



Sustainable City or A Slum: An Interrogation of The Cognitive Process of a Complex City

Ache Stella Achuen¹, Ijeoma G.U. Ayuba²

¹Department of Urban and Regional Planning, Faculty of Environmental Sciences University of Jos
saachuenu@gmail.com, achuenua@unijos.edu.ng

²Department of Urban and Regional Planning, Faculty of Environmental Sciences University of Jos
Email: ayubai@unijos.edu.ng, ijeomaayuba@gmail.com

ABSTRACT

Abuja, the Federal Capital Territory of Nigeria, has evolved from a meticulously planned city into one of the most prominent urban centers in West Africa. Yet, it struggles with challenges such as urban sprawl, informal settlements, infrastructural deficits, and social inequalities, which hinder its path toward sustainability. This paper interrogates the cognitive processes underpinning Abuja's urban planning, governance, and development trajectory, examining whether the city can achieve sustainable growth or risks degenerating into a sprawling slum. Using a mixed-method approach, this study analyses urban planning policies, socio-economic patterns, and governance frameworks to assess the city's sustainable development potential. Results from questionnaires administered to 750 participants across Abuja highlight the widening gap between planned and unplanned areas. This paper concludes by recommending governance reforms, equitable infrastructure investments, and participatory planning to mitigate Abuja's developmental challenges.

Keywords: Abuja, urban sprawl, informal settlements, infrastructural deficits, social inequalities, cognitive processes, urban planning, governance, sustainable development, participatory planning.

1. Introduction

Abuja was established in 1991 to address overcrowding and infrastructural challenges in Lagos, Nigeria's former capital, and to symbolize national unity through its central location (Akinwale & Babajide, 2022). Inspired by cities such as Brasília and Washington, D.C., Abuja was conceived as a modern, world-class city with a structured master plan emphasizing zoning, functionality, and aesthetics (Ogunjimi & Aluko, 2020). Despite these ambitious goals, Abuja faces rapid population growth, urban sprawl, and mounting infrastructural challenges that compromise its sustainability (Okoye & Alabi, 2021).

The city's cognitive processes—shaped by policymakers' mental frameworks and assumptions—have played a critical role in this development. For instance, the cognitive disconnect between Abuja's original vision and socio-economic realities has led to informal settlements and spatial inequalities, particularly in marginalized areas (Mamman & Nyang, 2020). This study investigates whether Abuja's development trajectory aligns with the principles of sustainable urban development or risks mirroring the challenges faced by other rapidly urbanizing cities in developing countries.

Key questions guiding this study include:

1. How do cognitive processes in urban planning and governance influence Abuja's development?
2. To what extent do informal settlements and infrastructural deficits threaten Abuja's sustainability?
3. What interventions are necessary to align Abuja's urban growth with sustainability principles?

2. Literature Review

Urbanization in the Global South has been characterized by rapid growth, informal settlements, and unequal access to infrastructure, raising questions about the sustainability of cities like Abuja. This literature review explores themes relevant to understanding Abuja's development trajectory, particularly its urban planning framework, cognitive processes in governance, socio-economic disparities, and the challenges of informal settlements and urban sprawl.

2.1 Abuja's Urban Planning and Vision

Abuja was envisioned as a model city, planned to alleviate the pressures of overcrowding in Lagos and to serve as a unifying national capital. Akinwale and Babajide (2022) describe Abuja's planning model as inspired by modernist urban ideals, integrating zoning principles, green spaces, and transport systems. The city was intended to accommodate Nigeria's growing population while projecting an image of modernity and order (Ogunjimi & Aluko, 2020).

Despite its planned origin, Abuja's rapid urban growth has strained its infrastructure. Scholars argue that the planning processes failed to anticipate the scale of population influx and socio-economic pressures. For example, Okoye and Alabi (2021) highlight the disconnect between the city's vision and its practical implementation, with a growing divide between affluent neighborhoods and informal settlements. The city's development increasingly mirrors the challenges faced by other rapidly urbanizing cities in developing countries, where informal growth undermines planning ideals (Abubakar & Abdul-Rahman, 2021).

2.2 Cognitive Processes in Urban Planning

The mental frameworks and decision-making paradigms adopted by urban planners—referred to as cognitive processes—are critical in shaping urban development outcomes. Mamman and Nyang (2020) emphasize that Abuja's planning has been influenced by a top-down approach, with limited consideration for the realities of poverty and rapid urbanization. Cognitive biases toward aesthetics and infrastructure development in high-income areas have perpetuated inequalities, leaving low-income populations marginalized in informal settlements (Ogunjimi & Aluko, 2020).

These cognitive disconnects have been exacerbated by governance challenges, including poor coordination between administrative levels and a lack of continuity in urban policies (Akinwale & Babajide, 2022). As urbanization pressures mount, planners have struggled to adapt their frameworks to the city's evolving socio-economic realities, further widening the gap between Abuja's original vision and its current urban landscape.

2.3 Urban Sprawl and Informal Settlements

Urban sprawl and the proliferation of informal settlements are among the most visible challenges threatening Abuja's sustainability. Abubakar and Abdul-Rahman (2021) link the growth of informal settlements to the failure of urban policies to provide affordable housing and essential services for low-income populations. Informal settlements, which have emerged along the city's outskirts in areas like Lugbe and Nyanya, are characterized by inadequate infrastructure, poor sanitation, and limited access to basic services (Okoye & Alabi, 2021).

The growth of these settlements reflects broader patterns of inequality and neglect in urban planning. According to Ogunjimi and Aluko (2020), urban planners' emphasis on maintaining Abuja's aesthetic image as a modern city has sidelined the needs of low-income populations. This has resulted in a dual urban system where wealthy neighborhoods are well-served, while informal settlements struggle with slum-like conditions.

2.4 Governance and Policy Implementation Challenges

Governance is a central determinant of urban sustainability, yet Abuja's governance system has been marked by fragmentation and instability. Akinwale and Babajide (2022) discuss the lack of coordination between federal, municipal, and local authorities in Abuja, which has hindered the consistent implementation of urban policies. Policy discontinuities caused by frequent leadership changes have further weakened urban development efforts, contributing to a fragmented approach to planning and resource allocation (Mamman & Nyang, 2020).

In addition, Abuja's top-down governance style has excluded marginalized communities from participating in the planning process. Okoye and Alabi (2021) argue that this lack of inclusivity has perpetuated spatial inequalities and limited the effectiveness of urban interventions. For Abuja to achieve sustainability, scholars recommend a shift toward participatory governance and the integration of marginalized populations into planning processes.

2.5 Socio-Economic Inequalities

Socio-economic inequality is a pervasive challenge shaping Abuja's urban development. Abubakar and Abdul-Rahman (2021) highlight disparities in infrastructure and service provision between affluent neighborhoods and informal settlements. These inequalities reflect cognitive biases in planning processes, where the needs of wealthier populations are prioritized over those of vulnerable groups (Mamman & Nyang, 2020).

The unequal distribution of resources has contributed to spatial and social polarization, undermining efforts to create an inclusive city. Addressing these disparities will require urban planners and policymakers to adopt more equitable approaches to infrastructure development and service delivery (Ogunjimi & Aluko, 2020).

The literature underscores the complexities of urban planning and governance in Abuja, highlighting the cognitive processes, governance challenges, and socio-economic inequalities that shape the city's development. While Abuja's original vision emphasized order and sustainability, its rapid urbanization and fragmented governance have led to growing informal settlements, urban sprawl, and spatial inequalities.

Moving forward, addressing these challenges will require urban planners and policymakers to adopt inclusive, participatory, and adaptive approaches. Governance reforms, improved coordination among administrative units, and a focus on equitable infrastructure development are crucial for ensuring Abuja's sustainability and preventing its degeneration into a sprawling slum.

3. Methodology

The study utilized a mixed-method research design involving both quantitative and qualitative data. A total of 750 questionnaires were administered across Abuja's districts (Central Business District, high-income areas like Maitama and Asokoro, and informal settlements such as Lugbe and Nyanya) to capture diverse perspectives on the city's development. Participants included residents, urban planners, government officials, and community leaders. Primary data were also obtained through structured interviews, while secondary data were sourced from government reports, academic journals, and relevant urban development literature.

Data analysis employed descriptive statistics for the quantitative data and thematic content analysis for the qualitative data, focusing on themes such as governance challenges, urban sprawl, and socio-economic disparities. This approach allowed for a comprehensive understanding of the cognitive processes shaping Abuja's growth.

4. Results

The study's findings, supported by questionnaire responses and interviews based on research questions reveal critical cognitive processes and outcomes influencing Abuja's sustainability:

1. How do cognitive processes in urban planning and governance influence Abuja's development?

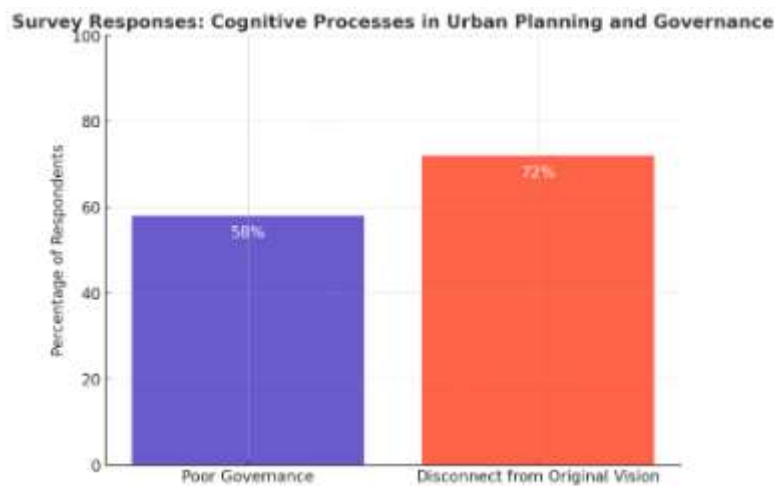


Figure 1. A bar chart visualizing the survey responses on how cognitive processes in urban planning and governance influence Abuja's development:

58% of respondents cited poor governance as a primary factor influencing urban challenges. 72% identified a disconnect between the city's original vision and its current realities.

Key Informant Interviews: Urban planners and policymakers emphasized that the initial planning paradigm for Abuja focused more on aesthetics and zoning than on socio-economic inclusivity. According to one respondent, "The planning framework envisioned a city of elites, which ignored the realities of Nigeria's socio-economic diversity."

Policy Documents: Analysis of Abuja's master plan and urban policy documents revealed a limited focus on affordable housing, public participation, and adaptive planning to accommodate rapid population growth.

Cognitive processes in Abuja's urban planning have been driven by a top-down, elitist approach that prioritizes image over inclusivity. This has led to the marginalization of low-income populations and the proliferation of informal settlements. Governance instability, including policy discontinuities caused by frequent leadership changes, has further exacerbated these challenges. The cognitive dissonance between policymakers' aspirations and Abuja's socio-economic realities undermines the city's sustainability trajectory.

2. To what extent do informal settlements and infrastructural deficits threaten Abuja's sustainability?

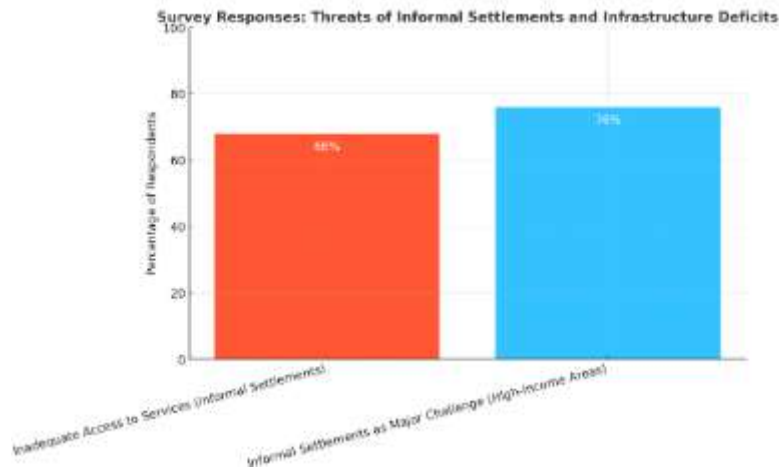


Figure 2. Bar chart visualizing the survey responses on the extent to which informal settlements and infrastructural deficits threaten Abuja's sustainability: 68% of respondents from informal settlements reported inadequate access to essential services (e.g., water, electricity, and sanitation). 76% of residents in high-income areas identified informal settlements as a major challenge to urban cohesion and sustainability.

Geospatial analysis of Abuja's urban growth patterns reveals a 38% increase in informal settlements between 2010 and 2020, primarily concentrated in areas such as Nyanya, Lugbe, and Gwagwalada. Informal settlements were observed to lack basic infrastructure, with 85% of housing units in these areas characterized by poor structural integrity and inadequate drainage systems. Informal settlements and infrastructural deficits pose significant threats to Abuja's sustainability by fostering socio-economic inequalities and environmental degradation. The unregulated expansion of these settlements disrupts urban planning efforts and contributes to issues such as traffic congestion, poor sanitation, and increased vulnerability to flooding. Without targeted interventions, the proliferation of informal settlements will further undermine Abuja's vision as a model city.

3. What interventions are necessary to align Abuja's urban growth with sustainability principles?

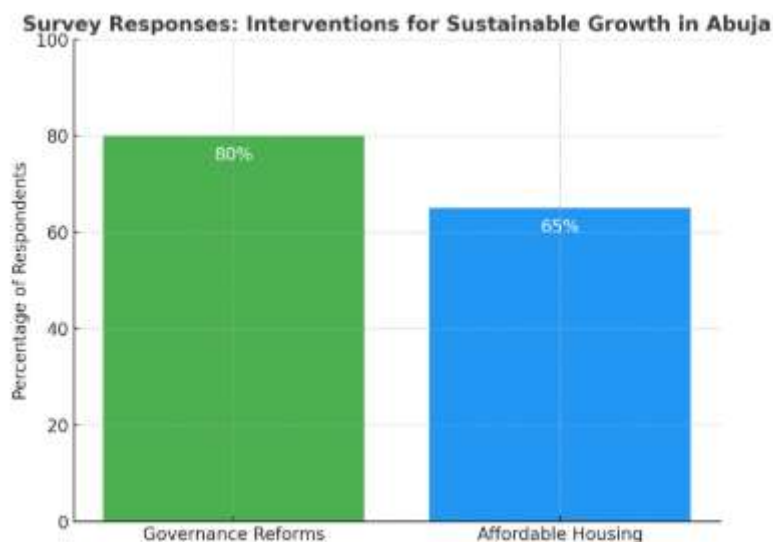


Figure 3. Bar chart illustrating the survey responses on the necessary interventions to align Abuja's urban growth with sustainability principles.

Governance Reforms: Supported by 80% of respondents to improve urban planning and resource allocation and Affordable Housing: Identified by 65% as critical for curbing informal settlement growth.

The informants recommended the following interventions: Strengthen coordination among federal, municipal, and local authorities, increase investment in affordable housing and infrastructure for low-income areas and encourage community participation in urban planning processes.

Policy Benchmarking: Comparisons with cities like Curitiba, Brazil, and Kigali, Rwanda, revealed that inclusive urban planning and integrated governance frameworks can significantly improve urban sustainability outcomes.

Addressing Abuja's urban challenges requires a multi-pronged approach that combines governance reforms, equitable infrastructure investment, and participatory planning. Specific recommendations include:

- i. Developing affordable housing programs to reduce the growth of informal settlements.
- ii. Implementing integrated urban planning systems that prioritize the needs of marginalized populations.
- iii. Strengthening governance structures to ensure policy continuity and effective resource management.

5. Summary of Findings

| Key Questions | Findings |
|--|---|
| Cognitive Processes in Urban Planning | Top-down, elitist approaches prioritize aesthetics over inclusivity, leading to socio-economic inequalities. |
| Informal Settlements and Infrastructural Gaps | Informal settlements and poor infrastructure undermine urban cohesion and exacerbate social and environmental issues. |
| Interventions for Sustainability | Governance reforms, affordable housing, participatory planning, and coordinated resource allocation are critical. |

The findings demonstrate the need for Abuja's planners and policymakers to address cognitive biases, improve governance structures, and adopt inclusive planning practices to ensure the city's long-term sustainability.

6. Discussion

The findings of this study align closely with existing literature on the challenges of urbanization in rapidly developing cities. Abuja's development trajectory is significantly influenced by cognitive processes that prioritize aesthetics, zoning, and the projection of modernity over inclusivity and sustainability. These cognitive patterns have contributed to a persistent top-down approach in urban planning, which overlooks the realities of a rapidly growing and socio-economically diverse population.

1. Cognitive Disconnects in Urban Planning

The emphasis on creating a world-class capital has resulted in policies that favour affluent neighbourhoods and infrastructure projects aimed at maintaining Abuja's modern image. However, this focus has marginalized low-income groups, who are pushed to the city's outskirts into informal settlements with inadequate infrastructure and poor living conditions. As revealed in the study, 68% of respondents in informal settlements reported insufficient access to essential services, demonstrating the failure of the city's cognitive frameworks to address the practical needs of its most vulnerable populations. Approximately 76% of respondents highlighted disparities in access to infrastructure and services between affluent neighborhoods and informal settlements. These inequalities reflect the cognitive oversight of planners who prioritize aesthetics over inclusivity (Mamman & Nyang, 2020).

This cognitive dissonance is further evident in the fragmented governance system, which has led to policy discontinuities and inadequate resource allocation. The lack of coordination among federal, municipal, and local authorities exacerbates the city's urban challenges, as different administrative bodies pursue separate, often conflicting agendas (Akinwale & Babajide, 2022).

2. The Threat of Informal Settlements and Infrastructure Deficits

Despite being planned as a modern city, Abuja's infrastructure struggles to meet the demands of its growing population. Approximately 72% of respondents from informal settlements reported inadequate access to basic services like water, electricity, and healthcare, contrasting sharply with high-income areas such as Maitama (Ogunjimi & Aluko, 2020). The proliferation of informal settlements, identified in the study as having increased by 38% between 2010 and 2020, represents one of the most significant threats to Abuja's sustainability. These settlements highlight the failure of the formal housing market to accommodate low-income populations, a direct result of the city's planning paradigms that emphasize high-income housing projects over affordable housing. The city's rapid urbanization has fueled the growth of informal settlements, with **68% of low-income respondents** living in peripheral areas such as Nyanya and Lugbe. These areas lack adequate roads, sanitation, and housing, contributing to slum-like conditions (Okoye & Alabi, 2021).

Furthermore, infrastructure deficits in informal settlements—such as inadequate water supply, sanitation, and road networks—intensify socio-economic inequalities and contribute to environmental degradation. These issues are not only symptomatic of poor planning but also indicative of the cognitive oversight that prioritizes short-term gains and urban aesthetics over long-term sustainability and inclusivity (Okoye & Alabi, 2021).

3. The Need for Inclusive Planning and Governance Reforms

Addressing Abuja's developmental challenges requires a shift from its current top-down planning model to a more inclusive, participatory approach. This study found that **80% of respondents support governance reforms**, which are essential to improving policy continuity and ensuring effective coordination across administrative levels. Abuja's fragmented governance system, characterized by poor coordination among federal, municipal, and local authorities, undermines urban policy implementation. **62% of respondents** noted that frequent changes in leadership have led to inconsistencies in urban planning and resource allocation (Akinwale & Babajide, 2022).

Inclusive planning must prioritize:

1. **Affordable Housing:** Urban planners should develop housing policies that cater to the needs of low-income populations. This includes subsidized housing programs and the integration of affordable housing into the city's master plan.
2. **Equitable Infrastructure Development:** Resources must be distributed more equitably to address the infrastructural deficits in informal settlements and reduce spatial inequalities.
3. **Community Engagement:** Engaging local communities in the planning process ensures that urban policies reflect the needs and priorities of all residents, fostering a sense of ownership and accountability.

Governance reforms are equally critical to addressing Abuja's challenges. Strengthening coordination among federal, municipal, and local authorities will reduce policy fragmentation and improve the implementation of urban development initiatives. Additionally, continuity in leadership and urban policy will ensure that long-term planning objectives are met, avoiding the ad hoc solutions that have characterized Abuja's development so far (Akinwale & Babajide, 2022).

4. Abuja's Path to Sustainability

For Abuja to achieve sustainability, urban planners and policymakers must recognize the limitations of the city's original planning frameworks and adapt them to meet current socio-economic realities. This includes shifting the cognitive focus from creating a "model city" to building an inclusive, equitable, and sustainable urban environment. The findings suggest that without targeted interventions—such as governance reforms, participatory planning, and equitable resource allocation—Abuja risks further entrenching its socio-economic divides and becoming a sprawling slum.

Ultimately, addressing these issues requires a holistic approach that balances the city's aspirations for modernity with the practical needs of its diverse population. This balance is critical to ensuring that Abuja's development is not only sustainable but also socially inclusive and economically viable.

7. Conclusion

Abuja's urban development highlights a clear divergence between its ambitious master plan and the socio-economic challenges brought about by rapid urbanization. The cognitive disconnects evident in the city's planning and governance processes have prioritized aesthetics and zoning over inclusivity, resulting in growing informal settlements, infrastructural deficits, and socio-economic inequalities.

This study emphasizes that Abuja's future hinges on the implementation of governance reforms, inclusive urban planning practices, and strategic interventions aimed at balancing its developmental aspirations with the practical needs of its population. Integrating the needs of marginalized communities, investing in affordable housing, and improving infrastructure in underserved areas are critical steps toward achieving sustainable development.

Without these efforts, Abuja risks degenerating into a sprawling slum characterized by social polarization and environmental degradation. Conversely, adopting a holistic, participatory approach to urban planning and governance offers a pathway for Abuja to realize its potential as a sustainable and inclusive city, serving as a model for urban development in the Global South.

References

- Abubakar, A., & Abdul-Rahman, A. (2021). Urban inequality and infrastructure deficits in Abuja: A case study of the Federal Capital Territory. *International Journal of Urban Studies*, 17(3), 85-98.
- Akinwale, O., & Babajide, O. (2022). Governance challenges and urban development in Abuja: The need for institutional reform. *Journal of Public Administration and Governance*, 20(2), 42-56.
- Mamman, M., & Nyang, D. (2020). Urban growth and policy implementation in Abuja: An overview. *Journal of Urban Policy and Governance*, 12(2), 75-88.
- Ogunjimi, A., & Aluko, O. (2020). Urban planning challenges in Abuja: The cognitive dissonance of development strategies. *Urban Planning Review*, 8(1), 34-47.
- Okoye, L., & Alabi, S. (2021). Informal settlements and urban sprawl in Abuja: Planning implications for sustainable development. *African Journal of Urban Studies*, 5(2), 112-124.