



VULNERABILITY AND RESILIENCE IN PERI-URBAN IBADAN: ENVIRONMENTAL AND SOCIO-ECONOMIC IMPACTS ON WELL-BEING AND LIVELIHOODS

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Abstract

This study explores the interplay between vulnerability and resilience in the peri-urban areas of Ibadan, focusing on environmental and socio-economic impacts

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INTRODUCTION

Ibadan, the third most populous city in Nigeria, is experiencing rapid urbanization and expansion. (Bruce, 2019), (NURHI, 2013). As the city extends beyond its core into peri-urban areas, it faces a complex interplay of environmental and socio-economic challenges that impact the well-being and livelihoods of its inhabitants. (Tafesse, 2022). This study focuses on the peri-urban regions of Ibadan, where these dynamics are particularly pronounced, and seeks to understand the vulnerability and resilience of local communities in the face of these

conducted across four peri-urban regions: Eleyele, Adetokun, Alafara, and Ologuneru, with a sample size of 346, from which 325 responses were returned. The research methodology employed a mixed-methods approach, including surveys, interviews, and field observations to assess the impacts of recent developmental activities on the residents. The findings revealed significant concerns related to government land acquisitions and the consequent transformation of these areas into informal settlements. Additionally, development projects involving oil pipelines, high-tension power lines, and heavy soil lifting activities have been prevalent. Specifically, the

impact of government land acquisitions was most pronounced in Alafara (44.5%) and Eleyele (43.8%), followed by Ologuneru (35.7%) and Adetokun (35.1%). These developments have exacerbated vulnerability among local communities, affecting their livelihoods and well-being. A critical issue identified is the lack of awareness regarding the health implications of such developments. Approximately 64.5% of respondents are unaware of the potential health risks associated with residing in areas affected by these infrastructural changes. This lack of awareness underscores the need for enhanced community education and engagement to better prepare and

protect residents from adverse outcomes linked to environmental and infrastructural changes. The study highlights the significant impact of these vulnerabilities on the well-being and livelihoods of peri-urban populations, emphasizing the need for targeted policy interventions. Addressing issues related to land use, infrastructure, and environmental management is crucial for enhancing resilience and improving living conditions in these peri-urban areas. The findings provide valuable insights for policymakers and stakeholders seeking to foster sustainable development and mitigate the adverse effects of rapid urban expansion.

Challenges. (Ayele, 2020).

Urbanization in Ibadan, driven by both population growth through migration and natural birth, has led to significant changes in land use, infrastructure, and socio-economic conditions. (Bodo, 2019), (Ayiti, 2023). Peri-urban areas—those transitional zones between urban and rural environments—are particularly vulnerable to the pressures of rapid

urban expansion. (Salem, 2024). The influx of people seeking better opportunities, coupled with inadequate urban planning, often results in informal settlements, characterized by strained infrastructure, and increased environmental degradation. (Onyebueke, 2020).

The environmental impacts of urbanization in peri-urban Ibadan are multifaceted. Key issues include land degradation, water scarcity and pollution, air quality and climate change. (Varkey, 2019). The conversion of agricultural and forested lands into residential and commercial areas leads to soil erosion, loss of arable land, and reduced biodiversity. An increased demand for water resources and inadequate waste management systems contribute to the depletion of water sources and contamination of existing ones. (Buxton, 2022).

The rise in construction activities and vehicular emissions has worsened air quality, affecting public health and overall well-being. (Kofinas, 2009). The peri-urban areas are also vulnerable to climate change effects, such as increased temperatures and erratic rainfall patterns, which worsen existing environmental problems. (Hutchings, 2022).

The socio-economic challenges in peri-urban Ibadan are closely linked to the environmental issues, economic disparities, health risks, educational access, and social inequality. (Alabi, 2021). Rapid urbanization often leads to the growth of informal economies where many residents work in low-paying, unstable jobs. (Central Bank of Nigeria, 2024). The lack of access to formal employment opportunities perpetuates poverty. Poor environmental conditions contribute to a range of health problems, including respiratory issues from air pollution and waterborne diseases from contaminated water sources. (Adelekan, 2019).

The rapid population growth strains educational infrastructure, limiting access to quality education and affecting future economic opportunities for residents. The uneven distribution of resources and services often results in social inequality, with marginalized communities bearing the brunt of environmental and economic challenges. (Babalola, 2023).

Understanding vulnerability and resilience in peri-urban Ibadan requires a nuanced approach that considers both environmental and socio-economic dimensions. Vulnerability here refers to the susceptibility of individuals and communities to the adverse effects of environmental and socio-

economic stressors. Resilience, on the other hand, is the capacity of these communities to adapt, recover, and thrive despite these challenges. (Oladeji, 2022).

Key factors influencing vulnerability and resilience include community networks, access to resources, adaptation strategies, and government and policy interventions. (Olugbesan, 2024). Strong social networks and community solidarity can enhance resilience by facilitating mutual support and collective action. Availability and access to financial, educational, and health resources play a crucial role in reducing vulnerability and building resilience. The ability of individuals and communities to implement adaptive strategies, such as improved farming practices or enhanced waste management systems, can significantly impact their resilience. (Quiroz-Ibarra, 2020). Effective governance and policy frameworks are essential in addressing the root causes of vulnerability and fostering resilience through targeted interventions and support systems.

The peri-urban areas of Ibadan present a unique case study of the interplay between environmental and socio-economic factors in shaping well-being and livelihoods. (Sumardjo., 2023). This study aims to explore these dynamics in detail, providing insights into the challenges faced by peri-urban communities and the strategies they employ to enhance their resilience. By examining both the vulnerabilities and the resilience factors in these areas, the study seeks to contribute to more effective policies and practices that support sustainable development and improved quality of life for peri-urban residents.

Literature Review

The study of vulnerability and resilience in peri-urban contexts, particularly in rapidly urbanizing regions, is critical for understanding the complex interplay between environmental and socio-economic factors. (Hung, 2024). (Patel, 2020). Urbanization has been a significant force shaping peri-urban areas globally, with profound implications for land use, infrastructure, and socio-economic conditions. (Kong, 2022).

In the context of Ibadan, studies indicate that rapid urban expansion has transformed peri-urban zones into densely populated areas characterized

by informal settlements and inadequate infrastructure. (Ogunseitan, 2019). The peri-urban interface is marked by a blend of urban and rural features, creating unique challenges and opportunities for its residents. (Akinmoladun, 2022a). The impact of urbanization on land degradation is profound in peri-urban areas. The conversion of agricultural land to urban uses leads to soil erosion and loss of arable land (Akinbode, 2021). Land degradation in Ibadan's peri-urban areas has been linked to reduced agricultural productivity and increased vulnerability to food insecurity. (Ajibade, 2020).

The strain on water resources due to urban expansion is well-documented. In peri-urban Ibadan, inadequate water supply and poor sanitation infrastructure exacerbate water scarcity and contamination issues (Sulaimon, 2018). Studies have shown that peri-urban residents often rely on unreliable water sources, which poses significant health risks. (Olawuyi, 2019). Air pollution is a growing concern in peri-urban areas, driven by increased vehicular emissions and industrial activities. Research has demonstrated that air quality in peri-urban Ibadan is compromised, leading to respiratory problems and other health issues among residents. (Egbinola, 2021).

Climate change exacerbates environmental challenges in peri-urban areas. Increased temperatures and altered precipitation patterns affect agricultural practices and water availability (Maku, 2022). Vulnerability to climate-related impacts is heightened in peri-urban areas due to their limited adaptive capacity.

Peri-urban areas often experience high levels of economic inequality. Informal employment and low wages are common, contributing to persistent poverty among residents (Dada, 2021). The economic marginalization of peri-urban populations limits their access to resources and opportunities for upward mobility. The environmental conditions in peri-urban areas contribute to various health risks. Poor sanitation and contaminated water sources lead to the prevalence of waterborne diseases (Ojo, 2022). Additionally, air pollution exacerbates respiratory conditions and other health problems (Ogunlesi, 2019).

The rapid growth of peri-urban populations strains educational infrastructure, resulting in overcrowded classrooms and limited access to

quality education (Akinmoladun, 2020b). Educational challenges further perpetuate socio-economic inequalities, impacting future economic prospects for residents. Social inequality in peri-urban areas is influenced by inadequate access to essential services, such as healthcare, education, and infrastructure. Marginalized communities often bear the brunt of these disparities, affecting their overall well-being and quality of life (Ezeani, 2021).

Social capital and community networks play a crucial role in enhancing resilience. Studies have shown that strong community ties and collective action can improve adaptive capacity and support residents in managing environmental and socio-economic stressors (Agbola, 2020). Access to financial, educational, and health resources is critical for reducing vulnerability and building resilience. Research indicates that improved access to these resources can enhance the ability of peri-urban residents to cope with and adapt to changing conditions (Ehiwario, 2022).

Adaptation strategies, such as improved agricultural practices and enhanced waste management, are essential for building resilience in peri-urban areas. Studies have documented various adaptive measures implemented by residents to mitigate environmental impacts and improve livelihoods (Oke, 2021). Effective governance and policy interventions are vital for addressing vulnerability and fostering resilience. Research emphasizes the need for comprehensive urban planning and targeted policies to support peri-urban communities in managing environmental and socio-economic challenges (Saka, 2022).

The complex interplay between environmental and socio-economic factors in shaping vulnerability and resilience in peri-urban Ibadan has been highlighted. Environmental degradation, economic disparities, and social inequalities contribute to the challenges faced by peri-urban residents. However, strong community networks, access to resources, and adaptive strategies offer pathways to enhance resilience. (Derr, 2024). Understanding these dynamics is essential for developing effective policies and interventions to support the well-being and livelihoods of peri-urban communities. (Boston, 2024). Future research should continue to explore these themes, with a focus on integrating environmental and socio-economic perspectives to inform sustainable development practices.

Research Methodology

The objective of this research is to investigate the vulnerability and resilience of peri-urban communities in Ibadan, focusing on the environmental and socio-economic impacts on their well-being and livelihoods. To achieve this, a mixed-methods approach was employed, combining quantitative and qualitative data collection techniques to provide a comprehensive understanding of the challenges and adaptive strategies in these areas.

The study adopted a mixed-methods design to capture both quantitative and qualitative dimensions of vulnerability and resilience. This approach enabled a detailed analysis of environmental and socio-economic impacts and the strategies used by residents to cope with these challenges.

The research focused on selected peri-urban areas in Ibadan, Eleyele, Adetokun, Alafara, and Ologuneru, in Ido and Ibadan Northwest Local Government Councils. These areas are characterized by rapid urban expansion, informal settlements, and significant environmental and socio-economic challenges. A purposive sampling method was used to select specific peri-urban districts that represent a range of conditions within the peri-urban spectrum.

A structured questionnaire was developed to collect quantitative data on key variables, including environmental conditions, socio-economic status, health outcomes, and access to resources. The questionnaire was administered to a representative sample of households within the selected peri-urban areas.

A stratified random sampling technique was used to ensure that various sub-groups (e.g., different income levels, household sizes) are adequately represented. The sample size was determined based on a power analysis to ensure statistical validity and reliability. Key variables include demographic information, income levels, employment status, educational attainment, access to water and sanitation, health conditions, and perceptions of environmental quality.

Semi-structured interviews were conducted with key informants, including community leaders, local government officials, and representatives of non-governmental organizations (NGOs) working in the area. These interviews provided insights into the broader socio-economic and environmental

context and the strategies used to address the challenges. Focus group discussions were organized with community members to explore their experiences and perceptions regarding environmental and socio-economic impacts. The discussions focused on topics such as adaptive strategies, community resilience, and perceived vulnerabilities.

Field observations were conducted to assess environmental conditions, infrastructure, and living conditions directly. This helped to corroborate findings from surveys and interviews and provide a contextual understanding of the peri-urban environment.

Quantitative data was analyzed using statistical software (e.g., SPSS or R). Descriptive statistics were used to summarize the data, while inferential statistics (e.g., regression analysis) was used to examine relationships between variables, such as the impact of environmental conditions on health outcomes or socio-economic status. Geographic Information Systems (GIS) was used to map environmental and socio-economic variables, providing spatial insights into vulnerability and resilience patterns.

Qualitative data from interviews and focus group discussions were transcribed and analyzed using thematic analysis. Key themes and patterns related to vulnerability, resilience, and adaptive strategies will be identified and explored. Content analysis was used to systematically analyze the data for recurrent themes and concepts, providing a deeper understanding of community perspectives and experiences.

Participants were provided with detailed information about the study and given informed consent before participating. Confidentiality and anonymity was ensured in the reporting of findings. The study was conducted with cultural sensitivity and respect for local customs and practices. Special attention was given to avoiding any potential harm or discomfort to participants.

This methodology outlines a comprehensive approach to studying vulnerability and resilience in peri-urban Ibadan. By integrating quantitative and qualitative methods, the research aims to provide a holistic understanding of the environmental and socio-economic impacts on well-being and livelihoods, offering valuable insights for policy development and community support.

Discussion

Notable housing developments in the vulnerable areas of the case study are categorized into five, namely; the riverine areas of Eleyele Lake, the sand lifting areas in Gbamongbo and Ajadi areas, the power-line areas of Eleyele, Alafara and Ologuneru, the oil pipeline traversing Alafara/Ologuneru and government acquired land in Idi Igbaro and

Alafara areas. While sand lifting activities are still going unabated, land encroachments, buildings on the oil pipelines and power-lines are also on the increase, especially, commercial activities.

Encroachment on Government Acquisition and Vulnerable Areas

In a bid to examine the health implications of land use changes of development across the sampled peri-urban community, observations were carried out to determine respondents' view on encroachment practices on government acquisition and other vulnerable areas in the study area. Findings in Figure 4.1 revealed a higher proportion (44.5%) of respondents in Alafara community experienced development along government acquired land. This proportion was higher compared to respondents' claim in Eleyele (43.8%), Ologuneru (35.7%) and Adetokun (35.1%) communities. For high tension wires, 27.0% of the respondents in Adetokun community affirmed to the encroachment of high-tension wire as against Eleyele (21.9%), Alafara (14.1%) and Ologuneru (4.1%) community. In addition, it was observed that 42.0% of the respondents in the study area indicated other vulnerable areas (such as places around rail lines and oil pipelines) where encroachment on stipulated setbacks were observed.

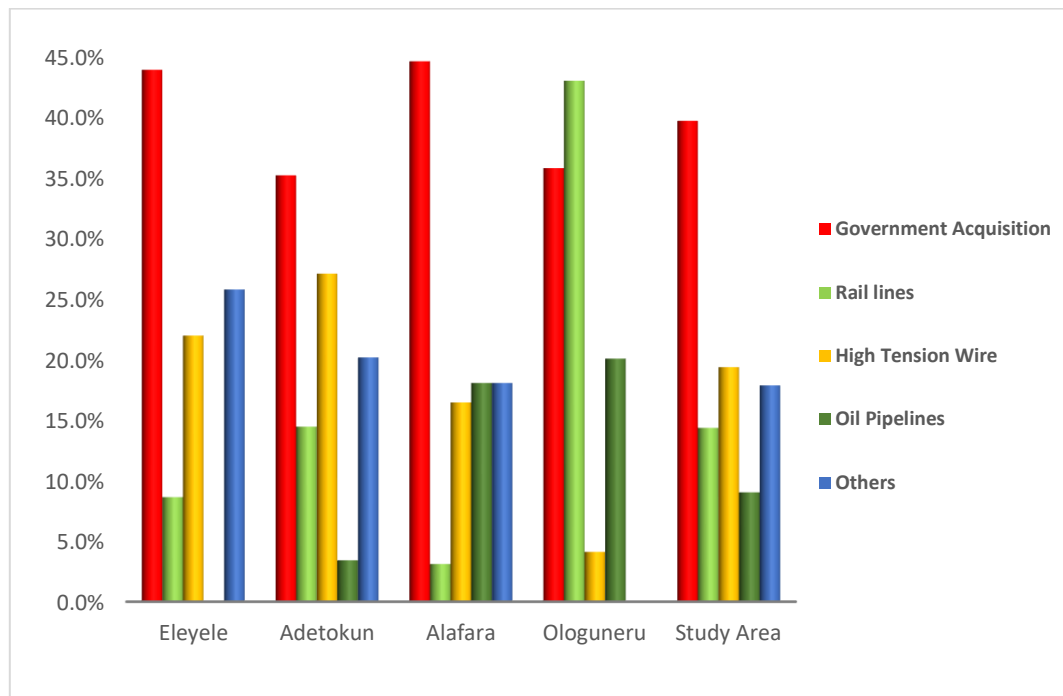


Figure 4.1: Encroachment on Vulnerable Areas

Source: Fieldwork 2023



Figure 4.2. Effect of Encroachment on Oil Pipeline in the Ologuneru Area

Source: Fieldwork 2023

Residents' Awareness on the Health Hazard of Vulnerable Areas Development

In Figure 4.3, two-third of the respondents were not aware of the health implication of development activities in vulnerable areas. This proportion accounts for 64.5% of the respondents in the study area. With this finding, it can be deduced that within the sampled peri-urban communities, majority of the residents had no prior knowledge of the health implications associated with the development activities in vulnerable areas.

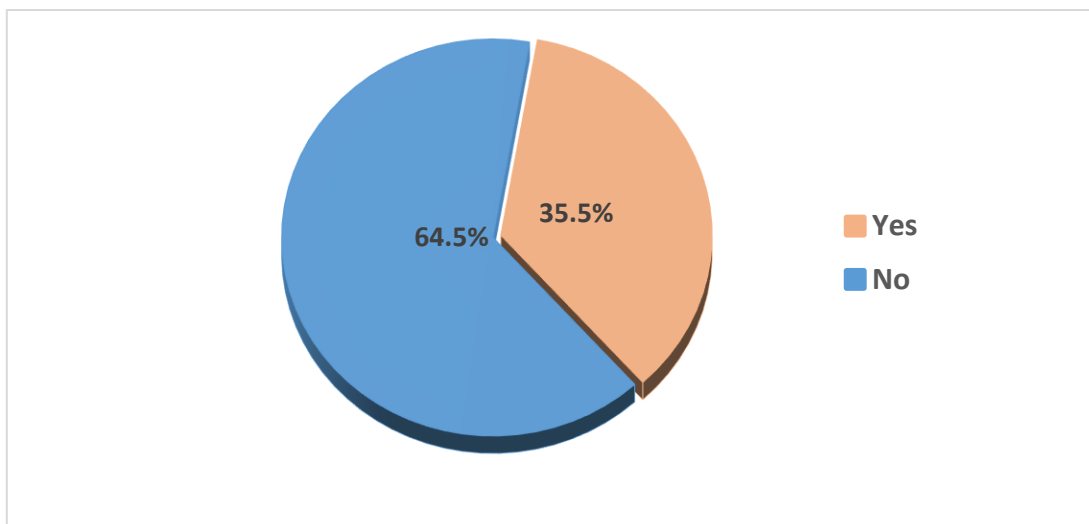


Figure 4.3: Awareness of the Health Hazard of Developing on Vulnerable Areas

Source: Fieldwork 2023



Figure 4.4 Buildings and Business Activities Under 33kva High Tension Wire

Source: Fieldwork 2023



Figure 4.5 Buildings and Non-Compliance with Setbacks on Oil Pipeline in Ologuneru Area

Source: Fieldwork 2023



Figure 4.6 Oil Pipeline Infrastructure and Housing Development in Alafara Area

Source: Fieldwork 2023

Conclusion

The peri-urban areas characterized by their transitional nature between urban and rural environments, face a complex array of challenges that impact the well-being and livelihoods of their residents. This study has examined the environmental and socio-economic dimensions of vulnerability and resilience in these areas, highlighting several key findings and implications.

Urban expansion in peri-urban areas has led to significant environmental degradation, including land erosion, water scarcity, and deteriorating air quality. (Ma, 2023). These environmental issues are not only detrimental to the local ecosystems but also pose serious risks to public health and quality of life. The conversion of agricultural lands and the strain on water resources contribute to food insecurity and inadequate sanitation, exacerbating the vulnerability of peri-urban populations. (Okeke, 2023).

The socio-economic landscape of peri-urban Ibadan is marked by pronounced disparities. High levels of poverty, informal employment, and limited access to education and healthcare underscore the economic challenges faced by residents. These socio-economic factors intersect with environmental issues, amplifying the vulnerabilities experienced by peri-urban communities. The inadequate infrastructure and services in these areas further hinder residents' ability to improve their economic conditions and overall well-being. (Carmen, 2022).

Despite these challenges, peri-urban communities demonstrate considerable resilience. Strong social networks and community solidarity play a crucial role in supporting residents through environmental and economic stressors. Adaptation strategies, such as improved agricultural practices and community-based initiatives, contribute to enhanced resilience. However, the effectiveness of these strategies is often limited by the resources and support available to the communities. (Liu, 2022).

The findings of this study underscore the need for targeted policy interventions to address the unique challenges faced in the study area. Comprehensive urban planning that integrates environmental management and socio-economic development is essential for mitigating the adverse impacts of urbanization. Policies should focus on improving infrastructure, expanding access to essential services, and supporting community-based adaptation efforts. Additionally, fostering greater collaboration between government agencies, local organizations, and residents can enhance the effectiveness of these interventions. (Barbosa, 2022).

Future research should continue to explore the evolving dynamics of peri-urban areas, with a focus on long-term sustainability and resilience. Investigating the impacts of climate change, the effectiveness of adaptive strategies, and the role of policy in shaping outcomes will provide valuable insights for further improving the well-being and livelihoods of peri-urban populations.

In conclusion, addressing the vulnerability and enhancing the resilience of peri-urban Ibadan requires a multifaceted approach that considers both environmental and socio-economic factors. By understanding and addressing these challenges, stakeholders can work towards creating more

sustainable and equitable peri-urban environments that support the well-being and prosperity of all residents.

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