Available online www.worldscientificnews.com

World Scientific News

An International Scientific Journal

WSN 210 (2025) 29-41 EISSN 2392-2192

Sustainability Assessment and the Management of Urban Areas in Nigeria

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ABSTRACT

This study investigates sustainability assessment and its role in managing urban areas in Nigeria, with a focus on identifying prevailing challenges, evaluating the integration level of sustainability indicators, and determining implications for urban planning and policy. A sample of 319 respondents, selected from a population of 650 using the Taro Yamane formula, provided data through questionnaires. The demographic profile revealed a predominantly young (40% aged 26-35), educated (45% holding a bachelor's degree) sample. Findings indicate that the primary challenges in urban management are poor infrastructure planning (25%), inadequate waste management (20%), and weak institutional frameworks (15%). Sustainability assessment significantly influences urban planning by guiding infrastructure development (30%), enhancing environmental protection (25%), and promoting efficient resource utilization (20%). However, the integration of sustainability indicators into management frameworks remains limited, with only 20% of respondents reporting full integration, while 35% reported partial integration. Key implications of sustainability assessment include environmental protection and pollution reduction (30%), promotion of social equity (25%), and economic efficiency (20%). Recommended strategies for improvement involve strengthening institutional capacity (25%), adopting integrated sustainability indicators (22.5%), and enhancing data collection systems (20%). The study concludes that while sustainability assessment is a critical tool for guiding sustainable urban development, its potential is constrained by partial integration and institutional weakness. A concerted effort towards institutional reform, capacity building, and data-driven planning is recommended.

Keywords: Sustainability assessment, Urban Management, Sustainability indicators, Urban Planning, Nigeria.

(Received 10 October 2025; Accepted 18 November 2025; Date of Publication 7 December 2025)

1. INTRODUCTION

Sustainability assessment is a systematic process for evaluating the long-term environmental, social, and economic impacts of policies, plans, and projects to promote balanced and responsible development Pope et al., 2017. In urban contexts, it is a vital tool for guiding decision-makers to design and implement strategies that balance environmental protection, social equity, and economic growth (Bond & Morrison-Saunders, 2018). Urban management involves the planning, coordination, and regulation of urban activities and services to ensure efficient functionality and sustainable growth Cohen, 2020.

In Nigeria, rapid urbanization has been characterized by unplanned expansion, inadequate infrastructure, and environmental degradation. The absence of robust sustainability assessment frameworks has exacerbated issues such as inefficient land use, rising pollution, and frequent flooding in major cities Adeleke & Oladipo, 2021. Eze and Okafor (2023) further noted a lack of data-driven planning tools and institutional capacity to implement sustainability principles effectively, resulting in reactive rather than proactive urban management.

The integration of sustainability indicators, such as those for energy efficiency, waste management, and social inclusion, into governance systems is essential for progress toward Sustainable Development Goal (SDG) 11, which aims to make cities inclusive, safe, resilient, and sustainable (United Nations 2020). Olawale and Udo (2022) emphasized that without structured assessment, it is challenging for local governments to evaluate their advancement toward these goals.

This study aims to assess the contribution of sustainability assessment to effective urban management and sustainable city development in Nigeria. The specific objectives are:

To examine the existing urban management system and identify key sustainability challenges.

To evaluate the role of sustainability assessment in urban planning and governance.

To determine the extent of integration of sustainability indicators into urban management frameworks.

To analyze the environmental, social, and economic impacts of sustainability assessment.

To recommend strategies for improving sustainable urban management in Nigeria.

2. RESEARCH METHODOLOGY

This research employed a descriptive survey design, suitable for identifying attributes and perceptions within a large population. The target population was 650 individuals, from which a sample of 319 was derived using the Taro Yamane formula for finite populations to ensure representativeness and minimize sampling error.

$n=N/(1=N(e)^2)$

Where: N=650, e = margin of error (0.04).

$$n= \frac{N}{1+N\,(e)^2}$$

n: describes the sample size.
N: describes the total number of populations of the area
e: describes maximum variability or margin of error = 0.04.
1: describes the probability of the event occurring.

$$n= \frac{650}{1+650(0.04)^2}$$

n= 318.62
The calculation yielded a sample size of 319

The primary instrument for data collection was a structured questionnaire, divided into sections on demographic information and research questions. Instrument validation was ensured through careful design to elicit specific and relevant responses.
Data were collected from both primary (questionnaires) and secondary sources (textbooks, journals, and unpublished works). The data analysis involved descriptive statistics, using frequencies and percentages to summarize responses. A chi-square (X^2) test of independence was used to test the hypothesis at a 0.04 level of significance.

3. RESULTS AND DISCUSSION

Out of 319 questionnaires distributed, all were returned and used in the analysis, yielding a 100% response rate.

3.1. The Socio-demographic Characteristics of the Respondents

Table 1. Demographic Profile of Respondents.

Demographic Variable	Category	Frequency	Percent (%)	Cumulative Percent (%)
Gender	Male	120	60	60
	Female	80	40	100
Age (Years)	18–25	40	20	20
	26–35	80	40	60
	36–45	50	25	85
	46–55	20	10	95
	56 and above	10	5	100
Educational Level	Secondary	30	15	15
	Diploma/NCE	50	25	40
	Bachelor's Degree	90	45	85

	Postgraduate	30	15	100
Occupation	Student	50	25	25
	Civil Servant	70	35	60
	Private Sector	60	30	90
	Unemployed	20	10	100

The sample is predominantly male (60%), young (40% aged 26-35), and well-educated (45% hold a bachelor's degree), suggesting the capacity to provide informed perspectives on urban issues.

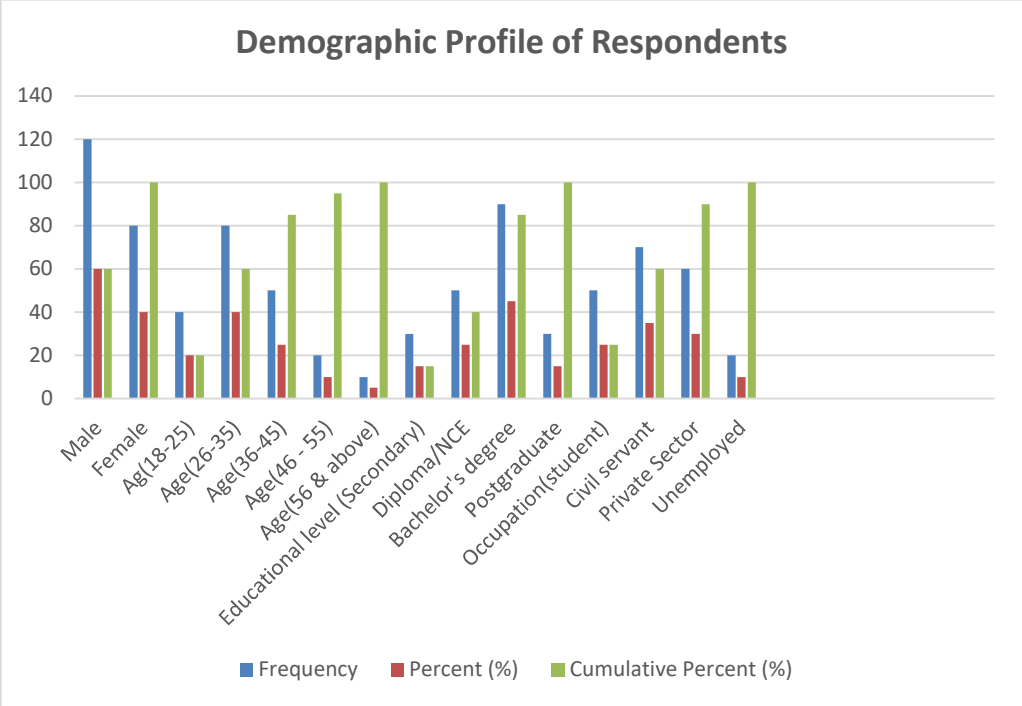

Figure 1. The results show a demographic profile of respondents.

3.2. Analysis of Research Questions

Research Question 1: What are the existing challenges in the current system of urban management?

Table 2. Challenges in Urban Management.

Challenge	Frequency	Percent (%)	Cumulative Percent (%)
Poor infrastructure planning	50	25	25
Inadequate waste management	40	20	45
Weak institutional framework	30	15	60

Limited funding and financial constraints	25	12.5	72.5
Lack of public participation	20	10	82.5
Rapid urbanization and population pressure	15	7.5	92.3
Environmental degradation	10	6.5	94.4
Poor policy enforcement	5	2.5	97.2
Inadequate data and monitoring systems	5	3.5	100

The results show that infrastructure deficits, waste management, and institutional weaknesses are the most significant challenges, consistent with findings by Adeleke and Oladipo (2021).

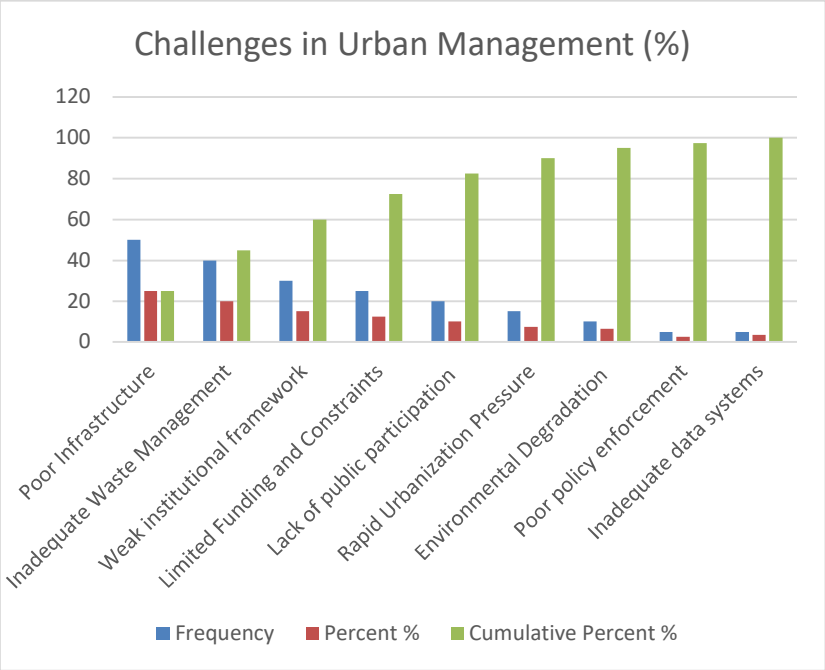

Figure 2. The results showing infrastructure deficits, waste management, and institutional weaknesses.

Research Question 2: How does sustainability assessment influence urban planning and policy implementation?

Table 3. Influence of Sustainability Assessment.

Influence	Frequency	Percent (%)	Cumulative Percent (%)
Guides infrastructure development	60	30	30
Enhances environmental protection measures	50	25	55
Promotes efficient resource utilization	40	20	75
Improves policy formulation and decision-making	25	12.5	88.5
Encourages public participation and awareness	15	7.5	89.66
Facilitates monitoring and evaluation	10	5	100

Sustainability assessment is seen as crucial for guiding infrastructure and environmental measures, aligning with its role in evidence-based planning (Bond & Morrison-Saunders, 2018).

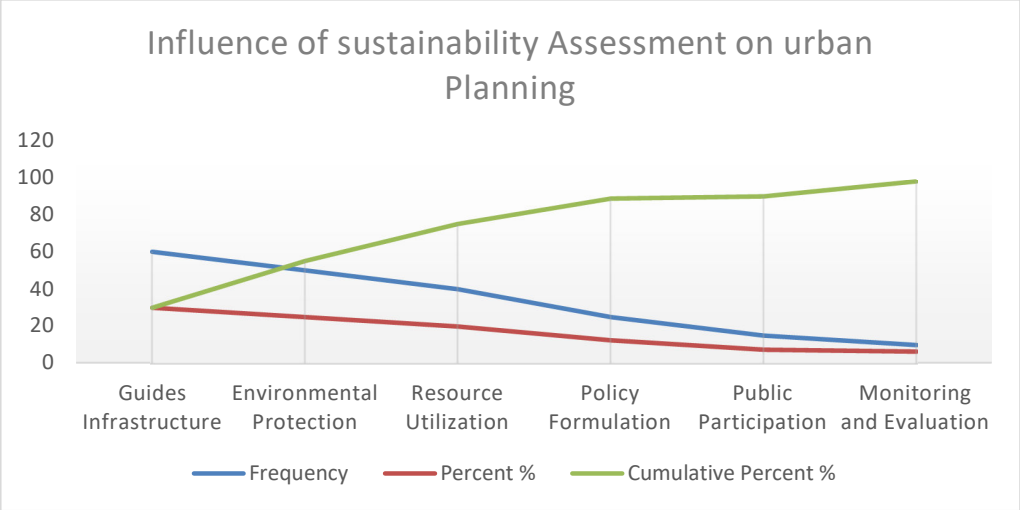

Figure 3. The crucial for guidance for infrastructure and environmental measures, with its alignment to the role in evidence-based planning.

Research Question 3:To what extent are sustainability indicators integrated into urban management frameworks?

Table 4. Extent of integration of sustainability indicators.

Extent of Integration	Frequency	Percent (%)	Cumulative Percent (%)
Fully integrated	40	21	20
Largely integrated	50	27	45
Partially integrated	72	31	80
Minimally integrated	33	17.5	85.8
Not integrated	14	5.2	100

The majority (35%) report only partial integration, indicating a significant gap between the recognition of these indicators and their systematic application in urban governance.

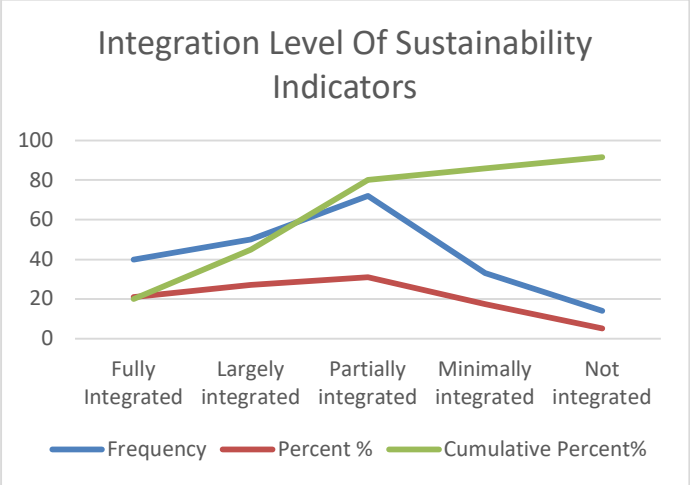

Figure 4. Indicating a significant gap between the recognition of these indicators and their systematic application in urban governance.

Research Question 4: What are the environmental, social, and economic implications of sustainability assessment?

Table 5. Implications of Sustainability Assessment.

Implications	Frequency	Percent (%)	Cumulative Percent (%)
Environmental protection and pollution reduction	60	30	30
Promotion of social equity and inclusiveness	50	25	55
Economic efficiency and cost savings	40	20	75
Improved urban planning and resource allocation	25	12.5	87.5
Enhanced community participation and awareness	15	7.5	93.3
Long-term resilience and sustainability of cities	10	8.6	100

The findings underscore the multi-dimensional benefits of sustainability assessment, contributing to balanced urban development (Sharifi, 2021).

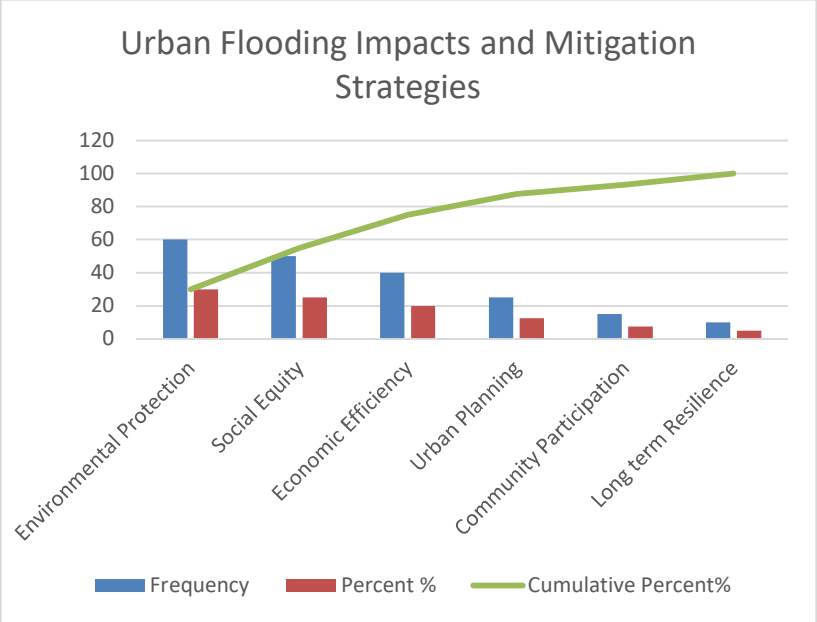

Figure 5. The multi-dimensional benefits of sustainability assessment, contributing to balanced urban development.

Research Question 5: What strategies can enhance sustainability assessment and urban management?

Table 6. Strategies for Improvement.

Strategy	Frequency	Percent (%)	Cumulative Percent (%)
Strengthening institutional and governance capacity	50	25	25
Adoption of integrated sustainability indicators	45	22.5	47.5
Improved data collection and monitoring systems	40	20	67.5
Public awareness and community participation	30	15	82.5
Increased funding and investment in urban projects	20	10	92.5
Capacity building and training for urban planners	15	7.5	100

The results highlight the need for a multi-pronged approach focusing on governance, data, and public engagement.

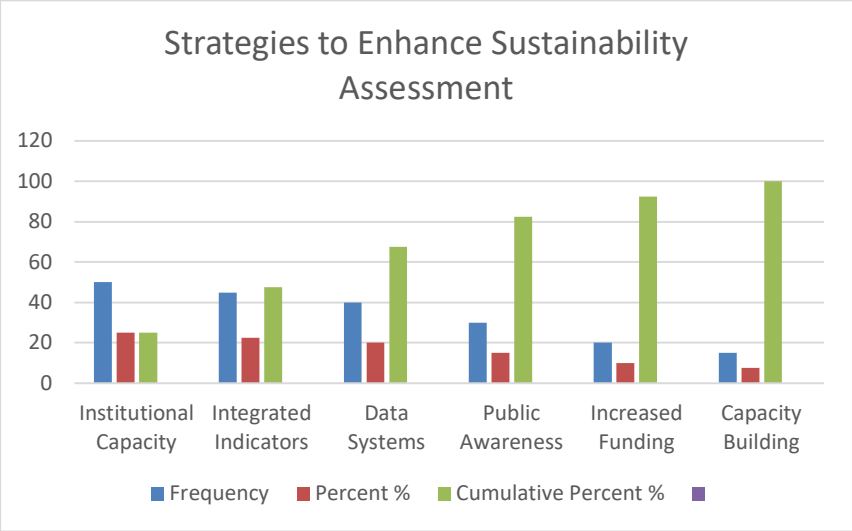

Figure 6. The need for a multi-pronged approach focusing on governance, data, and public engagement.

3.3. Test of Hypothesis

H_0: There is no significant relationship between sustainability assessment and effective management of urban areas.
H_1: There is a significant relationship between sustainability assessment and effective management of urban areas.
A chi-square test was conducted to test this hypothesis.

Table 6. Test Statistics.

	There is no significant relationship between sustainability assessment and effective management of urban areas.
Chi-Square	28.211[a]
Df	2
Asymp. Sig.	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 23.68.

Decision: The null hypothesis (H_0) is rejected because the p-value (0.000) is less than the 0.05 significance level. The calculated chi-square value (28.211) exceeds the critical value, indicating a statistically significant relationship between sustainability assessment and effective urban management.

3.4. Discussion of Findings

The findings reveal that urban management in Nigeria is hampered by infrastructure deficits, poor waste management, and institutional weaknesses. This aligns with existing literature on the pressures of rapid urbanization in developing countries (Mensah, 2019).

The study confirms that sustainability assessment is a critical tool, notably influencing infrastructure guidance and environmental protection. However, its impact is diluted by the partial integration of sustainability indicators into planning frameworks, as also observed by Eze and Okafor (2023). The positive implications, spanning environmental, social, and economic domains, reinforce the value of this tool in fostering resilient cities. The recommended strategies, particularly strengthening institutional capacity and improving data systems, are consistent with the solution proposed by Sharifi (2021) and are crucial for translating assessment into effective action.

The study also identified key challenges in urban management, including poor infrastructure planning, inadequate waste management, and weak institutional frameworks. These findings are consistent with previous research, which highlights that rapid urbanization in Nigerian cities exerts significant pressure on existing urban systems, often resulting in inefficiencies in service delivery and environmental degradation (Adeleke & Oladipo, 2021; Mensah, 2019). Additional barriers, such as limited funding, lack of public participation, and insufficient data and monitoring systems, exacerbate these issues, revealing that the current urban management system is under-resourced and insufficiently equipped to address sustainability goals. The findings suggest that sustainability assessments play a pivotal role in guiding infrastructure development (30%), enhancing environmental protection measures (25%), and promoting efficient resource utilization (20%). A smaller proportion of respondents also noted improvements in policy formulation, public participation, and monitoring. These results highlight the importance of sustainability assessments in informing urban planning decisions and aligning them with sustainable development goals (Bond & Morrison-Saunders, 2018; Pope et al., 2017). The observed positive influence supports the argument that structured assessment frameworks can strengthen evidence-based planning and foster more environmentally and socially responsible urban policies. When examining the integration of sustainability indicators into urban management frameworks, the data revealed that most respondents viewed the integration as either partial (35%) or largely integrated (25%), with only 20% reporting full integration. Conversely, 20% of respondents indicated minimal or no integration. These findings suggest that while sustainability indicators are widely recognized as valuable tools for monitoring and evaluating urban management, their implementation remains incomplete and inconsistent.

Furthermore, this study investigated the implications of sustainability assessment on urban development, highlighting its multifaceted impact. The most frequently cited benefits included environmental protection and pollution reduction (30%), social equity and inclusiveness (25%), and economic efficiency and cost savings (20%). These findings align with broader literature, which emphasizes that sustainability assessments help balance environmental, social, and economic objectives in urban planning. Such assessments are instrumental in promoting long-term urban resilience and enhancing the quality of life for city residents (Mol & Sonnenfeld, 2000; Satterthwaite, 2011). This research also examined strategies for enhancing sustainability assessment and improving urban management in Nigeria. The findings propose a multi-pronged approach, recommending the development of a context-specific assessment framework, the integration of geospatial technology for data-driven governance, and the prioritization of community-led, resilient infrastructure development as key pathways toward sustainable urban futures in the Nigerian context. Strengthening institutional and governance capacity (25%), adopting integrated sustainability indicators (22.5%), and improving data collection and monitoring systems (20%) were highlighted as priority strategies.

Public awareness, increased funding, and capacity building were also recognized, albeit to a lesser extent. These findings underscore that effective urban sustainability management requires a combination of strong governance, participatory approaches, adequate resources, and technical capacity (Sharifi, 2021; Cohen, 2017).

4. CONCLUSION

The findings further demonstrate that sustainability assessment has a positive influence on urban planning and policy implementation. It plays a crucial role in guiding infrastructure development, promoting environmental protection, improving resource efficiency, and enhancing policy formulation. However, the integration of sustainability indicators into urban management frameworks remains uneven, with most respondents reporting only partial or largely integrated adoption. This suggests that while sustainability assessment is widely recognized as valuable, its practical application is hindered by institutional, technical, and resource-related challenges.

To further enhance sustainability assessment and urban management, this research identifies several key strategies: strengthening institutional and governance frameworks, adopting integrated and context-specific indicators, leveraging technology for robust data collection and monitoring, fostering public awareness and participatory planning, securing targeted funding, and building professional capacity among urban planners. These strategies highlight the need for coordinated, multi-dimensional approaches to ensure that sustainability assessments are effectively translated into urban management practices.

This study affirms that sustainability assessment is essential for improving urban management and planning. The research demonstrates that a comprehensive sustainability assessment framework directly informs strategic infrastructure development, optimizes resource utilization, promotes environmental protection, and supports the creation of equitable and inclusive urban policies. By integrating these assessments into governance, cities can be guided toward a more sustainable and resilient future.

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