Exploring Infrastructure Development in Peri-Urban Communities of Developing Nations: The Boluwaji Example

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ABSTRACT

Rapid urbanization strains existing infrastructure, while limited resources and governance issues further hinder development at the peri-urban areas of developing nations. This paper analyses infrastructure development in Boluwaji – a peri-urban community in Oluyole Local Government Area (LGA) of Oyo State, Nigeria. A total of 289 structured questionnaires were distributed across six zones within the study area, with respondents selected via a stratified random sampling technique. The findings reveal that while 34.3% of respondents have access to essential services, a significant proportion still faces challenges, particularly with water and electricity supply. About 41.5% rated the condition of roads as fair, while over half of the respondents reported daily reliance on public transport. Also, a notable 58.8% of respondents indicated that infrastructure development has negatively affected air quality in their community. This paper canvasses for a regional balance in the provision of infrastructural facilities with particular attention to peri-urban communities where urbanization is drifting to in order to ensuring sustainable development practices that protect the environment while improving residents' quality of life.

Keywords: Boluwaji, Development, Infrastructure, Nigeria and Peri-Urban

INTRODUCTION

Peri-urban areas are undergoing a significant social and economic transformation, moving beyond just physical development and land-use changes (Ayeni et al., 2017). However, the absence of essential infrastructure hinders the full potential of these areas (Agbola, 2019). Onifade et'al (2021) posited that infrastructure investment in peri-urban areas can foster a more equitable environment for investment and business growth. This, in turn, can lead to increased community development, job creation, and pave the way for further infrastructure projects (World Bank, 2019).

The unique blend of rural and urban characteristics in peri-urban areas presents both opportunities and challenges. Ayonga (2018) highlights that these areas are magnets for businesses and residents due to their proximity to jobs, services, and markets. This decentralization fuels urban expansion, but existing communities can face significant disruptions to their way of life and work (Teye, 2022). As non-agricultural uses like housing and businesses expand, competition for land intensifies, putting a strain on traditional land management practices (Tacoli et al., 2018). While the challenges in peri-urban areas are substantial, recent research suggests promising strategies to promote sustainable and inclusive growth. Carey (2015) opined that fostering collaborative governance models that involve local communities, businesses, and policymakers is crucial for such growth. This participatory approach can help identify and address community needs while ensuring responsible land management practices.

Proper infrastructure is key to sustainable development, economic growth, and improved quality of life for peri-urban residents. Without adequate infrastructure, peri-urban development can become a recipe for chaos. While infrastructure development holds immense potential for peri-urban areas, it's not without its challenges. Unequal distribution of benefits and inefficient infrastructure projects are well-documented challenges in peri-urban development (Smith, 2018; Barbosa, Pradilla, & Rajendran, 2022). Wealthier individuals might disproportionately benefit from new infrastructure, while low-income communities struggle with displacement or lack of access to upgraded services (Derisi, 2016; McCarney et al., 2019). Furthermore, uncoordinated planning can lead to inefficient infrastructure projects. Poorly designed roads can fragment ecosystems, while inadequate waste management systems contribute to environmental degradation (Satterthwaite, 2010 McCarney et al., 2011; Teye, 2022).

Nigeria, like many developing countries, faces significant challenges in providing adequate infrastructure across its peri-urban areas. Rapid urbanization strains existing infrastructure, while limited resources and governance issues further hinder development ([UN Habitat, 2020]). The national focus on urban centers can exacerbate these issues, leaving peri-urban areas underserved and with lower living standards and development opportunities compared to their urban counterparts (World Bank, 2019).

While infrastructure holds immense potential for Boluwaji's growth, concerns exist regarding its equitable distribution and potential negative consequences. This paper investigates the impact of infrastructure development in Boluwaji by examining the interplay between infrastructure and peri-urban development, which can contribute to a deeper understanding of this crucial aspect of urban growth in Nigeria.

Conceptual Framework and Literature Review:

Conceptual Framework: This paper builds its conceptual framework around urbanization and peri-urbanization.

(i) The Concept of Urbanization: Urban development refers to the process of physical, social, and economic growth and change within urban areas. It encompasses the expansion, renewal, and improvement of built environments, infrastructure, and socio-economic conditions in cities and towns (Tinghui et'al, 2022). This multifaceted process involves various stakeholders, including government bodies, private sector entities, and local communities, working together to shape the urban landscape. Urban development encompasses a multifaceted process characterized by several key features. It involves population growth and demographic shifts, often resulting in increased density and changing community compositions (FMHUD, 2025)

The importance of urban development cannot be overstated, particularly in rapidly urbanizing countries like Nigeria. Adeloye and Acheampong (2021) emphasize the critical importance of well-planned urban development, highlighting its multifaceted benefits; and stressed that thoughtful urban planning can contribute to social inclusion and reduce inequality, creating more equitable and harmonious urban societies.

Internationally, the United Nations' New Urban Agenda, adopted in 2016 and reaffirmed in recent years, underscores the global commitment to sustainable urban development which emphasizes the need for inclusive, safe, resilient, and sustainable cities (UN-Habitat, 2020). This agenda recognizes urban development as a transformative force that, when properly managed, can be a powerful tool for sustainable development.

In the Nigerian context, Ogunyemi and Olamitunji (2013) emphasize that urban development is a key driver of national progress, contributing significantly to GDP growth and poverty reduction. However, they also note the challenges associated with rapid, unplanned urbanization, including informal settlements, inadequate infrastructure, and environmental degradation.

Conclusively, urban development is a complex, multidimensional process that shapes the physical, social, and economic fabric of cities. Its importance lies in its potential to drive economic growth, improve living standards, and create more sustainable and resilient urban environments. However, as Adelekan et al. (2023) pointed out, achieving these positive outcomes requires careful planning, inclusive governance, and a commitment to sustainability principles.

(ii) The Concept of Peri-Urbanization: Peri-urban areas, often described as the 'edge of the city', represent dynamic transitional zones between urban and rural landscapes (Adebayo, 2010). These areas are characterized by a complex interplay of urban and rural land uses, rapid population growth, and evolving socioeconomic structures (Jeremiah, 2024). Unlike traditional urban or rural settlements, peri-urban areas exhibit a hybrid character, blending elements of both (Adebayo et al., 2020).

The concept of peri-urbanization, which describes the process of development in these areas, has gained significant attention in recent years due to its implications for urban planning, environmental management, and social equity (Udessa, 2024). It is a complex phenomenon influenced by a variety of factors, including urbanization, globalization, and technological advancements (Carrilho & Trindade, 2022).

Peri-urban areas are characterized by rapid population growth, often driven by rural-urban migration and natural increase (Adebayo et al., 2020). This demographic change leads to increased demand for housing, infrastructure, and services, putting pressure on existing resources and infrastructure (Jeremiah, 2024). Consequently, land use patterns undergo significant transformations, with agricultural land being converted to residential, commercial, and industrial uses (Carrilho & Trindade, 2022).

The significance of peri-urban development cannot be overstated. These areas play a crucial role in providing affordable housing, employment opportunities, and access to urban amenities for a growing population (Udessa, 2024). They also contribute to regional economic growth and development by serving as hubs for industrial and commercial activities (Adebayo et al., 2020). However, if not properly planned and managed, peri-urbanization can lead to challenges such as informal settlements, environmental degradation, and social inequality (Carrilho & Trindade, 2022).

It is essential to adopt a comprehensive and integrated approach to peri-urban development that considers the social, economic, and environmental dimensions of these areas. By understanding the characteristics and dynamics of peri-urbanization, policymakers and planners can develop effective strategies to harness its potential benefits while mitigating its negative impacts.

LITERATURE REVIEW

Infrastructure refers to the fundamental physical and organizational structures and facilities essential for the operation of a society (Adesina et al., 2020). It encompasses a vast array of systems and assets, including transportation networks, energy systems, water supply and sanitation, telecommunications, and public services such as education and healthcare (OECD, 2019; UNICEF, 2019). Collectively, these elements form the backbone of economic growth, social development, and environmental sustainability (Adebayo et al., 2020).

Infrastructure can be classified into various types. Physical infrastructure, often referred to as "hard infrastructure," comprises tangible assets like roads, bridges, railways, ports, airports, power plants, and water treatment facilities (OECD, 2019). Conversely, social infrastructure, or "soft infrastructure," encompasses intangible assets such as education systems, healthcare facilities, public administration, and legal frameworks (UNICEF, 2019). Both types of infrastructure are interconnected and mutually reinforcing, contributing to overall development outcomes (Adebayo et al., 2020).

Several studies have examined the impact of infrastructure on peri-urban development, offering valuable insights into how infrastructure affects growth and sustainability in various contexts. In Nigeria, Adepoju and Salau (2022) highlighted that improved infrastructure significantly enhances living conditions and access to services. These authors concluded that the expansion of roads, water supply, and sanitation facilities led to increased economic opportunities and a better quality of life for residents. Their study emphasizes the role of infrastructure in supporting sustainable development in peri-urban settings and provides a pertinent case study for understanding similar dynamics in Oluyole Local Government Area.

Ravallion (2020) in his study explored how infrastructure investment impacts peri-urban areas in developing countries and discovered that infrastructure improvements, such as better transportation networks and utilities, were crucial in driving economic growth and reducing poverty in these regions. This study showed that

infrastructure investment not only facilitates urban expansion but also enhances local economies by improving accessibility and connectivity which is relevant for comparing the effects observed in Nigeria with those in other developing countries, providing a broader framework for assessing infrastructure's impact on peri-urban development.

Infrastructure planning and management encompasses the processes involved in developing, maintaining, and optimizing the systems and services that support a community or organization. This includes both physical infrastructure like roads and utilities, as well as IT infrastructure. Effective infrastructure planning ensures resources are used efficiently, future needs are anticipated, and the infrastructure remains resilient and sustainable.

The role of infrastructure in development is undeniable. Adequate infrastructure serves as a catalyst for economic growth by facilitating trade, investment, and productivity (Adebayo et al., 2020; Jeremiah, 2024). It enhances social well-being by improving access to essential services, reducing poverty, and enhancing quality of life (Olayemi et al., 2021). Moreover, infrastructure plays a crucial role in environmental sustainability by supporting renewable energy, efficient resource management, and disaster risk reduction (Adesina et al., 2020). Infrastructure plays a pivotal role in shaping the trajectory of peri-urban development. It serves as both a catalyst and a constraint, influencing the pace, pattern, and quality of urban expansion (Jeremiah, 2024). Adequate infrastructure, including transportation, water supply, sanitation, energy, and telecommunications, is essential for supporting population growth, economic activities, and social well-being in these dynamic areas (Adebayo et al., 2020; Olayemi et al., 2021).

In Nigeria, infrastructure development has been identified as a critical enabler of economic growth and poverty reduction (Jeremiah, 2024). However, the country faces significant infrastructure challenges, including inadequate investment, poor maintenance, and uneven distribution (Olayemi et al., 2021). Addressing these challenges requires a comprehensive and integrated approach that involves both public and private sector collaboration (Adesina et al., 2020).

Peri-urban areas across the globe are facing unprecedented pressures due to rapid population growth, particularly in developing regions of Latin America, Asia, and Africa. The Asian Development Bank (2022) underscores that peri-urban areas in large and medium-sized cities within these regions are anticipated to experience substantial demographic expansions in the coming years. This growth places additional stress on already insufficient infrastructure and exacerbates the poverty faced by these populations. As urban centers expand, the strain on infrastructure often becomes more pronounced in the peri-urban fringes, where services and facilities are frequently inadequate (Asian Development Bank, 2022).

Latin America experience population declines in their central urban areas, while their peri-urban zones are witnessing significant demographic increases (Salas, 1994; Torres, 2002). Recent study by Silva and Martins (2021) reveals that the migration to peri-urban areas is largely driven by the search for affordable housing, which often results in overcrowded and underdeveloped conditions. This migration trend not only intensifies pressure on existing infrastructure but also exacerbates issues related to public services and urban management (Silva & Martins, 2021).

Haroldo (2008) previously highlighted that peri-urban areas in Latin America suffer from inadequate regulation, poor sanitation, and severe environmental problems such as deforestation and pollution. Recent observations by Gómez and López (2023) reinforce these findings, noting that these areas are often characterized by poorly managed waste disposal, inadequate water supply, and limited access to basic services. These conditions contribute to deteriorating living standards and increased health risks for residents. Gómez and López argue that addressing these issues requires substantial improvements in government data systems and more effective urban planning strategies (Gómez & López, 2023).

Data and Methods:

The Study Area: Boluwaji is a vibrant community situated in the southeastern part of Ibadan, the capital city of Oyo State in southwestern Nigeria. This bustling neighborhood exemplifies the typical character of Ibadan,

featuring a harmonious blend of residential and commercial spaces. The area boasts basic infrastructure including roads, electricity, and water supply, supporting the daily needs of its residents. Boluwaji community reflects the cultural diversity that Ibadan is renowned for, creating a rich tapestry of traditions and lifestyles. The local economy thrives with a mix of small businesses, bustling markets, and larger commercial establishments, providing ample employment and shopping opportunities. Education is well-catered for, with several schools ranging from primary to secondary levels serving the area's youth. Transportation in Boluwaji is efficient and varied, with a network of buses and taxis connecting it to other parts of Ibadan, ensuring easy mobility for residents and visitors alike. From the digitized may of Boluwaji, the community covers a total land area of 166 hectares with about two thousand eight hundred and eighty-six buildings (2,886). Figure 1 shows the maps of the study area in its National, Regional and Local Settings.

Oluyole LGA is one of the eleven local government areas that make up the city of Ibadan. It unfolds within the sprawling metropolis of Ibadan, Oyo State, Nigeria. Established as one of Ibadan's oldest LGAs, Oluyole exemplifies the dynamic nature of a peri-urban region. Here, the urban and rural landscapes merge seamlessly, offering a unique blend of city life's conveniences and the charm of a more relaxed, rural environment.

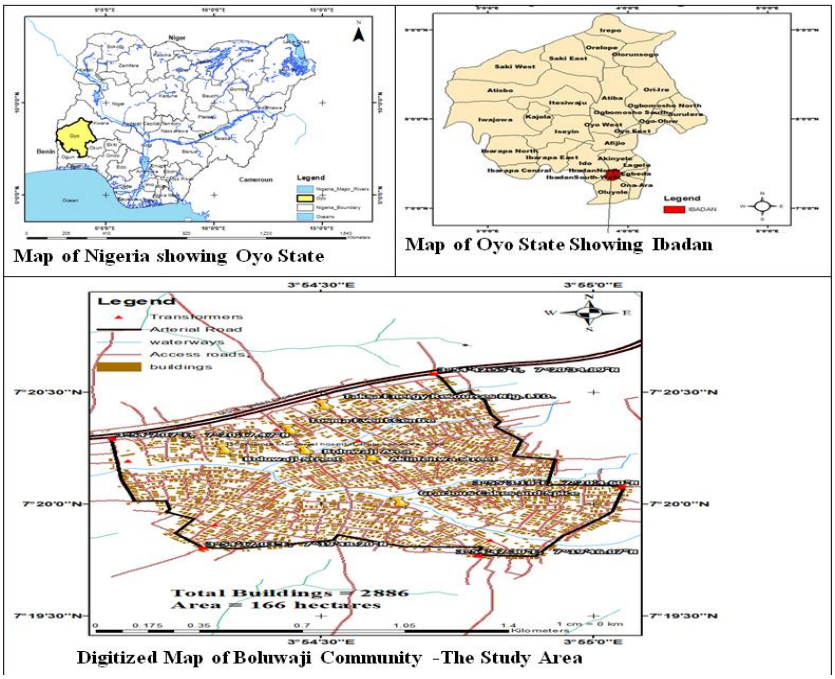

Figure 1: Map of The Study Area in its National Regional and Local Settings

Source: Federal Ministry of Urban Development, Abuja, Nigeria (digitized in ArcMap GIS by the Authors), 2024

Occupying a substantial area of approximately 4,000 square kilometers, Oluyole's population has undoubtedly grown significantly since the 2006 census, which documented over 200,000 residents. Urbanization trends suggest the current population is likely considerably higher.

Oluyole's infrastructure reflects the peri-urban character; for instance, the headquarters area boasts well-developed infrastructure, with major roads facilitating movement and established companies setting up shop, hinting at a more urbanized zone. However, venturing outwards towards the peri-urban areas, access to essential services like water supply might become limited. This uneven distribution of infrastructure presents a critical challenge for Oluyole's balanced development. While the presence of industries like BAT (British American Tobacco) suggests some level of industrial development, ensuring this economic activity is balanced and sustainable across the entire LGA remains a crucial consideration.

The Methods: The Primary and Secondary data sources were employed to gather information for this study. Primary data was gathered directly from residents and key stakeholders within Boluwaji Community using Semi-structured and structured questionnaires. The semi-structured questionnaires were served on local government

officials, community leaders, and infrastructure specialists, who were able to. provide valuable insights into the infrastructure projects within the community, the challenges in implementation, and their direct effects on socio-economic development. Structured questionnaires were administered to a representative sample in Boluwaji Community. The survey collected quantitative data on aspects such as residents' access to infrastructure (roads, electricity, and water supply), satisfaction levels, and the perceived impact on employment, business growth, and property values. Site visit was also conducted to observe and assess the condition of key infrastructure facilities such as roads, drainage systems, water supply points, and electricity grids. These observations focused on the physical condition, maintenance, and overall functionality of the infrastructure, providing real-time data to support findings from interviews and surveys. Personal observations supplemented by photographic documentation were also carried out to document the state of infrastructure in the study area.

The research population for the study is the population of Boluwaji community. The Google image of the study area was acquired and digitized using ArcGIS (Figure 2). The total number of buildings was calculated to be 2,2886. Using the 5 households per building (ODBS, 2012), the total number of households for the community was calculated to be 14, 430 (See Table 1). A 2.0% sample of the calculated number of households was deemed appropriate for the study due to homogeneity characterizing the study area (Adeleke & Adepoju, 2018). This sample size allows for an adequate representation of the population while considering the logistical challenges and resource constraints typically associated with fieldwork in Nigerian communities (Adewale et al., 2021).

Table 1: Sampling in Residential Zones of Boluwaji Community

Zone	No. of Building	No. of Households (5hpb)	Sample size (2%)
A	204	1,020	20
B	350	1,750	35
C	740	3,700	74
D	747	3,735	75
E	345	1,725	35
F	500	2,500	50
Total	**2,886**	**14,430**	**289**

Source: Authors' Fieldwork, 2024

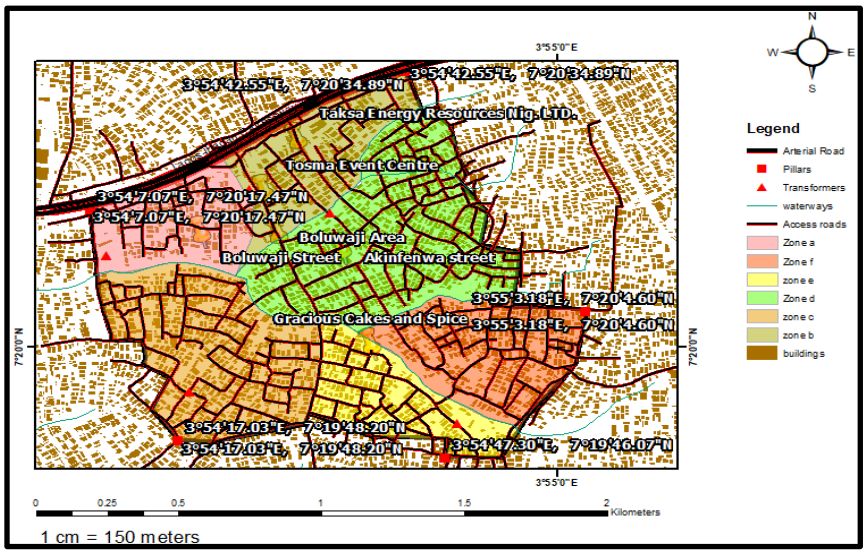

Figure 2: Data Delineation Zone Map of the Study Area

Source: Authors' Fieldwork, 2024

From Table 1, two hundred and eighty-nine (289) questionnaires were randomly distributed to residents in the study area based on the household population in each zone. Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Results were presented using tables, charts and figures.

DISCUSSION OF FINDINGS:

Socio-economic Characteristics of respondents: Table 2 shows some of the socioeconomic characteristics of respondents. The gender distribution shows a slightly higher proportion of males (55.4%) compared to females (44.6%). This is consistent with patterns observed in peri-urban and urbanizing areas where men often migrate earlier to urban fringes for economic reasons, such as jobs in construction or other industries linked to infrastructure development (Tacoli, 2015). Additionally, cultural factors in Nigerian communities sometimes promote male migration as they seek better livelihoods while leaving females in rural areas to manage households (Adepoju, 2005). The nearly balanced gender distribution, however, reflects an increasing trend of female migration to peri-urban zones, driven by job opportunities and education.

Table 2: Socio-economic Characteristics of the Respondents (N=289)

Variables	**Variable**	**Freq.**	**%**
Gender	Male	160	55.4
	Female	129	44.6
Age group	18-35	130	45.0
	36-45	100	34.6
	46-55	30	10.4
	56-60	9	3.1
	> 60	20	6.9
Education	Primary	50	17.3
	Secondary	170	58.8
	Tertiary	60	20.8
	None	9	3.1
Tenure	< 1 year	93	3.5
	1-5 years	46	10.4
	6-10 years	69	41.5
	Over 10 years	81	44.6

Source: Authors' Fieldwork, 2024

The majority of respondents (45.0%) falls within the 18-35 age group, followed by 34.6% in the 36-45 age group. These reflect a predominantly youthful population, which is typical for peri-urban communities in developing regions where younger individuals are more likely to reside due to migration and employment opportunities

(Tacoli, 2015). The smaller percentages of respondents in older age brackets (10.4% for 46–55 and 3.1% for > 60) suggest that older individuals may be less represented due to rural-to-urban migration patterns, as younger generations seek better access to infrastructure and economic opportunities in peri-urban settings (Cohen, 2006).

On education**,** a significant majority (58.8%) of respondents have attained secondary education, with 20.8% holding tertiary education qualifications. The relatively high level of secondary and tertiary education reflects the educational aspirations prevalent in peri-urban areas, where people seek improved access to services and opportunities offered by nearby urban centers (UN-Habitat, 2010). The low percentage of respondents with only primary education (17.3%) or no formal education (3.1%) indicates that educational access has improved significantly, possibly influenced by infrastructure developments that facilitate better access to schools and educational resources (World Bank, 2013). These trends are crucial for the development of peri-urban areas as educated individuals can contribute to both economic and social progress.

On the length of stay, majority of respondents have lived in Boluwaji for more than 6 years, with 44.6% residing for over 10 years and 41.5% for between 6–10 years. This demonstrates a significant level of residential stability, which is critical for assessing the long-term impact of infrastructure development. Long-term residents are more likely to have witnessed infrastructural changes over time, making them valuable sources of information on the community's evolution (Moses, 2024). The low percentage of new residents (3.5% for less than a year and 10.4% for 1–5 years) suggests that Boluwaji is not experiencing rapid in-migration, which could be a result of either limited housing or economic opportunities. Long-term residence is often associated with stronger community ties and greater civic engagement, both of which can influence the sustainability of infrastructure projects (Dang et'al, 2021).

Respondents' perception on the level of infrastructural development in Boluwaji Community: Figure 3 shows the perceived development level of Boluwaji in terms of infrastructural development. Most respondents rated the development level of infrastructure in the study area as either low (38.0%) or very low (13.5%). This perception indicates concerns about infrastructure inadequacies or slow development progress in these areas, a common challenge in peri-urban zones where planning and investment may lag behind demand (Cohen, 2006). On the other hand, 27.7% rated the development level as high, and 20.8% as very high, showing that there are pockets of perceived progress, possibly linked to areas with better infrastructure or more recent development projects (World Bank, 2013).

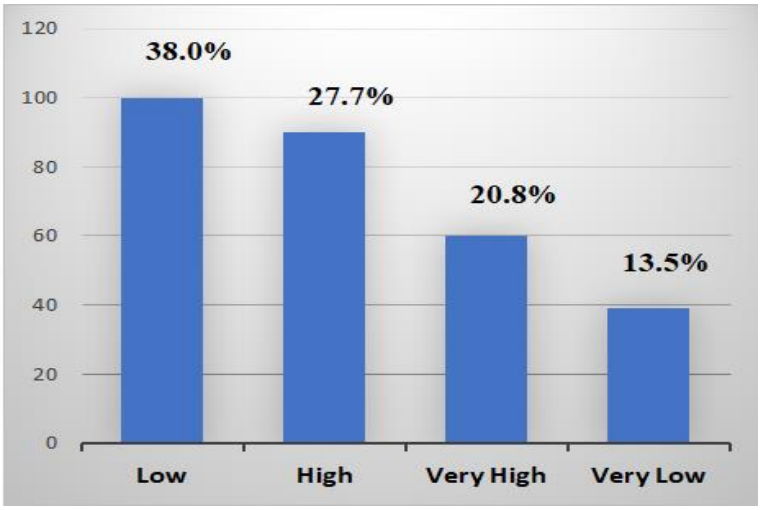

Figure 3: Development Level of Infrastructure in Boluwaji Community

Source: Authors' Fieldwork, 2024

Access to infrastructural services: Figure 4 shows respondents' opinion on access to infrastructural services in the study area. From Figure 4, it is obvious that 34.3% of respondents agreed to have access to "ALL" the essential infrastructure services - roads, water supply, and electricity. However, a significant proportion has access to individual services, with 27.7% reporting access to roads, 20.8% to electricity, and 17.3% to water

supply. This suggests a disparity in the availability of comprehensive infrastructure, a common issue in peri-urban areas where infrastructure development tends to be fragmented (UN-Habitat, 2010). The data indicates that while many residents benefit from integrated services, others may face limitations, particularly regarding water and electricity access.

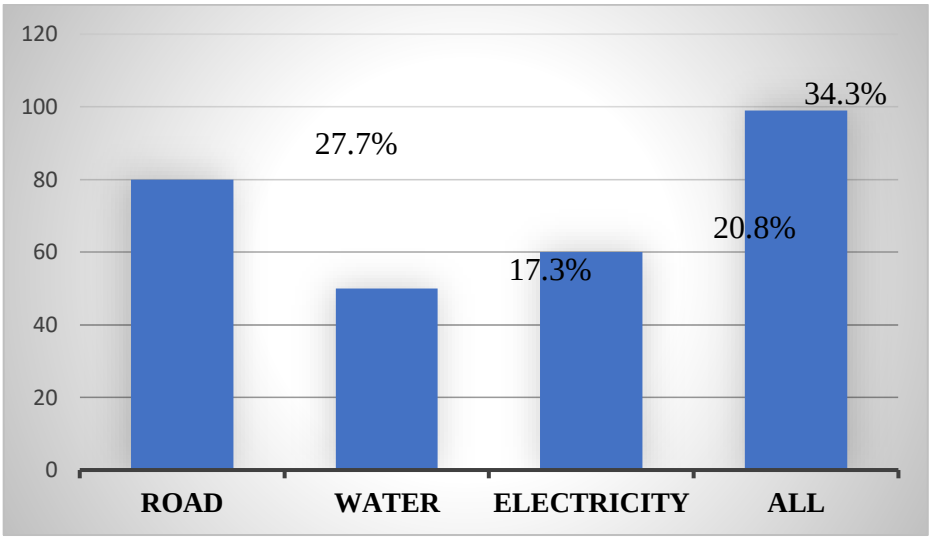

Figure 4: Access to Infrastructural Services Authors' Fieldwork, 2024

Availability of healthcare facilities: The majority of respondents (59.0%) confirmed that healthcare facilities are available in their community, indicating decent coverage in terms of health infrastructure. However, 21.0% indicated a lack of facilities, while 10.0% noted that facilities are still under construction, pointing to ongoing efforts to improve healthcare services. Another 10.0% of respondents were unsure of the availability of healthcare facility in the study area, reflecting some uncertainty about the local health infrastructure, which may indicate a communication gap or limited engagement with these services (World Health Organization, 2008).

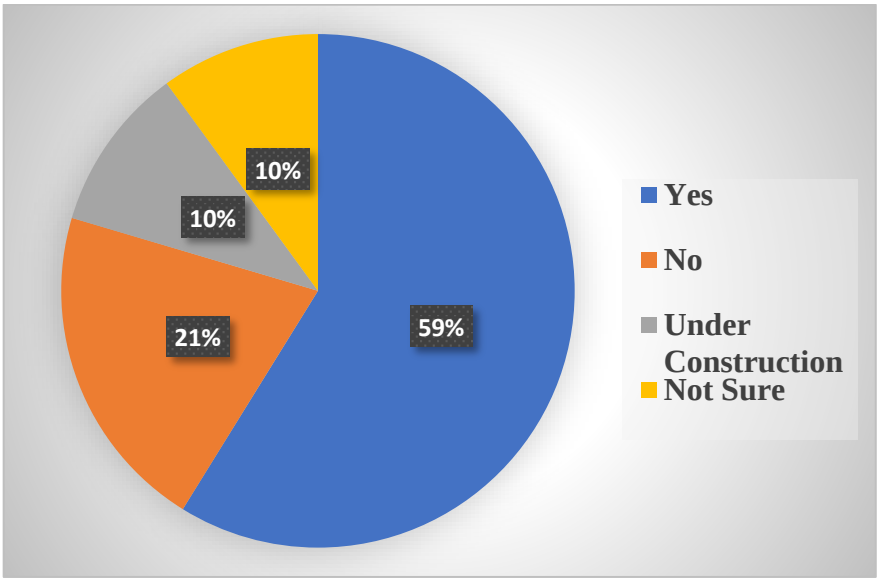

Figure 5: Availability of Healthcare Facilities

Source: Authors' Fieldwork, 2024

Condition of Road Infrastructure in the Study Area: Figure 6 shows the condition of roads in the study area. The majority of respondents (41.5%) rated the condition of roads in Boluwaji as "Fair," indicating a need for improvement. Meanwhile, 34.6% considered the roads to be in "Good" condition, and only 10.4% rated them as "Excellent." However, 13.5% described the roads as "Poor," highlighting disparities in road quality within the community. This distribution suggests that while some roads may meet the community's expectations, others

require significant upgrades to ensure uniform quality across the area. Poor road conditions in developing regions often hinder economic activities and access to essential services (Porter, 2014). Figure 7 shows a typical bad road condition in the study area.

Figure 6: Conditions of Roads in Boluwaji

Source: Authors' Fieldwork, 2024

Figure 7: A Typical Road Condition

Source: Authors' Fieldwork, 2024

Frequency of Water Supply in the Study Area: Figure 8 shows respondents opinion on the frequency of water supply in the study area. A substantial proportion of respondents (48.4%) reported encountering water supply issues "Often," while 20.8% faced these issues "Rarely and "Always" respectively; only 10.0% reported "Never" encountering water supply issues. These findings suggest that while water availability is relatively stable for a minority, most residents still deal with inconsistent water supply. Ensuring consistent access to water is a common challenge in peri-urban areas, where infrastructure development often lags behind population growth (Gandy, 2006).

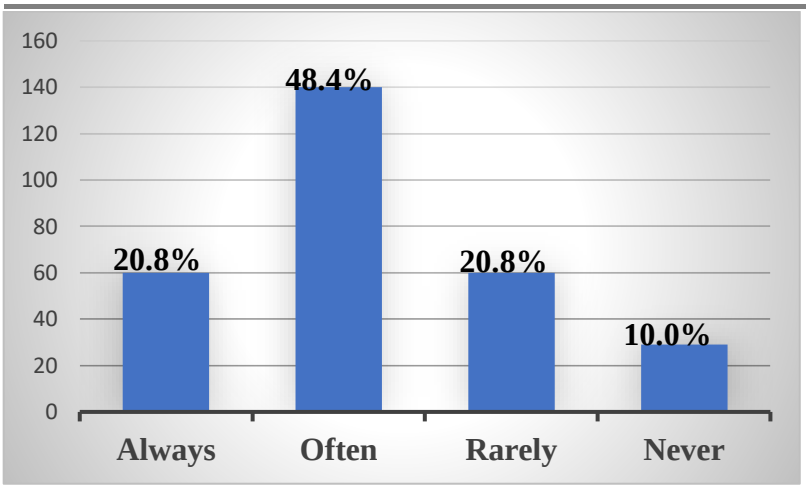

Figure 8: Frequency of Water Supply in Boluwaji Community

Source: Authors' Fieldwork, 2024

Reliability of Electricity Supply in the Study Area: Figure 9 shows respondents' opinion on the functionality and reliability of electricity supply in the study area. Empirical analysis shows that 34.6% of respondents agreed that electricity supply was "Unreliable" and 13.5% agreed it was "Very Unreliable." Only 38.1% of respondents found the electricity supply "Reliable," and 13.8% rated it as "Very Reliable." This suggests that power outages or inconsistent electricity provision are common, affecting both household activities and business operations. Improving the stability of electricity in such areas can significantly enhance quality of life and support local economic growth (Davidson & Mwakasonda, 2004).

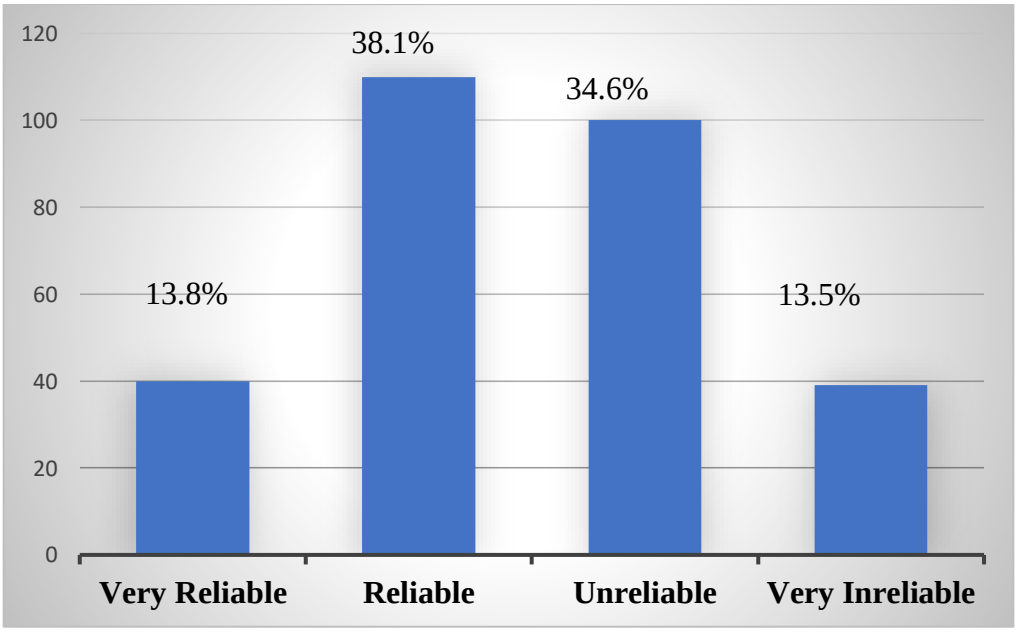

Figure 9: Reliability of Electricity Supply in Boluwaji

Source: Authors' Fieldwork, 2024

Adequacy of waste management services: Figure 10 shows respondents' opinion on the adequacy of waste management services in the study area. The data indicates that waste management services are only "Sometimes" adequate according to 24.0% of respondents, and 41.0% felt that these services were adequate. However, 22.0% expressed that waste management was inadequate, and 13.0% were "Not Sure" about the status of these services. This uncertainty could be due to a lack of regular waste collection or information gaps about waste management procedures. Figure 11 shows indiscriminate dumping of waste in the study area. Adequate waste management is

essential for maintaining environmental health and preventing diseases, particularly in peri-urban regions that may lack robust sanitation infrastructure (Marshall & Farahbakhsh, 2013).

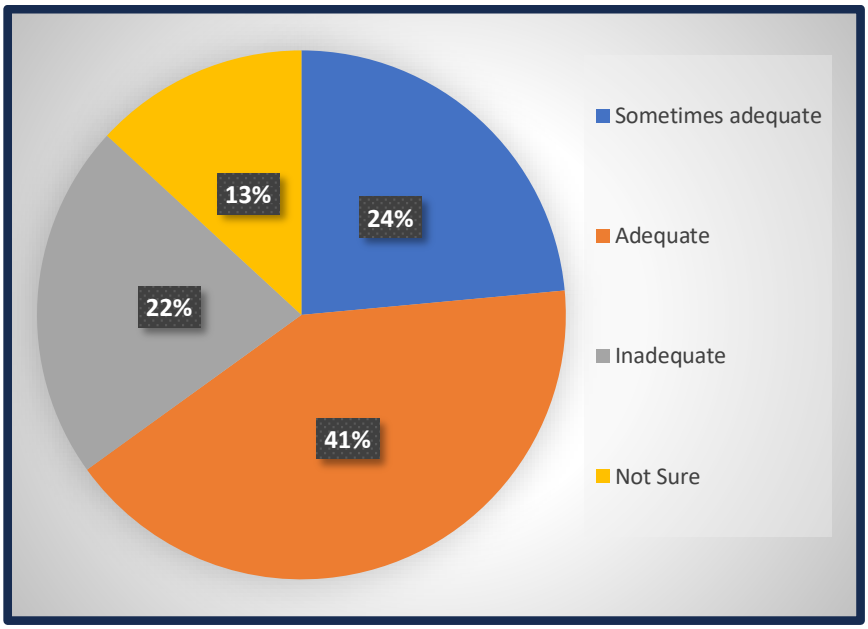

Figure 10: Adequacy of Waste Management Facilities

Source: Author's Field Work, 2024

Figure 11: A Typical Refuse Dump in the study area

Source: Authors' Fieldwork, 2024

Impact of Infrastructural Development on Air Quality: From Figure 12, it is obvious that a notable 58.8% of respondents indicated that infrastructure development has negatively affected air quality in their community, while only 13.8% felt it had a positive impact. Additionally, 17.3% believed that infrastructure development had no impact on air quality, and 10.0% were unsure. The negative perception aligns with findings in many developing regions, where the expansion of infrastructure - such as roads and industrial zones - leads to increased vehicular emissions and dust, contributing to air pollution (UN-Habitat, 2009).

58.8%

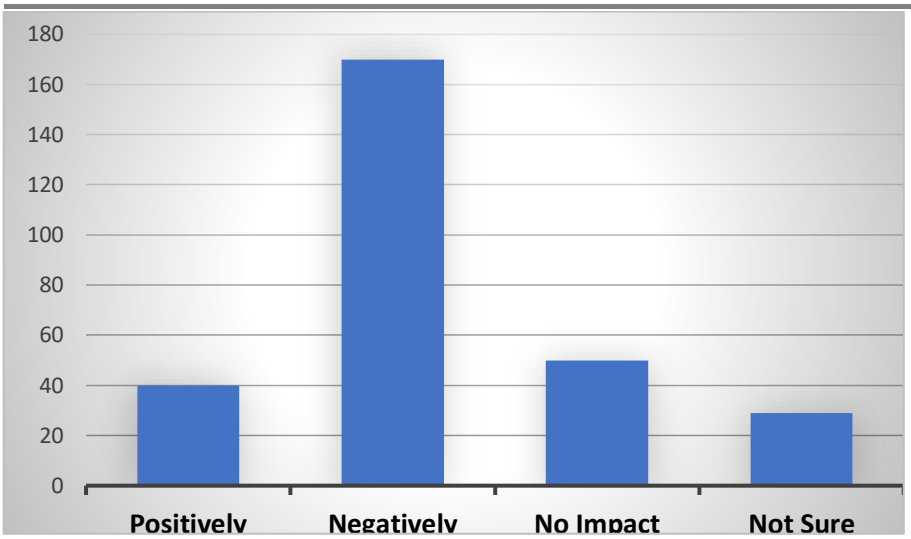

Figure 12: Impact of Infrastructure on Air Quality

Source: Authors' Fieldwork, 2024

Physical Planning Implications of the study: This paper revealed several key areas that require attention from urban planners and policy-makers to enhance the community's overall livability and functionality.

First, improving road infrastructure in Boluwaji is essential to accommodate current demand and future growth. Roads in Boluwaji must be upgraded to ensure better connectivity within the community and with surrounding areas. This includes not only expanding the road network but also ensuring the maintenance of existing roads to prevent deterioration. Physical planning must consider long-term transportation needs, integrating sustainable modes of transport such as bicycle lanes and pedestrian pathways to reduce congestion and promote healthier lifestyles.

Secondly, the uneven access to essential services such as water, electricity, healthcare, and education underscores the need for more equitable distribution of infrastructure. Urban planners must adopt an inclusive approach, ensuring that infrastructure developments reach all parts of the community, particularly underserved areas. Proper zoning and land-use planning should prioritize the placement of utilities and public services in locations accessible to the majority of the population. Physical planners should also incorporate flexibility in their designs to accommodate future expansions and upgrades as the community grows.

Lastly, the environmental implications of infrastructure development necessitate incorporating green infrastructure and sustainability principles into future planning efforts. The reported negative impact on air quality and waste management services indicates a need for better waste disposal systems, energy-efficient technologies, and pollution control mechanisms. Urban planning in Boluwaji should include the development of green spaces, efficient waste management facilities, and policies that promote renewable energy use to mitigate environmental degradation. Adopting environmentally friendly building practices and encouraging the use of sustainable materials in infrastructure projects can also help reduce the ecological footprint of the community's growth.

CONCLUSION AND RECOMMENDATIONS:

Conclusion: This paper has provided a comprehensive assessment of the impact of infrastructure development in Boluwaji Community, Oluyole Local Government Area in Ibadan, Nigeria. Empirical analysis shows that about 51.5% of respondents agreed on the low level of infrastructure development in the study area; hence, over 66.0% of respondents do not have access to good roads, portable water and electricity. Also, a whopping 60.0% of respondents attested to the negative impact of infrastructure development on air quality and environmental sanitation in the study area. These findings indicate that while infrastructure projects have positively influenced economic activity, particularly through job creation and improved transportation access, significant gaps remain in essential services such as water supply, electricity, and healthcare. The study also highlights the social and

environmental implications of infrastructure development, with notable concerns about equity in service access and the adverse effects on air quality and waste management. The study emphasizes the critical role of infrastructure in enhancing both the economic and social well-being of peri-urban communities in Nigeria, which could be extended to peri-urban communities in other developing nations with similar challenges.

Recommendations: Based on the findings, this paper canvasses that the Oyo State and Oluyole Local government should as a matter of policy ensure regional balance in the provision of infrastructure facilities with particular attention to peri-urban communities where urbanization is always drifting to; also future efforts at infrastructure development in Boluwaji community should focus on closing service delivery gaps, fostering greater social equity, and ensuring sustainable development practices that protect the environment while improving residents' quality of life.

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