

An Evaluation of the Urban Environmental Management Activities of Town Planners in Abakaliki Metropolis, Ebonyi State, Nigeria

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ABSTRACT

Urban environmental management has become increasingly important in addressing the environmental consequences of rapid urbanization, particularly in developing countries such as Nigeria. This study evaluated the urban environmental management activities of town planners in Abakaliki Metropolis, Ebonyi State, with emphasis on existing environmental management activities, their effectiveness, and the major environmental problems confronting the metropolis. The study was anchored on the Collaborative Planning Theory and adopted a mixed-method survey research design. Primary data were collected through structured questionnaires, interviews, focus group discussions, and field observations, while secondary data were obtained from relevant literature, planning documents, and government reports. A purposive sampling technique was used to select 400 respondents comprising professional town planners, planning officials, community leaders, and other built-environment stakeholders. Data were analysed using descriptive statistics, one-sample t-test, and other inferential statistical techniques with IBM SPSS Statistics Version 27. Findings revealed that 30.37% of respondents identified urban planning and zoning regulations as the dominant environmental management activity, followed by waste management and recycling (22.78%). However, 47.6% perceived environmental management activities as ineffective, while only 25.3% considered them effective. Flooding (40.8%) and poor waste management (33.4%) emerged as the most critical environmental problems. Hypothesis testing showed that physical planning interventions significantly affect environmental sustainability ($M = 2.18, t = -19.52, df = 394, p < 0.001$), leading to the rejection of the null hypothesis. The study concludes that strengthening institutional capacity, enforcement mechanisms, infrastructure provision, stakeholder participation, and sustainable planning policies is essential for improving environmental sustainability and urban resilience in Abakaliki Metropolis.

KEYWORDS: Urban Environmental Management · Town Planners · Physical Planning · Environmental Sustainability · Development Control · Stakeholder Participation · Abakaliki Metropolis

SUBJECT AREAS: Urban & Regional Planning · Environmental Management · Sustainable Development

ARTICLE INFORMATION

RECEIVED 2 Jul 2026

ACCEPTED 13 Jul 2026

PUBLISHED 31 Jul 2026

ARTICLE DOI
10.5281/zenodo.21737111

HOW TO CITE
Ogbaga, M. N., Iyi, E. A., & Ogberetitor, O. (2026). An evaluation of the urban environmental management activities of town planners in Abakaliki Metropolis, Ebonyi State, Nigeria. *Advances in Urban Informatics and Cyber-Physical Systems*, 3(2), 1–14.

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1. Introduction

Urban environmental management has become an indispensable component of sustainable urban development as cities across the world continue to experience rapid population growth and spatial expansion. The increasing concentration of population and economic activities in urban centres has intensified pressure on land, housing, transportation, infrastructure, and environmental resources, resulting in challenges such as indiscriminate waste disposal, flooding, pollution, traffic congestion, environmental degradation, and uncontrolled urban development. Since urban environments are largely shaped by human activities, there is an increasing responsibility to ensure that urban growth is effectively planned and managed in order to safeguard environmental quality, strengthen urban resilience, and improve the quality of life of residents (Kweezi, 2023; Ogunbode et al., 2024; UN-Habitat, 2024).

Globally, urbanization has become one of the defining trends of the twenty-first century. The United Nations (2018) estimates that about 55% of the world's population currently lives in urban areas, with the proportion expected to increase to 68% by 2050. Although urbanization stimulates economic growth, innovation, and social transformation, it also creates enormous environmental and governance challenges that require integrated planning responses. Consequently, the New Urban Agenda and the Sustainable Development Goals advocate sustainable urban planning, resilient infrastructure, efficient land-use management, climate adaptation, and inclusive governance as essential pillars for creating environmentally sustainable cities (United Nations, 2015; UN-Habitat, 2020; United Nations, 2023; UN-Habitat, 2024; Watson, 2016).

In response to these challenges, many countries have strengthened their physical planning policies and environmental management frameworks to regulate urban growth and minimize the adverse effects of unplanned development. Countries such as the United States, Japan, the United Kingdom, France, South Africa, and Nigeria have adopted planning policies that emphasize environmental conservation, orderly land-use development, infrastructure provision, pollution control, climate resilience, and

sustainable urban governance (UN-Habitat, 2009; World Bank, 2022; Unegbu et al., 2024). Within these frameworks, professional town planners perform critical functions through land-use planning, development control, environmental impact assessment, environmental monitoring, protection of environmentally sensitive areas, infrastructure coordination, and enforcement of planning regulations. These responsibilities are fundamental to achieving environmentally sustainable urban development (Abayomi, 2013; Enoguanbhor et al., 2021; Yekeen & Misnan, 2024).

Evaluating the environmental management activities of town planners has therefore become increasingly necessary for determining the effectiveness of planning interventions in promoting sustainable urban development. Such evaluations provide evidence on whether planning policies, environmental regulations, and development control measures are achieving their intended objectives while identifying institutional, financial, and operational constraints affecting planning practice. They also provide a basis for strengthening planning institutions, improving environmental governance, enhancing climate resilience, and promoting sustainable urban development. Common indicators for evaluating urban environmental management include land-use efficiency, environmental sustainability, infrastructure adequacy, pollution control, conservation of natural resources, and equitable access to urban services (Jones et al., 2017; UN-Habitat, 2020; Iduseri et al., 2024; UN-Habitat, 2024).

In Nigeria, rapid urbanization has continued to outpace the capacity of planning institutions to effectively manage urban growth. Increasing demand for housing, transportation, commercial development, and public infrastructure has resulted in numerous environmental problems, including unplanned development, flooding, inadequate drainage systems, poor waste management, environmental pollution, and weak compliance with planning regulations. Although planning authorities are statutorily responsible for regulating physical development and enforcing environmental standards under the Nigerian Urban and Regional Planning Act, their efforts are frequently constrained by inadequate funding, weak institutional capacity, ineffective policy implementation, political interference, and poor enforcement mechanisms

(Federal Republic of Nigeria, 2004; World Bank, 2023; Ogunbode et al., 2024; Unegbu et al., 2024).

Abakaliki Metropolis, the capital of Ebonyi State, typifies many of these urban environmental management challenges. Since becoming the state capital, the city has experienced rapid physical expansion and population growth, resulting in increased pressure on land resources, infrastructure, and environmental services. Despite successive government interventions through planning schemes, master planning, and urban renewal programmes, the metropolis continues to experience environmental challenges such as uncontrolled physical development, poor drainage, inadequate waste disposal, traffic congestion, and uneven spatial development. These persistent problems raise important questions regarding the effectiveness of the environmental management activities performed by professional town planners in the metropolis.

Against this background, evaluating the urban environmental management activities of town planners in Abakaliki Metropolis is essential for determining the effectiveness of existing planning practices and identifying areas requiring improvement. The findings of this study will contribute to strengthening planning institutions, improving environmental governance, promoting evidence-based policy implementation, and advancing sustainable urban development in Abakaliki Metropolis and other rapidly growing Nigerian cities (UN-Habitat, 2024; World Bank, 2023).

Objectives of the Study

The objectives geared towards achieving the stated aim include identifying the existing environmental management activities in Abakaliki Metropolis; examining the effectiveness of these environmental management activities; and determining the environmental problems facing Abakaliki Metropolis. The hypothesis of the study states that physical planning interventions do not significantly affect the environmental sustainability of Abakaliki Metropolis (H0).

2. Literature Review

2.1 Conceptual Review

2.1.1 Physical Planning

Physical planning is the systematic process of organizing, regulating, and managing the use and development of land to achieve orderly, functional, and sustainable human settlements. It integrates land-use planning, transportation, infrastructure provision, environmental protection, urban design, and regulatory control to ensure balanced spatial development and efficient resource utilization (Faludi, 2014; Healey, 2016). It also coordinates social, economic, environmental, and institutional considerations to promote sustainable urban growth while minimizing environmental degradation (Okpala, 2008; Daramola, 2021; Olanrewaju et al., 2024). Through policy formulation, implementation, monitoring, and development control, physical planning provides a framework for improving the quality of the built environment and enhancing the well-being of present and future generations (Adenaike et al., 2020).

2.1.2 Urban Environmental Management Activities

Urban environmental management activities refer to the coordinated planning, regulation, implementation, and monitoring measures undertaken by planning authorities and stakeholders to protect and improve the urban environment while promoting sustainable development. These activities encompass land-use regulation, waste management, pollution control, environmental protection, infrastructure management, conservation of natural resources, and enforcement of environmental standards to address the challenges of rapid urbanization (UN-Habitat, 2022; Bwala et al., 2022). Through collaborative governance, strategic planning, and stakeholder participation, urban environmental management activities seek to enhance environmental sustainability, urban resilience, public health, and the overall quality of life in cities (Yekeen & Misnan, 2024; Adeyemo & Olaitan, 2024; Nesmachnow & Callejo, 2025).

2.1.3 Town Planner

A town planner is a professionally trained expert responsible for guiding the orderly, sustainable, and legally compliant development of urban and rural environments through spatial planning, land-use

regulation, and environmental management. Town planners prepare development plans, administer development control, coordinate infrastructure provision, undertake environmental impact assessments, protect environmentally sensitive areas, and ensure compliance with planning laws and standards (UN-Habitat, 2024; Yekeen & Misnan, 2024). They also engage stakeholders, monitor urban growth, promote climate-resilient development, and integrate environmental, social, and economic considerations into planning decisions to enhance urban sustainability, resilience, and the quality of life of residents (Olanrewaju et al., 2024; World Bank, 2023; Adeyemo & Olaitan, 2024).

2.2 Theoretical Framework: The Collaborative Planning Theory

This study is anchored on the Collaborative Planning Theory developed by Healey (1997), which emphasizes that sustainable urban development and environmental management are best achieved through collaborative decision-making involving government agencies, planning professionals, private organizations, and local communities. The theory argues that town planners should serve as facilitators who integrate environmental, social, economic, and institutional interests into planning and environmental management processes to achieve sustainable urban outcomes (Healey, 1997, 2003). It further maintains that effective urban environmental management depends on strong institutional capacity, stakeholder participation, transparent governance, and coordinated implementation of planning policies (Healey, 1998; Calderon & Westin, 2021).

The theory is relevant to this study because the environmental challenges confronting Abakaliki Metropolis — including indiscriminate development, poor waste management, encroachment on environmentally sensitive areas, and weak enforcement of planning regulations — reflect inadequate collaboration and institutional coordination among planning authorities and stakeholders. Evaluating the environmental management activities of town planners from this theoretical perspective provides a framework for assessing the effectiveness of planning institutions, development control, environmental governance, and stakeholder participation in achieving sustainable urban development. The theory

therefore offers an appropriate lens for identifying institutional gaps and recommending strategies for improving urban environmental management and planning practice in Abakaliki Metropolis (UN-Habitat, 2024; Yekeen & Misnan, 2024).

2.3 Empirical Review

Empirical studies on environmental management activities in urban areas have focused on issues such as waste management, urban environmental governance, the creation of green infrastructure, climate resilience, and public environmental education.

Eya et al. (2022) studied environmental management and city sustainability for sustainable development in Nigeria using a survey research design. The findings showed that activities like waste management, urban planning policies, and environmental monitoring play a vital role in sustainable urban development. The study highlighted that inadequate environmental management practices are a major reason for environmental deterioration in many Nigerian cities.

Yekeen and Misnan (2024) examined urban governance in Nigerian cities in relation to social exclusion and livability, using a qualitative approach that included policy analysis and a review of the literature. The study found that inadequate urban planning systems and weak environmental governance frameworks have a major impact on social inclusion and environmental sustainability in cities, and advocated for integrated environmental management frameworks that incorporate community involvement, environmental regulation, and urban planning.

Amin et al. (2024) investigated environmental protection policies and sustainable waste management systems in Nigeria using a survey method, analysing data through descriptive and inferential statistics. The results indicated that effective waste collection systems, recycling programs, and waste disposal regulations play a crucial role in reducing environmental pollution in urban settings, although insufficient infrastructure and weak policy enforcement hinder effective waste management.

Jerie et al. (2024) investigated plastic waste management practices in the urban suburbs of Zimbabwe using a mixed-methods approach

incorporating household surveys, interviews, and field observations. The results revealed that inadequate waste collection systems and insufficient recycling infrastructure lead to environmental pollution and pose risks to public health, underscoring the importance of circular-economy strategies.

Akintunde et al. (2024) conducted a cross-sectional survey on environmental literacy and solid waste management in Jos metropolis, Nigeria, analysing data using correlation and regression techniques. The results indicated that environmental literacy plays a significant role in encouraging residents to engage in waste sorting and proper disposal practices.

Alam and Zakaria (2021) investigated environmental awareness among urban residents in Bangladesh using a survey approach and logistic regression analysis. The results indicated that socio-economic factors, such as education, income, and occupation, play a significant role in shaping environmental awareness and involvement in environmental protection initiatives.

Ekele et al. (2025) examined urbanization and environmental quality in the Abuja Municipal Area Council, Nigeria, using remote sensing and GIS methods incorporating land surface temperature, NDVI, NDBI, and NDWI indicators. The results revealed that swift urbanization has resulted in higher land surface temperatures and diminished vegetation cover, adversely impacting environmental quality.

Adamu et al. (2025) studied urban drainage systems and their environmental impacts in Buea, Cameroon, using a case-study method with field surveys and hydrological assessments. The study found that inadequately designed drainage systems lead to flooding and environmental harm, and recommended improved drainage infrastructure and sustainable water management.

Bera et al. (2023) conducted a systematic literature review on urbanization and its effects on environmental sustainability, finding that urbanization has considerably influenced environmental sustainability through rising greenhouse gas emissions, an amplified urban heat island effect, loss of green areas, and disrupted biodiversity, while also highlighting the potential for

urban areas to lead sustainability efforts through policy, innovation, and community involvement.

Cobbinah et al. (2017) investigated urban environmental issues in Ghana using a survey methodology, finding that significant population growth, ineffective planning systems, and increasing poverty make urban Ghana vulnerable to environmental degradation, and that both human activities and natural phenomena have adversely altered the urban landscape.

Edelman (2021) focused on the management of the urban environment in Istanbul, Turkey, using survey research methods to examine challenges related to poverty reduction, industry, transportation, energy, water supply, sewage, sanitation, and financial constraints, and proposed a five-year strategy to address the city's environmental challenges.

Adekola et al. (2017) conducted a qualitative assessment of the environmental management situation among Nigeria's state capitals, finding that only five of the 37 state capitals, including the Federal Capital Territory, could be classified as environmentally friendly cities.

Oyebode (2018) assessed municipal solid waste management for public health and the environment in Nigeria using a survey method, finding that the average Nigerian generates approximately 0.43 kg of solid waste per person daily, with organic materials representing 60%–80% of the waste stream.

Ofulue (2025) investigated environmental sanitation management in Nigeria using a doctrinal legal approach, finding that legal challenges — including limited public awareness, ineffective law enforcement, insufficient penalties, and inadequate waste-management systems — hinder effective environmental sanitation.

Abur et al. (2024) reviewed municipal solid waste generation, management practices, and waste-to-energy potential in Nigeria, estimating substantial energy and revenue potential from municipal solid waste while identifying insufficient funding, outdated infrastructure, limited recycling facilities, and weak enforcement as persistent challenges.

Nwoko (2013) evaluated the Environmental Impact Assessment system in Nigeria using survey research methods, finding insufficient capacity of EIA approval bodies, weaknesses in screening and

scoping, poor EIA quality, limited public involvement, and weak monitoring.

In summary, the empirical literature reviewed indicates that environmental management activities in urban areas include waste management, green infrastructure development, environmental monitoring, climate-resilient infrastructure, and community participation, and that effective strategies significantly improve urban environmental quality and sustainability outcomes. However, the literature also highlights inadequate environmental infrastructure, weak policy enforcement, and limited environmental awareness among urban populations, with many studies focused on developed countries — creating a research gap in understanding environmental management practices in rapidly urbanizing African cities.

2.4 Statement of Research Gap

Despite the valuable contributions of the studies reviewed, there is a paucity of empirical research specifically investigating physical planning operations in Abakaliki Metropolis using a survey research design. Consequently, a knowledge gap remains regarding the influence of physical planning operations on the physical development and

administration of the metropolis. This study seeks to address this gap by providing empirical evidence from Abakaliki Metropolis, thereby contributing to the existing body of knowledge on urban and physical planning.

3. Materials and Methods

3.1 Study Area

Abakaliki is the capital of Ebonyi State in south-eastern Nigeria, located at latitudes 6°13'N–6°25'N and longitudes 8°00'E–8°10'E (Figure 1), with an area of approximately 320 square kilometres. The metropolis hosts four local government councils — Abakaliki, Izzi, Ebonyi, and Ezza South LGAs — and several communities, including Agbaja Unuphu, Nkaliki, Ishieke, Igbeagu, Amagu, Enyigba, Inyimagu Unuphu, Amike-Aba, and Umuaghara. The city is traversed by the trans-Saharan Enugu–Abakaliki–Ogoja road and other major routes such as the Abakaliki–Afikpo road and the Old Abakaliki–Enugu road, complemented by a network of paved intra-city roads (Water-Works, Ogoja, Quarry, Ezza, Onwe, and Nkaliki) connecting residential, commercial, institutional, and industrial areas.

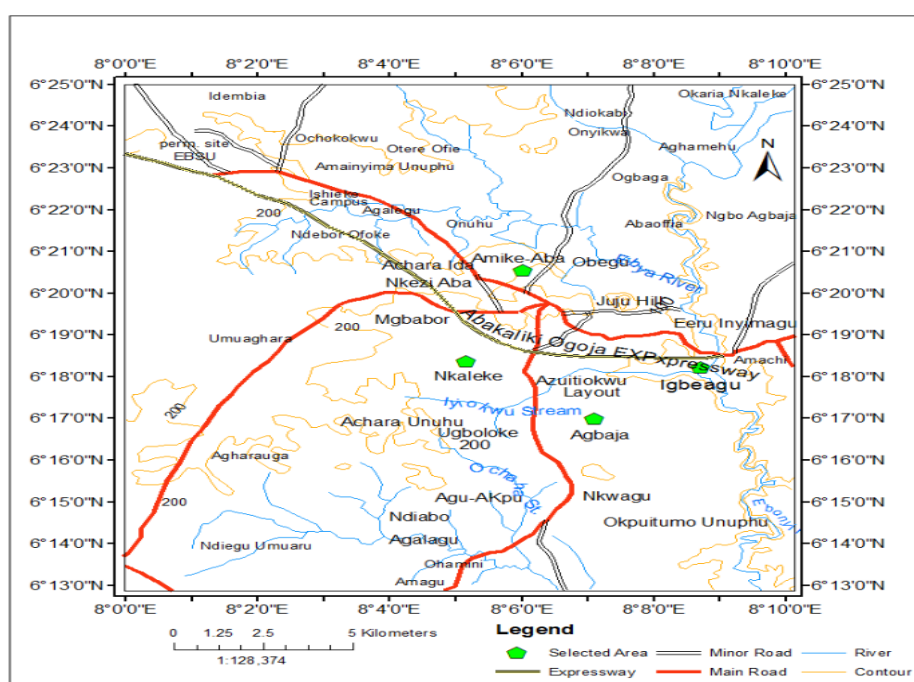


FIGURE 1. Location Map of Abakaliki Metropolis and Other Relevant Features

Source: Geology Department, Ebonyi State University, Abakaliki (2023)

The area has experienced rapid urban growth since the creation of Ebonyi State in 1996. The metropolis serves as the administrative, commercial, and socio-economic centre of the state and continues to attract increasing population and development activity. This rapid expansion has intensified pressure on land resources, infrastructure, public services, and the urban environment. The city is characterized by a mixed pattern of urban and peri-urban settlements, where former agricultural lands and wetlands have gradually been converted to residential, commercial, and institutional uses, with significant implications for environmental management, including loss of green spaces, increased surface runoff, flooding, and environmental degradation.

The tropical climate of Abakaliki, with distinct wet and dry seasons and an average annual rainfall of about 1,500 mm, further influences environmental conditions within the metropolis. Heavy rainfall frequently exposes inadequacies in drainage systems and waste management infrastructure, leading to flooding and pollution of waterways. In addition, rapid urbanization, indiscriminate waste disposal, deforestation, and encroachment on environmentally sensitive areas continue to threaten environmental sustainability, underscoring the importance of effective urban environmental management activities by town planners, particularly in land-use regulation, development control, environmental protection, and infrastructure planning.

3.2 Research Design

The study adopted a survey research design using both quantitative and qualitative approaches. The mixed-method approach enabled the collection of numerical and descriptive data required to evaluate the urban environmental management activities of town planners, environmental challenges, stakeholder participation, and the effectiveness of planning practices in Abakaliki Metropolis.

3.3 Sources of Data

Both primary and secondary data were utilized. Primary data were obtained through questionnaires, interviews, focus group discussions, and field observations involving town planners, community leaders, and other stakeholders. Secondary data comprised books, journals, planning documents, government reports, maps, policy documents, and

relevant legislation on urban planning and environmental management.

3.4 Study Population

The study population comprised professional town planners, planning consultants, officials of planning agencies, community leaders, and other built-environment professionals involved in environmental planning and urban development within Abakaliki Metropolis. These respondents were selected because of their knowledge and direct involvement in urban environmental management activities.

3.5 Sampling Technique

A purposive sampling technique was adopted to select respondents with adequate knowledge and practical experience in urban planning and environmental management, ensuring that only individuals directly involved in planning administration, environmental regulation, and urban development were included.

3.6 Sample Size

A sample size of 400 respondents was determined using Yamane's sample size formula at a 95% confidence level and 5% margin of error. Proportionate allocation was applied to distribute the sample among planning institutions, local government planning authorities, and selected communities within Abakaliki Metropolis.

3.7 Reliability of the Research Instrument

The reliability of the questionnaire was assessed using Cronbach's Alpha coefficient following a pilot survey. A reliability coefficient of 0.966 demonstrated a high level of internal consistency, confirming that the instrument was dependable for evaluating urban environmental management activities among the selected respondents.

3.8 Methods of Data Presentation

Collected data were presented using tables, frequency distributions, charts, graphs, and descriptive summaries. These presentation techniques enhanced data interpretation and facilitated comparison of respondents' views regarding urban environmental management activities, planning performance, environmental

challenges, and stakeholder participation in Abakaliki Metropolis.

3.9 Methods of Data Analysis

Data were coded and analysed using IBM SPSS Statistics Version 27. Descriptive statistics, including frequencies, percentages, means, and standard deviations, summarized the data, while Cronbach's Alpha, Analysis of Variance (ANOVA), and Spearman Rank Correlation were employed to test hypotheses and examine relationships among the study variables at a 5% significance level.

4. Findings

4.1 Existing Environmental Management Activities in Abakaliki Metropolis

Respondents were asked to indicate which urban environmental management activities exist in Abakaliki Metropolis, to assess how informed various stakeholder groups are about environmental programmes and policies. Responses were quantified into percentage values, presented in Table 1.

TABLE 1. Existing Environmental Management Activities in Abakaliki Metropolis

Environmental Management Activity	Frequency	Percent (%)
Urban planning and zoning regulations	120	30.37
Waste management and recycling programs	90	22.78
Green space maintenance (parks, gardens)	80	20.25
Sustainable transportation initiatives	70	17.72
Community education and awareness programs	15	3.99
Air and water quality monitoring	10	2.53
Others	8	2.05
Climate action plans	2	0.50
Total	395	100.0

Source: Researchers' Field Survey (2026)

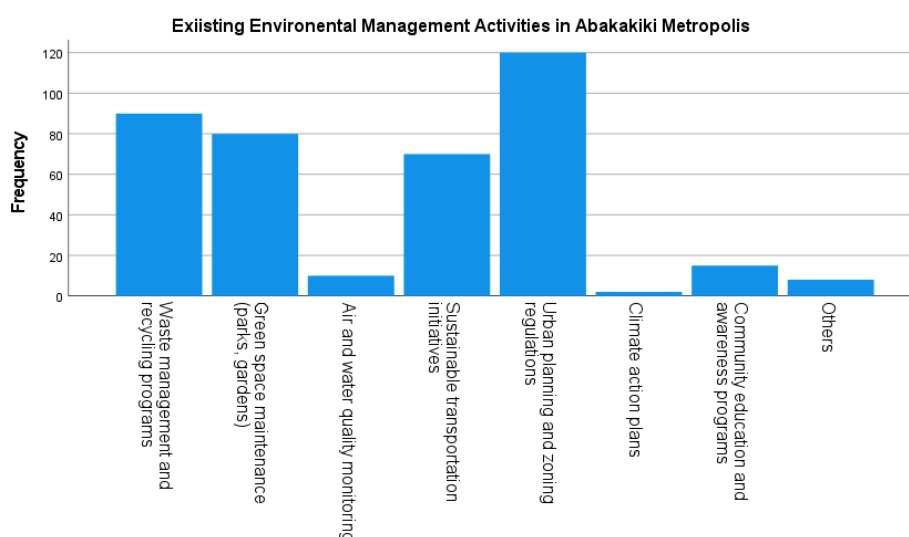


FIGURE 2. Existing Environmental Management Activities in Abakaliki Metropolis

Source: Researchers' Field Survey (2026)

The survey results in Table 1 indicate that 30.37% of respondents were aware of urban planning and zoning regulations, and 22.78% were aware of waste

management and recycling programmes, while awareness of sustainable transportation initiatives stood at 17.72%. Green space maintenance

accounted for 20.25%, air and water quality monitoring for 2.53%, community education and awareness programmes for 3.99%, and climate action plans for only 0.50%, with a small proportion (2.05%) citing other activities not captured by the main categories.

The analysis shows that stakeholders are most familiar with tangible, regulatory, and service-related environmental activities — such as urban planning, waste management, and green-space upkeep — while they are markedly less aware of technical, programmatic, or long-term

environmental strategies, including air and water quality monitoring, educational programmes, and climate action planning.

4.2 Effectiveness of Environmental Management Activities

Respondents' perceptions of the effectiveness of environmental management activities in Abakaliki Metropolis were categorized into five levels — very effective, effective, neutral, ineffective, and very ineffective — and are summarized in Table 2.

TABLE 2. *Effectiveness of Environmental Management Activities*

Effectiveness Level	Frequency	Percent (%)
Ineffective	113	28.6
Neutral	107	27.1
Very Ineffective	75	19.0
Effective	57	14.4
Very Effective	43	10.9
Total	395	100.0

Source: Researchers' Field Survey (2026)

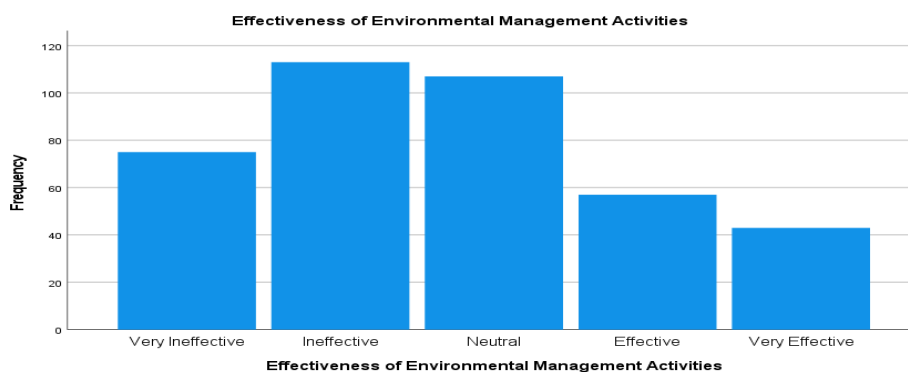


FIGURE 3. *Effectiveness of Environmental Management Activities*

Source: Researchers' Field Survey (2026)

The results in Table 2 indicate that more than 47% of respondents (19.0% very ineffective, 28.6% ineffective) perceived environmental management activities as ineffective or very ineffective. A considerable proportion (27.1%) adopted a neutral stance, while only 25.3% of respondents viewed these activities positively (14.4% effective, 10.9% very effective).

Stakeholders largely viewed these activities as ineffective or very ineffective, indicating significant dissatisfaction with current environmental management practices in the city. The neutral

responses suggest either uncertainty about the effectiveness of environmental initiatives or indifference toward their outcomes, possibly reflecting limited awareness of environmental programmes or unclear communication regarding their results. Interviews and focus group discussions with stakeholders further revealed that environmental issues such as waste management, flood control, and sanitation continue to pose serious challenges despite government efforts, indicating that current environmental management activities in Abakaliki are widely viewed as insufficient in

addressing critical issues of waste disposal, sanitation, pollution, and urban planning.

4.3 Environmental Problems Facing Abakaliki Metropolis

Respondents' perceptions of the major environmental problems confronting Abakaliki

Metropolis were quantified to reveal which problems are most prevalent or most widely recognized within the urban area, as presented in Table 3.

TABLE 3. Environmental Problems Facing Abakaliki Metropolis

Environmental Problem	Frequency	Percent (%)
Flooding	161	40.8
Waste management	132	33.4
Deforestation	80	20.3
Others	13	3.3
Water pollution	6	1.5
Air pollution	3	0.8
Total	395	100.0

Source: Researchers' Field Survey (2026)

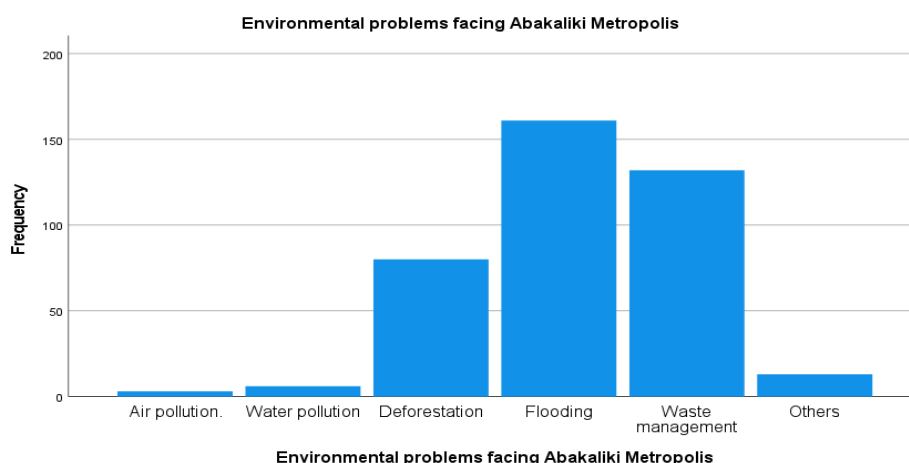


FIGURE 4. Environmental Problems Facing the Metropolis

Source: Researchers' Field Survey (2026)

The results in Table 3 indicate that the dominant environmental problem identified by stakeholders was flooding (40.8%), followed by waste management (33.4%), deforestation (20.3%), water pollution (1.5%), and air pollution (0.8%), with a small proportion (3.3%) citing other environmental problems not captured by the main categories.

Flooding stands out as the most urgent environmental concern in Abakaliki Metropolis, largely attributable to inadequate drainage systems, rapid urban development, blocked waterways from solid waste, and heavy seasonal rainfall. Its severity disrupts daily activities and poses serious threats to

property, public health, and infrastructure. Areas such as the Onuebonyi axis experience seasonal flooding from the Ebonyi River, the Amike-Aba axis is affected by the Abe River, and the Azuiyiokwu layout by the Iyiokwu River, while the New Layout is affected by the Iyiudele River. Although government has intervened through the National Erosion and Watershed Management Project (NEWMAP) by dredging some rivers, issues persist in areas such as Amike-Aba and Onuebonyi.

In addition to flooding, 33.4% of stakeholders reported waste management issues, citing the accumulation of solid waste, irregular collection

services, illegal dumping, and insufficient disposal facilities. Deforestation was also recognized as a significant challenge, stemming from urban expansion, land clearing for development, and fuelwood harvesting, with stakeholders expressing concern over diminishing green spaces, particularly in suburban areas. Water pollution, though perceived as less critical than flooding or waste management, reflects awareness of contamination affecting rivers, streams, and groundwater from improper household waste disposal, effluent discharge, and urban runoff. Only 0.8% of respondents cited air pollution as a concern, notwithstanding localized sources such as vehicle emissions, dust from unpaved roads, and open burning of waste. A small proportion (3.3%)

identified other issues, including noise pollution, soil degradation, and erosion unrelated to deforestation.

Overall, flooding and waste management were viewed as the most urgent environmental problems, with over 74% of respondents highlighting these issues, which are likely interconnected as inadequate waste disposal contributes to blocked drainage and increased flooding. The notable concern about deforestation reflects broader worries about environmental degradation linked to urban expansion, while air and water pollution are regarded as less significant, possibly due to lower visibility, limited monitoring, or reduced public awareness of pollution indicators.

Over 74% of stakeholders identified flooding and waste management as the most urgent environmental problems confronting Abakaliki Metropolis.

— KEY FINDING

of Abakaliki Metropolis. Statistical test: one-sample t-test (test value = 3.0, the neutral mean).

4.4 Hypothesis Testing

H0: Physical planning interventions do not significantly affect the environmental sustainability

TABLE 4. Results of the Hypothesis Test

Variable	Mean (M)	Std. Error	t-calc	df	Sig. (2-tailed)	Decision
Environmental Sustainability Impact	2.18	0.042	-19.52	394	.000	Reject H0

Source: Researchers' Field Survey (2026), SPSS v.27 Output

Result Interpretation: The mean score for the impact of planning interventions on environmental sustainability ($M = 2.18$) is significantly lower than the hypothesized population mean of 3.0. The t-statistic of -19.52, with a significance level of $p < .05$, indicates a significant departure from the hypothesized norm.

Findings: The null hypothesis is rejected. The data indicate that current physical planning interventions are having a significant negative effect on environmental sustainability. The low mean score confirms that the failure to implement green spaces and flood-control measures is directly contributing to environmental degradation in the metropolis.

5. Discussion of Findings

The environmental activities currently taking place in Abakaliki Metropolis, as presented in Table 1, include urban planning and zoning regulations, waste management and recycling programmes, maintenance of green spaces, water quality monitoring, community education and environmental awareness initiatives, and climate action planning. The results indicate that while these activities are present, respondents are primarily aware of visible, regulatory, and service-oriented environmental efforts — such as planning, waste management, and green-space upkeep — while being less familiar with technical, programmatic, or long-term strategies, including air and water quality

monitoring, educational programmes, and climate action planning. These findings are consistent with Eya et al. (2022), who emphasized the importance of waste management, urban planning policies, and environmental monitoring in promoting sustainable urban development, and noted that inadequate environmental management practices significantly contribute to environmental degradation in many Nigerian cities.

Regarding effectiveness, the results in Table 2 indicate that environmental management efforts in Abakaliki are currently viewed as ineffective in tackling major environmental challenges, as issues such as waste disposal, sanitation, pollution, and flood control continue to persist. This aligns with Amin et al. (2024), who found that effective waste collection systems, recycling programmes, and waste disposal regulations are essential for reducing environmental pollution in urban areas, while also identifying inadequate infrastructure and weak policy enforcement as substantial impediments to effective waste management.

Findings on the environmental challenges facing Abakaliki Metropolis, as shown in Table 3, reveal that flooding and waste management are viewed as the most pressing issues, with over 74% of respondents highlighting these concerns. These problems are likely interconnected, as inadequate waste disposal contributes to blocked drainage systems and increased flooding. Significant concern about deforestation indicates broader worries regarding environmental degradation linked to urban expansion, while air and water pollution are considered less significant, possibly due to lower visibility, limited monitoring, or reduced public awareness of pollution indicators. This aligns with Jerie et al. (2024), who found that insufficient waste collection systems and inadequate recycling infrastructure lead to environmental pollution and public health risks, and underscored the need for circular-economy strategies such as waste reduction and recycling to improve urban environmental management.

6. Conclusion

The study concludes that the effectiveness of urban environmental management activities undertaken by town planners in Abakaliki Metropolis remains constrained despite the existence of planning policies, environmental programmes, and institutional frameworks. Persistent environmental challenges, including poor waste management, flooding, pollution, uncontrolled development, and environmental degradation, are largely attributable to weak enforcement of planning regulations, inadequate institutional capacity, limited funding, poor inter-agency coordination, and insufficient stakeholder participation. Consequently, the environmental management efforts of town planners have not adequately addressed the demands of rapid urbanization. Sustainable urban environmental management in Abakaliki therefore requires stronger governance, effective development control, enhanced institutional capacity, adoption of modern planning technologies, and inclusive stakeholder engagement to improve environmental quality and promote sustainable urban development.

7. Recommendations

In line with the findings of the study, the following recommendations are made:

1. Enhance Urban Infrastructure and Basic Services — While there has been some progress in waste management and electricity supply, significant deficiencies in water supply, internet access, and gas distribution need to be addressed. Investing in modern and resilient infrastructure is crucial for elevating living standards and fostering urban development.

2. Decentralize Essential Services — It is important to invest in decentralized transportation facilities, water supply, and sanitation services to alleviate pressure on urban centres. Public services such as healthcare, education, and recreational facilities should be distributed fairly across both central and peripheral areas.

3. Increase Infrastructure Investment — Increased investment in essential infrastructure, including roads, drainage systems, and public

utilities, is vital for effective physical planning and sustainable urban development.

Declarations

Author Contributions (CRediT). Ogbaga, M. N.: Conceptualization, Methodology, Investigation, Formal Analysis, Writing – Original Draft. Iyi, E. A.: Supervision, Methodology, Writing – Review & Editing. Ogberetitor, O.: Data Curation, Investigation, Writing – Review & Editing.

Funding. This research received no external funding.

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Conflict of Interest. The authors declare no conflict of interest.

Ethics Approval. Not applicable.

Consent to Participate. Informed consent was obtained from all respondents prior to data collection.

Data Availability Statement. Data supporting the findings of this study are available from the corresponding author upon reasonable request.

Acknowledgements. Not applicable.

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