waste management system falls short of expectations, posing social and public health risks such as disease outbreaks from contaminated soil and water resources and air pollution despite the existence of the Abuja Environmental Protection Board (AEPB), an agency saddled with the responsibility of managing the collection and disposal of waste in the FCT (Abuja Environmental Protection Board, 1997). This study therefore, investigates the domestic waste storage collection and disposal practices, and consequences of improper waste activities in Bwari Area Council, one of the six (6) area councils in the FCT.

2. METHODOLOGY

This study was conducted in Bwari Area Council. Bwari is located in the northern part of the FCT, spanning approximately 225km^2, with coordinates between latitude 9^{o}10' to 9^{o}20' N and longitude 7^{o}20' E to 7^{o}30' E. The Area Council has a population of approximately 500,100 (National Population Commission (NPC), 2022). The inhabitants of the area council include urban, semi-urban and rural settlements such as Bwari town, Ushafa, Kubwa, Dutse Alhaji, Mpape, Dawaki, and rural communities like Igu, Kawu, Shere, Paspa. Key waste disposal sites include informal dumps in Bwari Extension, War College, Peyi, Jigo, Baupma, Kubwa, Dei-Dei, Byazhin, Arab Road and Mpape, managed by AEPB, private waste collectors licensed by the area council and informal waste collectors (Mai Boola or Mai Sharra). The study focused on five purposively selected areas of Bwari town, Ushafa, Kubwa, Byazhin and Dawaki representing a mix of high density urban, semi-urban and rural settings to capture for ease of access to participants and key resources, and limit time and geographic constraints.

This study adopted a statistical survey research design with the deployment of a structured questionnaire characterized by closed-ended and open-ended responses to investigate improper waste collection and disposal activities and their implications for environmental health and social wellbeing. The approach was

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a quantitative method in measuring waste patterns and health incidences. The target population comprised of residents of Bwari Area Council aged 18 years and above, including household heads, community leaders, and health workers of the area council. Stratified random sampling was used to divide the five selected areas into strata based on settlement type (urban, semi-urban, rural). A sample size of 384 was generated using the Freud and William's statistical formula:

$$n_o = \frac{z^2 p\,(1-p)}{e^2}$$

where n_o is the estimated sample size, z is the standard nominal variate, which corresponds to the desired confidence level. p is the estimated proportion of an attribute that is present in the population while e is the desired level of precision. The assumptions are: Confidence level – 95% (z-value = 1.96); Estimated population (p); 0.5 (as a conservative estimate); Desired precision (e); and 0.05 (5% margin of error).

Calculation:

$$n_o = \frac{(1.96)^2 \times 0.5 \times (1-0.5)}{(0.05)^2} = \frac{3.8416 \times 0.5 \times (0.5)}{0.0025} = \frac{1.9208 \times (0.5)}{0.0025}$$

$$= \frac{0.9604}{0.0025} = 384.12$$

Finite Population correction:

Since the population size is finite (500,100), the finite population correction to the sample size is applied thus:

$$n = \frac{n_o - 1}{N}$$

Where n is the final sample size and N is the population size (500,100).

$$n = \frac{384.12 - 1}{500{,}100} = 384$$

Data was generated from these 384 respondents through proportional allocation distributed samples across the selected areas for the administration of questionnaires. That is, Bwari town – 84; Ushafa – 40; Kubwa – 180; Byazhin – 50; and, Dawaki – 30. Within each stratum, systematic random sampling selected every fifth household along major roads, streets and paths. However, exclusion criteria were included to non-residents and households unwilling to participate. A 95% response rate was achieved through follow-up visits.

Primary data were collected using a structured questionnaire. The questionnaire, a 12-item instrument, divided into sections on demographics and household information (e.g., gender, age, and residency), waste storage and collection practices (open dumping, burning or govt approved bins, collection frequency, and service provider, place of disposal), implication (social problem), consequences (health hazards (malaria, cholera, respiratory issues etc.), environmental degradation (soil and water contamination), social wellbeing (stigma, disorder, crime etc.). The tool was pre-tested on 20 households (5% of sample) in a

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non-study area for reliability (Cronbach's a = 0.82). Administered face-to-face by 10 trained enumerators, with translations into Hausa and Gbagyi for accessibility.

3. RESULTS AND DISCUSSION

Table 1: Demographics and Household Information:

Respondents variable	Frequency	%
Gender		
Male	**258**	**70.7**
Female	**107**	**29.3**
Age-Group		
18 – 24	30	8.2
25 – 31	73	20
32 – 38	64	17.5
39 – 45	129	35.3
46 – 52	31	8.5
53 – 59	29	8
60 and above	9	2.5
Period of Residency		
1 – 5 years	81	22.2
6 – 10 years	64	17.5
More than 10 years	220	60.3
Total	**365**	**100.0**

Source: Field survey, 2025

Table 1 shows that demographic assessment of the respondents using variables such as gender, age and residency. 70.7% of the sample population are males while 29.3% are females. The huge disparity between the males and the females could be as a result of insecurity situation in Nigeria whereby the female gender is afraid to interact with strangers, in this case, the research assistants who administered the questionnaires to various respondents thereby predisposing the males to attend to strangers rather the females. The table further found that overwhelming majority of the respondents have lived in Bwari Area Council for more than 10 years showing a significant 60.3% of the total sample size which ensure robust responses on the activities of service providers in the waste sector. Finally, the table displays that the respondents are young population as 81% fall within the age bracket of 18 – 45 years which tend to generate more wastes than any other category.

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Table 2: How do you store your waste?

Respondents variable	Frequency	%
Govt-approved bins	64	17.5
Household items like baskets or disused containers	258	70.7
Open spaces	43	11.8
Total	**365**	**100**

Source: Field survey, 2025

Table 2 shows an overwhelming 70.7% representing 258 respondents store their waste using unapproved wastes bins such as baskets or disused containers. The findings revealed that there is no compliance with environmental laws in terms of using appropriate government approved waste bins for waste collection in the FCT thereby leading to overfilled solid waste dumps within the respondents' houses. This Table further depicts inadequate infrastructure for effective solid management services in the FCT confirming the finding by Ogwueleka (2019) that unsightly heaps of waste poses risks to public health. As part of the AEPB rules and regulations, households are expected to properly dispose of all kinds of solid waste (garbage) in approved AEPB waste disposal receptacle (dustbins) and ensure that it is kept in good condition. The finding on this table shows total contravention of the laid down regulations thereby increasing the social and environmental health risks to the public.

Table 3: Who provides waste collection services in your area?

Respondents variable	Frequency	%
AEPB/Area Council	85	22.2
Private waste contractors	64	16.7
Informal waste collectors (Mai Boola or Mai Shara)	235	61.1
Total	**365**	**100.0**

Source: Field survey, 2025

Findings on **Table 3** shows the dominance of the informal sector, that is, waste collectors otherwise known as 'mai boola or mai sharra' who move from door to door to collect waste for a fee in the FCT confirming the studies by Adefemi and Awokunmi (2019) and Omuta (2018) that the escalation of ecological deterioration affects the public health. It further shows that the AEPB/Area Council could not meet up with its responsibilities of providing municipal liquid and solid waste collections and disposal/sanitation management services to FCT residents.

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Table 4: How often is waste collected from your area?

Respondents variable	Frequency	%
Daily	22	6
2 – 3 times a week	107	29.3
Once a week	171	46.9
Irregular	65	17.8
Total	**365**	**100.0**

Source: Field survey, 2025

Table 4 shows timelines of waste collection from various homes of the respondents. Finding from a majority 64.7% of the sampled size answer in the negative on how effective the collection activities might be. Wastes are generated daily and require efficient and effective evacuation regularly. A weekly and sometime irregular collections display ineffective waste management activities in the FCT showing that the existing collection system is ineffective leading to air pollution, soil and water contamination with consequences to the public.

Table 5: Is indiscriminate dumping of wastes a social problem

Respondents variable	Frequency	%
Yes	320	87.7
No	37	10.1
Do not know	8	2.2
Total	**365**	**100.0**

Source: Field survey, 2025

87.7% of the respondents sampled on **Table 5** allude to the fact that improper waste disposal is a social problem affecting the general public. Any action or issue that affect the significant number of the public negatively affects their social wellbeing. Illegal dumping of refuse by the roads, streets, drainages, river channels and uncompleted buildings breed criminality as scavengers operate more in the slum and in a socially disorder environment.

Table 6: What are the consequences of improper waste disposal?

Respondents variable	Frequency	%
Health hazards (malaria, cholera, respiratory issues etc.)	177	48.5

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Environmental degradation (soil and water contamination)	113	31
Social wellbeing (stigma, costs, disorder, crime)	75	20.5
Total	**365**	**100.0**

Source: Field survey, 2025

Findings on **Table 6** are consistent with existing literature that indicated ineffective solid waste management poses severe health and environmental risks that threatens the health of the people and widespread environmental degradation. The findings by this study supported the works of Faridah et al., (2024); Ali & Yusuf (2021); WHO (2021); Agunwamba (2019); and, Yusuf et al., (2019) that indiscriminate dumping of refuse has a direct correlation with the spread of diseases in Nigeria, thus posing a health risk to public health.

Table 7: What do you think is the best solution to ineffective solid waste management in FCT?

Respondents variable	Frequency	%
Privatisation of solid waste management services	67	18.4
Community Engagement in waste reduction programmes	70	19.2
Improve enforcement of environmental regulations	34	9.3
Capacity improvement for Area Councils	28	7.7
All of the above	166	45.4
Total	**365**	**100.0**

Source: Field survey, 2025

From the findings on this table, the respondents advocated for a number of remedies to improper waste collection and disposal practices in the FCT in order to reduce illegal dumping, and lower health risks from overflows. Their responses require integrated approach which include delegation of waste collection, transportation, and disposal responsibilities from the public sector, in this case, the AEPB/Area Council to private operators; active participation of residents in initiatives aimed at minimising waste generation, promoting recycling and behavioural change; enforcement of laws and regulations governing air quality, waste management, pollution control, land use, and even wildlife protection which will go along way in protecting human and animal life; and, enhancing institutional, technical, financial, human, and infrastructural resources through training, policy reforms and partnerships between AEPB and the Area Council.

4. CONCLUSION AND RECOMMENDATIONS

In conclusion, the persistent inefficiencies in solid waste management across Nigeria and the FCT in particular, is driven by inadequate environmental infrastructure therefore entrenching a cycle of environmental health and social problems translating to environmental health hazards such as malaria,

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cholera, respiratory ailments from open burning, and water borne illnesses like diarrhea and dysentery.

The findings of this study highlight the consequences of indiscriminate waste dumping on the health status of residents in the FCT, lack of sufficient waste bins and facilities for collection, and over reliance on the services of the informal waste collectors (mai boola or mai sharra). The prevalent concerns regarding soil and water contamination, unpleasant odours, drainage blockages and flooding underscores the urgent need for an improved waste management system. Moreover, the study identifies with the findings of existing literature that posit solid waste as a challenging phenomenon in Nigeria.

To address the issues associated with the findings, it is imperative to implement a sustainable and comprehensive solid waste management system that focuses on both the environmental health and social aspects in the waste sector. To this end the following recommendations are made:

i. That the Federal Capital Territory Administration should as a matter of importance provide cost effective customised waste bins to residents of the FCT with a repayment plan spanning two years;
ii. That the informal sector participation in waste management services in the FCT should be formalised through profiling of participants, and provision of code of conduct with strict supervision by AEPB/Area Councils;
iii. That the waste collection and disposal should be organised at least three times weekly;
iv. That a comprehensive solid waste management policy driven by the private sector be established in the FCT.

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