UTILIZATION OF BEHAVIOURAL MODEL FOR EFFECTIVE ENVIRONMENTAL SANITATION PRACTICES IN THE FEDERAL CAPITAL TERRITORY ABUJA, NIGERIA

By

DR. MAREN STEPHEN
Geography Department
FCT College of Education Zuba-Abuja.
&
MRS. ESTHER ENGLAMA
Geography Department
FCT College of Education Zuba-Abuja.

Abstract
The study examines environmental sanitation practices in households within the Federal Capital Territory (FCT), Abuja, focusing on various behavioral models such as spatial interaction, environmentally responsible behavior (ERB), pro-environmental behaviour, theories of planned behavior, reasoned action, and norm activation models. The population comprises all the household within in FCT. Purposeful sampling technique were adopted to sample 311 respondents across 11 wards in two area councils, AMAC and Gwagwalada, 21 officials of Abuja Environmental Protection Board (AEPB) and 58 to registered cleaning contractors, making a total of 390 respondents in all. Descriptive statistical tools, including frequency counts, tables and simple percentage methods were employed for the data analysis. The Mann-Whitney test and Chi-square test were used to assess relationships. Key findings revealed that 89% of respondents did not sort their waste before disposal, while 85% did not participate in environmental sanitation measures. The study emphasizes the importance of effective sanitation awareness messaging in local languages to ensure comprehension across different educational backgrounds. The paper recommends among others that implementing agencies like AEPB should adopt both punitive and incentivizing measures to ensure compliance. Punitive measures such as prosecution and fines can discourage non-compliance, while rewarding clean communities in the FCT could serve as a positive incentive. This dual approach aims to enhance public participation in environmental sanitation practices and improve overall compliance within the FCT.

Key Words: Utilization, Environment, Sanitation, Practices, Model, FCT-Abuja.

Introduction

Environmental sanitation practices refer to a set of activities and measures aimed at maintaining and improving the cleanliness and hygiene of the environment to prevent the spread of diseases and promote overall well-being. These practices are essential for safeguarding public health, preserving natural resources, and minimizing the impact of human activities on the environment. It entails proper disposal of solid and liquid waste is crucial to preventing environmental pollution and the transmission of diseases. This includes methods like recycling, composting, and safe disposal of hazardous waste (World Health Organisation, 2023). Environmental sanitation is essential for protecting public health, ensuring access to clean resources, and promoting the well-being of both people and the planet. It enhances the overall quality of life by creating cleaner and more pleasant living environments, reducing stress, and promoting a sense of well-being (Centre for Disease Control and Prevention, 2023).

Environmental sanitation problems are made more acute by rapid urbanization, uncontrolled population growth, without commensurate expansion in sanitary facilities (Owo, 2003). Consequently, slums/shanties have emerged in city fringes where the water sanitation problems are more pressing. The slums with poor housing are prominent features in our environment, particularly in cities due to poor implementation of town planning laws, poor land use control, rapid spatial expansion of settlements, inadequate provision of infrastructure services (Gosselin & Furgal, 2001). These practices are often implemented by various government agencies, non-governmental organizations, and international bodies in collaboration with local communities. Nigeria's environmental sanitation efforts are essential for addressing the country's health challenges, ensuring access to clean resources, and reducing the impact of human activities on the environment.

However, there are ongoing challenges, such as inadequate infrastructure and resource constraints, which require continuous efforts and investments to improve environmental sanitation in the country. For example, the inability to adhere to the Federal Capital Territory (FCT) development plan has created an upsurge of slums and shanty towns in the immediate environs of the city. Spontaneous squatter settlement continues to provide shelter for immigrants in an environment of great overcrowding and appalling squalor (Daramola & Olowoporoku, 2016). The characteristics of life in these slums/squatter areas make the provision of sanitary services extremely difficult. In many cases, the poor people live in neighborhoods without legal tenure of land or in areas authorities have deem unfit for habitation. Their illegal status mean that they are often not taken into account during the planning, and implementation of municipal programmes that aim at or extending services, as water supply, basic sanitation, garbage collection, flood protection, health care, among others.

Sanitation provision in many cities across sub-Saharan Africa remains grossly deficient, and the Federal Capital Territory (FCT), Abuja, is no exception, despite being the political heart of Nigeria. Environmental sanitation in Abuja is often challenged by rapid urbanization, unplanned growth and inadequate waste management infrastructure which exacerbate issues related to public health and quality of life. Similar to Ibadan, Nigeria's second-largest city, Abuja's sanitation facilities struggle to keep pace with the city's expanding population. In many parts of the FCT, access to hygienic toilets is limited, and untreated faecal waste is commonly disposed of in open spaces or drains, further escalating the risk of infectious diseases (Hutton, Haller, & Bartram, 2024). Abuja, with a population of over 4 million people, has witnessed a surge in both formal and informal settlements. The city's design, initially planned to accommodate a relatively small number of residents, has not been adequately scaled to meet the needs of its rapidly growing population. A significant portion of the FCT's population resides in informal settlements, which lack proper sanitation infrastructure. The urban sprawl has led to the emergence of densely populated slum areas with poor waste management systems, contributing to severe sanitation challenges.

Similar to Ibadan, industrial activities in Abuja although not as prevalent as in other parts of Nigeria include small-scale food processing and other low-impact industrial ventures. However, these activities still contribute to pollution, further compounding the city's environmental sanitation issues. Rural Agricultural Food (RUAF, 2007). The lack of effective waste management strategies in the FCT, coupled with the challenges of population density and informal settlements, results in substantial environmental degradation. This situation poses serious risks to public health, as uncollected waste and untreated sewage increase the likelihood of outbreaks of diseases such as cholera, typhoid fever, and dysentery. According to the

Vanguard newspaper report of May 23, 2019, it was revealed that 50% of FCT residents defecate openly due to the challenges of the non-availability of toilets in public places. The Director, Federal Ministry of Environment, in charge of Water Quality Control Sanitation, said this at the Water Supply Sanitation Collaborative Council (WSSCC), in collaboration with UNICEF, which had conducted the water sanitation hygiene (wash) norm survey in Nigeria. The data shows that 47 million Nigerians are involved in open defecation and poor sanitation hygiene practices.

Despite the efforts of the FCT administration through **Abuja Environmental Protection Board** (AEPB) to address environmental sanitation problems, the poor attitudes of some residents account for seventy percent of environmental health deterioration in the territory (Daramola, 2016). Given the population explosion, the multicultural setting, and the poor environmental sanitation attitudes of the residents, the FCT administration introduced a monthly environmental sanitation exercise and declared its observance by residents every last Saturday of the month, which lasted between 2008 and 2012. This led to the introduction of cleaning contractors, whose duties are to keep the FCT clean. About 56 cleaning contractors have been registered with the AEPB. Abuja Municipal Area Council (AMAC) has 32; Garki has 9, Wuse II has 7, Gwarinpa has 6, and Bwari has 5. Abuja Environmental Protection Board, (AEPB, 2024).

Research Questions

This research attempt to answer the following questions:

1. How effective is environmental sanitation monitoring in the FCT?
2. What is the level of implementation of environmental sanitation policy in the FCT?
3. How can environmental sanitation practices be improved upon in the FCT?

Aim and objectives of the study

The focused of this study is to address the following objectives:

1. To determine the effective environmental sanitation monitoring in the FCT.
2. To assess the level of implementation of environmental sanitation policy in the study area.
3. To develop an integrated environmental, Water, Sanitation, Hygiene (eWASH) model for the FCT-Abuja.
4. To develop an integrated environmental sanitation practices improvement in the FCT

Theoretical and Conceptual Framework

The first model is based on models of spatial interaction in order to explain the characteristics of various residential areas. The second is based on environmental sanitation practices that aim to ensure environmentally responsible behaviour ERB). Others include models of pro-environmental behaviour, theories of planned behaviour and reasoned action, and norm activation models.

1.1 Models of Spatial Structure

The variation in the physical structure and socio-economic backgrounds of residents in cities is acknowledged (Afon, 2008). According to Balchin (2000), a city is characterised by a heterogeneous population structure. It is an aggregation of smaller, more homogeneous areas. Also, spatial interactions among various elements of a city are its permanent features, since no settlement of its components exists in isolation (Jinadu, 2022). Thus, the city is a social phenomenon a social being with different residential settings, each with its own unique characteristics (Faniran, 2012).

In explaining the growth and spatial pattern of cities, various models and theories have been put forth. Among these are the Concentric Zones Model (Burgess, 1925); the Sector Analysis Model (Hoyt, 1939); and the Multiple Nuclei Model (Harris & Ulman,

1945). In describing these three models, they are often regarded as both ecological and classical (Afon, 2008; Fadare, 2010). The theories have identified variation in socioeconomic attributes of residents in terms of income.

The Concentric Zones Model was developed by a sociologist named Ernest W. Burgess in 1925 in his attempt to conceptualise the city of Chicago. Burgees postulated that cities grow as a ring, radiating from a centre (Figure 4). This model established that the growth of an urban area in a concentric form is a result of the socio-economic attributes of its residents. Thus, five distinct concentric zones make up an urban area. The general assumption of this model is that urban development is relatively uniform in all directions from the centre, which does not perfectly apply to most Nigerian cities (Daramola, 2012).

Other urban spatial models that emerged after the Burgess concentric zones model were the Sector Analysis Model by Hoyt (an economist) in 1939 (Figure 5) and the Sector Model by Harris Ullman (a geographer) in 1945 (Figure 6). Hoyt propounded that an urban area substantially grow in a sectoral form around major transportation routes from the centre towards the outskirt. Each sector reflects the segregation of population groups according to income and social status. In other words, each sector is made up of relatively homogeneous physical, cultural, and social characteristics. The Multiple Nuclei Model, on the other hand, was developed on the assumption that an urban area is made of more than one centre, unlike the concentric sector models. In this sense, an urban area is developed around many completely separate centres (Daramola, 2012).

The Concentric Zone Model, proposed by Ernest Burgess in 1925, is a sociological theory that divides urban areas into concentric rings radiating outward from a central business district (CBD). This model has been used to understand urban social structures and can be related to environmental sanitation practices among households in various ways. Here's how it can be applied to the context of the Federal Capital Territory (FCT) in Abuja, Nigeria:

The Central Business District (CBD) is the core commercial area, often equipped with superior infrastructure and sanitation services. Similarly, areas like Wuse and Garki, which are prominent residential and commercial zones in Abuja, also benefit from improved waste management and regular maintenance. In contrast, less developed zones such as Nyanya and Karu may face challenges in sanitation due to limited resources and infrastructure, which can impact the effectiveness of waste collection and public cleanliness.

Transitional Zone: This zone is characterised by mixed uses, including residential and industrial areas. Often, it includes deteriorating housing and may accommodate lower-income households. Examples of such places include the Idu industrial area, Gwagwa Karimu, and Dei-Dei. This zone has the challenges of inadequate waste disposal systems, overcrowding, and insufficient sanitation facilities.

Working-Class Residential Zone: This zone houses working-class families who have moved out of the transitional zone. These places include Kubwa, Gwarimpa, Gwagwalada, Asokoro, and Jabi. Sanitation practices in this zone vary. Some areas, like Gwarimpa and Asokoro, have organised waste collection services, while others, like Kubwa, Gwagwalada, and Dei-Dei, rely on informal or community-based systems. The level of awareness and resources available for maintaining sanitation is higher than in the transitional zone but still inconsistent.

Residential Zone: This zone is characterised by middle-class residences with more substantial housing and better living conditions. These areas are Garki, Wuse, Apo, and the three arm zones. Environmental sanitation in this zone has relatively well-maintained sanitation infrastructure. Regular

waste collection, better drainage systems, and greater community awareness of environmental hygiene are common. Residents have more access to municipal services and do participate in neighbourhood sanitation programmes.

Commuter Zone: Outermost zone with the highest-class residences, including suburban areas and commuter towns. Examples are Asokoro and Wuse 2. Households in this zone often have the best access to sanitation facilities. Private waste collection services, well-maintained streets, and advanced sewage systems are typical. The residents' higher socio-economic status often correlates with better personal and community sanitation practices. The FCT Administration has various programmes aimed at improving environmental sanitation, including waste management strategies, public health campaigns, and infrastructural development projects. These initiatives often vary in effectiveness across different zones. In many residential zones, community-led initiatives play a crucial role in maintaining sanitation. This includes local waste collection arrangements, community clean-up drives, and educational campaigns about hygiene and waste management. In the transitional and working-class zones, challenges such as rapid urbanisation, informal settlements, and limited resources can hinder effective sanitation practices. Efforts are needed to address these disparities to ensure equitable sanitation services across all zones.

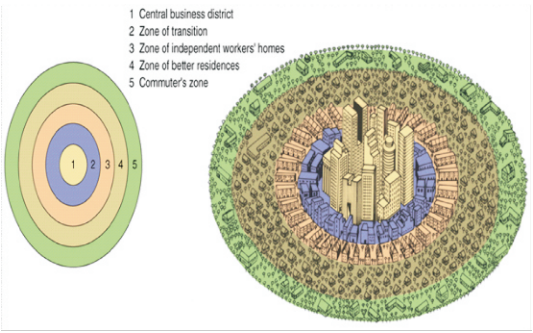

Figure 1: **The Concentric Zone Model**
Source: After Burgess (1925).

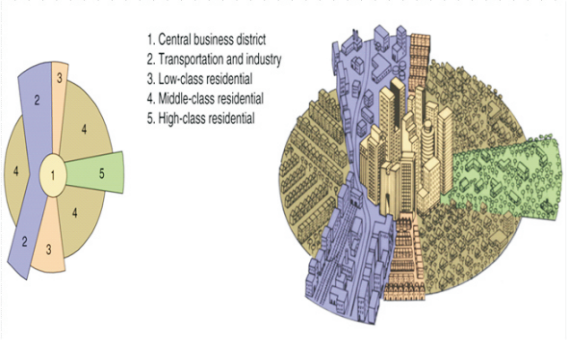

Figure 2: **The Sector Model**
Source: After Hoyt (1939)

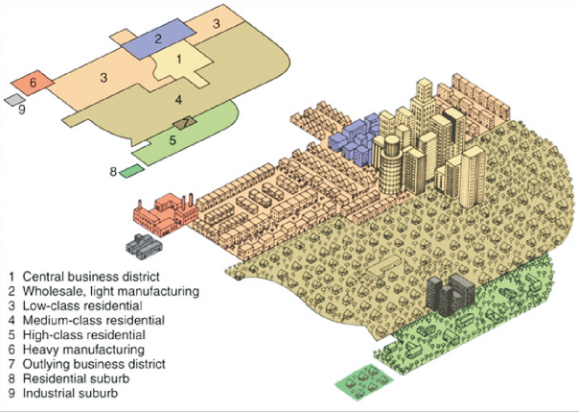

Figure 3: **The Multiple-Nuclei Model**
Source: After Harris and Ullman(1945).

Comprehensive Environmental Sanitation Management (FCT-CESM) Model

The FCT-CESM Model offers a holistic approach to addressing environmental sanitation challenges in Abuja. By focusing on community-based participation, traditional/community leaders, religion leaders, development partners (NGOS and CBOS), environmental sanitation vigilantes (ESVS) and households, this model aims to foster a clean and healthy environment for all residents in the Federal Capital Territory.

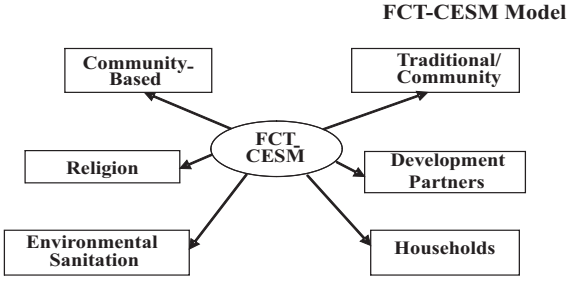

Figure 4: **FCT-CESM Model**
Source: Field Work, 2024.

Community-Based Participation

The engagement model integrates community leaders, religious leaders, development partners (NGOs), environmental sanitation vigilantes (ESVs), and households in line with national guidelines. Recognising the significance of community participation, as emphasised in Mensa's global perspective and the shift from top-down strategies (DWAFT, 2001), The approach aligns with Nigeria's commitment to inclusivity in development programmes.

Role of Traditional/Community Leaders

Traditional leaders include Mai angwa's, Etsu's, Emirs, Obas, and chiefs. They provide leadership for local communities. Logan (2009) suggests that traditional leaders use their voices as custodians of traditional values to break limiting or harmful taboos and motivate their subjects. They have an effective role as change agents. Traditional leaders play a pivotal role in enforcing environmental sanitation practices in FCT. This role aligns with Environmental Health Officers Registration Council of Nigeria (EHORCON) responsibilities and national guidelines. Logan's perspective on traditional leadership as change agents is integrated, ensuring not only awareness creation but also enforcing regulations. The door-to-door inspection aligns with community reliance, reflecting shared responsibilities in the FCT.

Role of Religion leaders

Religion leaders, akin to community leaders, actively contribute to effective environmental sanitation practices. By utilising religious institutions and leveraging pastors and imams, they align with national health programs. This approach emphasises the integral role of faith-based institutions in creating awareness and enforcing sanitation initiatives, contributing to a model consistent with national guidelines.

Role of Environmental Sanitation Vigilantes (ESVs)

Aligning with national policies and EHORCON, the ESVs, comprised the 'baban bola' (scavengers) group, who play a central role in waste management. Collaborating with Development Partners will ensures uniformity with international best practices. The provision of uniforms and allowances will serves as a motivational strategy, contributing to a more efficient waste collection and compliance monitoring system in accordance with national standards. Due to the past records of the scavengers, there is a need to thoroughly screen and profile the scavengers that would be recruited as ESVs due to insecurity. This would be carried out by the police in collaboration with the EHORECON and AEPB.

Development Partners (NGOs and CBOs)

Though NGOs and CBOs are mainly into advocacy and education within the communities, they also provide services that fall under the PPP arrangements. The NESP entrusted the responsibility of community mobilisation and assisting the district assemblies and communities to plan, fund, and help develop community sanitation infrastructure. However, very few local NGOs and CBOs have the capacity to invest in sanitation infrastructure (Franklin, 2018). NGOs and CBOs play a crucial role in the model, aligning with PPP arrangements outlined in the National Environmental Sanitation Policy (2005). Their responsibilities, endorsed by the Federal Ministry of Water Resources and Sanitation, include borehole provision, ESV training, and infrastructure development. This collaborative effort adheres to national standards, addressing water-related aspects and sanitation infrastructure outlined by the Federal Ministry of Water Resources in collaboration with the Federal Ministry of Environment.

Role of Households

Households, are central to the model, and guided by national guidelines on environmental sanitation. The provision of functional toilets aligns with the National

Environmental Sanitation Policy and WHO figures emphasizing the health benefits of sanitation. The model emphasizes participation in the Community Led Total Sanitation (CLTS) program, reflecting a commitment to clean and hygienic environments, in line with the FCT's central sewage disposal system.

Methodology

The population of the FCT has been increasing rapidly over the years. In 1977, the population was 125,000. This increased to 378,671 in 1991, and in the 2006 head count, it grew to 1,406,239, with an estimated growth rate of 4.0% per annum. Using this growth rate, the projected population for 2023 would be approximately **2,510,000** (calculated using the formula for compound growth: $P = P_0(1 + r)^t$, where P_0 is the population in 2006, r is the growth rate, and t is the number of years). Two major factors account for this growth, the natural and increase influx of low income migrants. This is particularly reflected in the increasing shortage of housing, employment and provision of basic social amenities in the Territory (Mundi & Chup, 2006).

The researcher adopts a purposeful sampling technique, also known as judgemental, selective, or subjective sampling. This is a non-probability sampling technique where the researcher selects units to be sampled based on their knowledge and professional judgment. The goal is to focus on particular characteristics of a population that are of interest, which will best enable the researcher to answer their research questions. (Lohr, 2019). Deliberate Selection: The units were chosen because they have specific characteristics that the researcher is interested in. Three hundred and eleven (311) copies of the questionnaire were administered to the eleven (11) wards, each with twenty-eight questionnaires administered. Six wards were selected from AMAC; these include Garki, Wuse, Gwarinpa, Karshi, Karu, and Nyanya. While the remaining five wards were selected from the Gwagwalada Area Council, which include Gwagwalada Centre, Kutunku, Dobi, Tungan-maje and Gwako, Twenty-one (21) copies of the questionnaire were administered to the officials of AEPB, while fifty-eight (58) copies were administered to the cleaning contractors who have registered with Abuja Environmental Protection Board (AEPB), making a total of 390 respondents. Descriptive statistical tools were assembled for the analyses of the questionnaire. The Microsoft Excel sheet was used to enter the data collected using the questionnaire. Frequency count, tables, and the simple percentage technique method of data analysis were used.

Results and Discussion

Environmental Sanitation Monitoring

Environmental sanitation monitoring is one of the instruments for achieving environmental sanitation, but when this is not done consistently, the desired result may not be achieved. Policy Development: AEPB is responsible for the development of sanitation policies and guidelines based on its on-the-ground experience and expertise. The board may provide recommendations to relevant authorities for the formulation of effective sanitation policies and regulations (Adeyinka & Dukiya 2018). This finding differs from Daramola (2012), who argued that environmental sanitation must be a collective-based communal approach where government and the host community must be carried along. It is on this premise that legislation compliance monitoring and implementation can be smooth and effective. While it can be argued that legislation is needed for effective, optimal performance, the role of environmental sanitation practices cannot be overemphasised in this regard. To buttress this fact, as it has been noted in Nigeria, the use of legislation has been dominant in securing the participation of all citizens, but despite various provisions of the laws, there is still a low level of

implementation of environmental sanitation practices. Like the monthly environmental sanitation practice in FCT, where the majority of citizens do not participate during the hours of sanitation exercise.Figure 4 depicted the respondents' perspectives on their involvement in environmental sanitation. Eighty-five (85%) of respondents indicate they do not participate in the implementation of environmental sanitation measures, while 15% say they do. This finding shows that the majority of the AEPB's policies are not community-based, as residents are not included in decision-making exchanges that will result in progressive policy frameworks for environmental sanitation. This could be one of the contributing factors to the losses faced in the field of environmental sanitation, as regulations are intended to be designed with people in mind. The implementation of environmental sanitation policies is critical to the long-term sustainability of environmental sanitation practices worldwide.

Danbaba, Nabegu, Mustapha & Binta (2016), in consonance with the findings of this study, conducted a study on the assessment of the implementation of environmental sanitation in FCT and found that 43.6% of the respondents observed that the extent of implementation of environmental sanitation policy within the study area is fair, followed by 26.7% who indicated that the level of implementation of the policy is poor, 25.7% indicated that the implementation is good, and 4.0% confirmed that the level of implementation is excellent. Thus, even though the extent of implementation is shared across the board, the number that indicates poor implementation of environmental sanitation policy is a source of concern. This implies that a bad attitude towards sanitation issues, a lack of proper public awareness, and inadequate enforcement of the policy by government agencies are contributing factors to poor policy implementation.

In addition, policy implementation does not remain the sole reason for poor sanitation performance; lack of public awareness, poverty, improper planning, poor funding, and poor implementation of hygiene programmes by different government agencies charged with the responsibility are also factors that hamper efforts to scale up sanitation access or coverage in the FCT. The researcher affirmed that the monthly environmental sanitation exercise in Nigeria is a quick-fix policy. This gives the impression of setting aside just one day of the month to clean the environment. They argued that the practice gives the impression that you can mess up the whole environment for a whole month and then clean it in one day. States in Nigeria still practice monthly environmental sanitation. Therefore, it can be concluded by saying that the Nigerian case of environmental sanitation practices rests more on compliance than willingness.

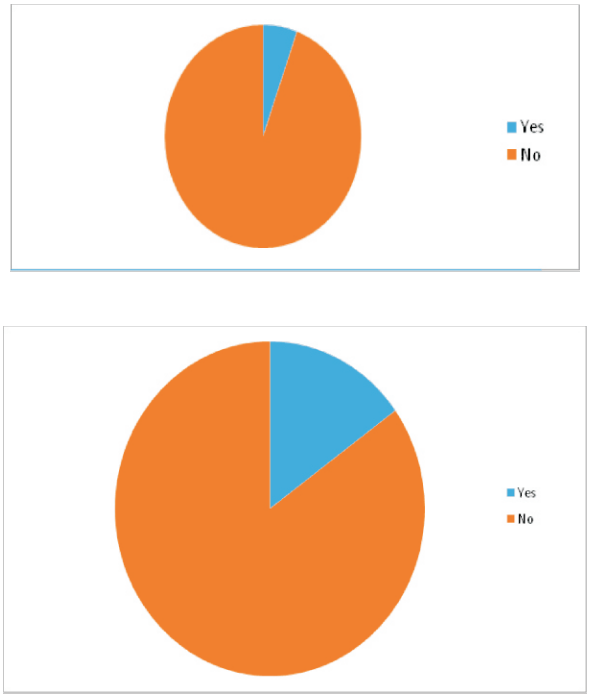

Figure 5: Respondents opinion on participation in the implementation of sanitation

Effectiveness of environmental sanitation monitoring in the FCT?

The results in Table 1 suggest that environmental sanitation monitoring in the FCT is somewhat effective but requires significant improvements in several key areas. Respondents identified issues in the monitoring of waste disposal, enforcement of sanitation policies, open defecation practices, and law enforcement's role in sanitation. To enhance the effectiveness of environmental sanitation monitoring, there is a need for stronger oversight, better coordination between agencies, and more regular inspections of sanitation facilities and services.

Table 1: Respondents Opinion on the Effectiveness of Environmental Sanitation Monitoring in FCT

S/N	Item	SA	A	I	D	SD	Total	M/S
1	The monitoring of cleaning contractors is effective	4	6	5	3	2	55	2.45
2	Open defecation practices are monitored adequately	3	5	7	6	2	52	2.3
3	Waste disposal activities are effectively monitored	5	7	2	4	3	54	2.45
4	Water supply and sanitation are monitored consistently	2	10	3	4	3	47	2.13
5	Toilet facilities and their usage are well monitored	6	4	8	3	2	55	2.6
6	The monitoring of waste disposal systems is adequate	8	5	3	4	1	56	2.8
7	Residents' willingness to comply with sanitation rules is regularly monitored	4	6	7	3	3	54	2.55
8	The enforcement of sanitation policies is consistently monitored	7	5	4	6	1	52	2.35
9	Sanitation facilities are inspected regularly for maintenance	9	7	2	4	1	58	2.75
10	The management of waste collection is effectively supervised	5	6	5	5	2	52	2.45
11	Drainage systems are regularly monitored for functionality	6	6	4	3	3	54	2.55
12	The monitoring of law enforcement agencies in sanitation is effective	4	5	6	7	2	48	2.3
13	The attitude of sanitation workers is monitored for performance	5	7	4	5	1	52	2.45
14	The overall monitoring of sanitation in the FCT is effective	6	5	4	3	4	53	2.4

Source: Researchers Analysis (2024)

Implementation of Environmental Sanitation Policy in the FCT

The results in table 2 suggest that while there are some areas where the environmental sanitation policies are moderately effective, there are several critical areas in need of attention. Key issues such as waste disposal systems, prompt payment for services, open defecation practices, and maintenance of dump sites require urgent intervention. These findings emphasize the need for more effective strategies, better enforcement, and improved management to enhance the implementation of environmental sanitation policies in the FCT.

Table 2: Respondent Opinion on implementation of Environmental Sanitation in FCT

S/N	Item	SA	A	I	D	SD	Total	M/S
1	The cleaning contractors are effective	3	7	3	7	2	52	2.3
2	Would you say that open defecation practice is high	4	3	1	8	6	75	3.4
3	Management of cleaning contractors is adequate	7	6	4	2	3	54	2.45
4	Water supply is Adequate	3	17	0	1	1	46	2.09
5	Toilet facilities are adequate enough	6	6	4	6	0	54	2.45
6	There is proper waste disposal system in the capital city	15	5	0	1	1	34	1.54
7	There is prompt payment of waste disposal service	8	7	2	3	2	40	1.81
8	Would you say residents are always willin g to pay for waste disposal service	4	6	5	7	0	59	2.68
9	Construction of drains for waste for waste water storm water	8	4	3	5	2	55	2.5
10	Provision of waste collection facilities	8	4	3	5	2	55	2.5
11	Enforcement of rules regulations	3	5	6	6	2	65	2.95
12	Maintenance of designated open dump site.	1	1	7	7	6	78	3.54
13	Attitude of law enforcement is bad	10	2	8	1	1	47	2.13
14	Number of sanitation workers is adequate.	10	5	4	1	2	46	2.09

Source: Researchers Analysis (2024)

Integrating Environmental Sanitation Practices Improvement in the FCT

An integrated model for environmental, water, sanitation, and hygiene (eWASH) for FCT is developed by synthesising and triangulating the results obtained from objectives one to three. The model is developed and validated through expert opinion. The Federal Capital Territory was established in 1976. It is the capital of Nigeria. It was initially developed according to a master plan devised in 1979. This apportioned 2.0% of the FCT area for government activity and usage, 49.0% for residential development, and 32.5% as open, green, and recreational areas to add to the aesthetics of the city, with the remaining 16.5% being used for ancillary services, light industries, other infrastructure, and commercial activities. The Abuja master plan was designed to stimulate growth and provide

an opportunity to avoid many of the problems associated with unplanned growth associated with other cities in Nigeria (Federal Ministry of Environment Report, 2004). Introducing an integrated environmental, water, sanitation, and hygiene (eWASH) model for FCT that aligns closely with Nigeria's National Environmental Sanitation Policy and adheres to the guidelines and standards set by the Federal Ministry of Environment. The FCT, established in 1976, operates within the framework of the 1979 Master Plan, dedicated to specific land-use allocations. The strategic allocation reflects the commitment to national policies aiming to mitigate issues associated with unplanned urban growth, as outlined in the Federal Ministry of Environment Report.

Conclusion

Lack of proper awareness of the impact of poor environmental sanitation practices has contributed negatively to acceptable sanitation and hygiene practices in the FCT. Similarly, a lack of adequate awareness of environmental sanitation laws has negatively impacted environmental sanitation practices in the FCT-Abuja. Therefore, if residents are more aware of the standards and laws guiding the implementation of environmental sanitation laws, it will go a long way towards improving environmental sanitation and hygiene practices in the area. The Abuja Environmental Protection Board should conduct regular inspections and monitoring of both public and private places, such as markets, residential areas, and commercial establishments, to ensure compliance with sanitation standards. Proper funding of environmental sanitation programmes in the FCT by the FCT administration, where critical stakeholders in environmental sanitation are involved, will bring an end to environmental sanitation challenges such as open defecation and the spread of diseases.

Recommendations

Waste collection point must be provided with large waste receptacles all across the FCT to ensure there isn't any form of indiscriminate waste disposal by residents.

1. This study recommends that awareness that would promote sound environmental sanitation practices should be put in place in order to educate the populace and enlighten them on the importance of environmental sanitation in the FCT. If environmental awareness is given a primordial importance from the beginning most of the sanitation problems would have been solved in the first place.

2. Sanitation awareness messaging should be designed in languages that can easily be understood by the general public, regardless of their educational background.

3. The implementing agencies, such as AEPB, should employ both punitive and remunerative measures to exact compliance. While using punitive measures such as prosecution and fines to discourage non-compliance, remunerative measures should also be considered as catalysts for compliance. For example, periodically announcing and rewarding the cleanest communities in FCT by the government and its implementing agencies could improve compliance. Also, reserving some development projects for the cleanest communities could motivate other communities to comply with sanitation laws.

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