

Impact of Land Degradation on Peri-Urban Interface in Ibadan

**Ismail Bimpe ADEWOYIN
LCU/PG/002117**

**Being a PhD Post-field Presentation Submitted to the Department of Urban & Regional Planning,
Faculty of Environmental Design & Management, Lead City University, Ibadan, Oyo State, Nigeria**

**In Partial Fulfilment of the Requirements for the Award of Doctor of Philosophy Degree (PhD) in Built
Environment**

2023

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Certification

This is to certify that Ismail Bimpe ADEWOYIN with matriculation number LCU/PG/002117 carried out this research work titled “Impacts of Land Degradation on Peri-Urban Interface in Ibadan, Oyo State, Nigeria” in the department of Urban and Regional Planning, Faculty of Environmental Design and Management, Lead City University, Ibadan, Oyo State, for the award of Doctor of Philosophy Degree (PhD) in Built Environment. The thesis is an outcome of an independent and original work. I have duly acknowledged all the sources from which the ideas and the extracts have been taken. The thesis is free from any plagiarism and has not been previously submitted.

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(Supervisor)

.....
Date

.....
Prof. Grace Oloukoi
(Head of Department)

.....
Date

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Dedication

This work is dedicated to my late father, Alhaji Jimoh Alamu Adewoyin.

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Acknowledgements

My gratitude goes to all that contributed into the success of this scholarly work conducted in the Department of Urban and Regional Planning, Faculty of Environmental Design and Management, Lead City University, Ibadan. The University library staff, for their constant provision of data support for the research work, my research assistants for the fieldwork, the officials from the Ministry of Lands, Housing and Urban Development, Ido Local Government Primary Health Center, the National Emergency Management Agency (NEMA), National Environmental Standards & Regulations Enforcement Agency (NESREA), The Federal Environmental Protection Agency for sharing valuable documents and knowledge with me on the topic of the research. The traditional rulers in the peri-urban areas that provided historical background on physical changes in the area.

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understanding throughout the programme. Even though the above-mentioned institutions and persons have assisted in the process of this research work, I alone stand responsible for the errors, if any, found in the work.

Abstract

This study examined The Impacts of Land Degradation on Peri-Urban Interface of Eleyele, Adetokun, Alafara and Ologuneru Areas in Ibadan, Nigeria. It assessed the relationships between land degradation and impacts on the socio-economic activities and the livelihoods of the people living in the peri-urban interface. A cross sectional exploratory research design was adopted and mixed method analysis employed for data collection. The fieldwork of this study help to understand the current state of land degradation in the peri-urban interface in Ibadan and associated impacts on the environment, households, and other stakeholders. With a combination of semi-structured interviews, review of local news sources, and a synthesis of existing research, this study assessed the problem of land degradation in the peri-urban interface in Ibadan. The interviews revealed that land degradation was caused by a variety of factors including sand lifting, overgrazing, unplanned developments, deforestation, and construction activities. Through satellite imagery and remote sensing capturing of the study area, the growth trend, land use classification and land degradation spots in retrospect for 2005, 2010, 2015 and 2020 were mapped out. Developed and undeveloped areas stands at 71% and 21% of the total landmass respectively. Finding on socio-economic characteristics in the study area shows a well mix and less ethnic segregation with high socio-cultural activities. It suggest that the study area is socially prone to land degradation. Households living in the peri-urban interface were most affected by land degradation as their livelihoods and health were put at risk. Local government and other stakeholders also felt the impacts of land degradation in terms of reduced incomes, environmental damage, and health issues. This study highlights the severity of land degradation, respondents' perception on flooding/erosion, soil/sand lifting, reduction in strength of rivers as these impacted on their health and means of livelihood.

Keywords: Degradation, Land, Land Use Change, and Peri-Urbanisation

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List of Acronyms

Abbreviation	Meaning
GRA	Government Reservation Area
LGA	Local Government Area
GIS	Geographic Information System
USA	United States of America
CBD	Central Business District
SPSS	Statistical Product and Service Solutions
PUI	Peri-Urban Interface
PUA	Peri-Urban Area
CDA	Community Development Association
NASA	National Aeronautics Space Administration
NESREA	National Environmental Standards & Regulations Enforcement Agency

FEPA	Federal Environmental Protection Agency
NEMA	National Emergency Management Agency
OYSADA	Oyo State Agribusiness Development Agency
RR	Rate of Return
Kva	Kilo-volt-amperes
QGIS	Quantum Geographic Information System
NIHORT	National Horticultural Research Institute
PPP	Public Private Partnership

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Chapter One

Introduction

1.1 Background to the Study

Since men learnt how to till the land for sustenance, settlement begins. Shelter, clothing and defense are other considerations for human agglomeration at a defined location¹. As men comes together to create built environment, many other factors set as attractions for high concentration in a particular place. These considerations are; rivers, mountains and hills, vegetation, fertile soil, mineral resources and inclement weather; also, considered as the tangible attracting features. Whereas the intangible features are socio-economic, spiritual, cultural, political and ethnic considerations². Similarly, modern human settlements are influenced by two factors, namely, physical and migration factors³.

The migration factors otherwise known as push and pull factors are subdivided into two; namely, emigrate and immigrate factors. Emigrate is likened to the push factors and are; for safety, poverty, drought, lack of infrastructure, flooding, and war. Emigrate features are the pull factors and they include; employment opportunities, more wealth, social services, good climate, less crime rate, fertile land and lower risk from natural hazard. The combination of many of these pull or push factors brings about modern day urban center¹.

Succinctly, modern urban centers are propelled by natural increase in population, migration, industrialization, commercialization, advancement in transportation and communication, availability of educational and recreational facilities, urban planning policies, topographical factors, unbalanced spatial development, transformation and modernization in the way of living, mining and investments, presence of functional administrative and social support office⁴.

Urban centers and or urban growth is a function of population growth. Population is measured by the numbers of people in a particular place at a particular time⁵. It is an increase in the number of people in a dispersed group.

Since the worst bubonic plague pandemic in human history otherwise tagged 'The Black Death' of 1346 to 1353 that claimed between 75 to 200million lives, human population has been increasing⁶. By the United Nations estimate, global population have exceeded 8billion in mid-November 2022⁷.

Urban development, has attracted over 50% of the world population to the urban centers. This phenomenon would, by 2045 increase the figure of urban dwellers to 6billion at 1.5 times growth⁸. By 2050, the trend would reach at nearly 7 of 10 people will live in the cities. The increasing proportion of city dwellers and process of transformation of rural areas into urban brings about urbanism or urbanization^{9, 10, 11, 12}.

Urbanization is a global phenomenon, it is a drift by people from the rural to urban centers¹³. It is also a growth in population as well as a surge in industrialization¹⁴. Findings posited that urbanization is a burden on the rural-urban interface as a result of its unending demand for expansion and infrastructure development¹⁵. Our urban centers have been experiencing various challenges, ranging from demographic, environmental, social and spatial, due to human anthropological activities on natural resources.

Though, there are different understanding on what constitute urban areas globally, but the United Nations in its 2018 report for the first time, agreed that more people live in urban than rural areas^{16, 17}. Furthermore, over 4 billion people live in urban areas globally, and 1-in-3 people in urban areas is predicted to live in a slum by 2050, also two-thirds of the world population of 7billion people will live in urban areas⁶.

The shift in population will have a good impact on both rural and urban centers. Some of these include a gradual shift in its economic base and gradual environmental degradation due to change in land use and land cover¹⁸. As urban centers continue to increase in population, demands for housing will initially rise by the low and middle income earners, resulting in shift to the peri-urban areas.

The demographic composition of the peripheral dwellers are mainly low income earners working in the urban centers¹⁹. As observed, the rapid growth in urban centers and the attendant pressure on urban land leads to spatial expansion to the peripheral of the cities. The concept of peri-urbanization cannot be explained without

integrating urban expansion and urban economy²⁰. The peri-urban is an area of complimentary opportunities for the urban centers²¹. Therefore, the peri-urban area is an interface between the urban and rural area. It is an interface where rural meets the urban, it is a transition interface.

Within the peri-urbanization concept, distance to the urban areas is inconsequential but the linkage for the flow of goods and services, is more important¹⁵. The change in land use due to high demand for housing and other uses have resulting impact on environment, economy and the socio-cultural characteristics of the people. Notable characteristics of peri-urban areas are; demographic change, weak institutional structure and locational reclassification. Primarily, agricultural land in rural areas are converted to other uses to accommodate the needs of the migrated urban population.

Peri-urban, was coined from the word periphery, which also have other associated terms like; sub-urban, urban fringes, urban periphery or interface and hinterland (rural)²². Unlike urban sprawl, peri-urbanisation is transformative in character. It tends to force the sprawl into the urban fringes and by nature using its attributes of physical, social and environmental changes to turn what is peri-urban today to urban tomorrow, which makes it necessary that in taking decision on spatial planning, special consideration must be made of peri-urbanisation^{23, 24}.

Peri-urbanisation was taken as a dynamic and a process, a phenomenon, as the rural land in the hinterland changes gradually to urban²⁵. In another dimension, urban sprawl was distinguished from peri-urbanisation by describing one as a phenomenon and other, its manifestation²⁶. There are reasons, causes and patterns of peri-urbanization, even though, it has some driving factors which shall also be discussed.

Factors considered as drivers of peri-urbanization are listed as; physical expansion of the city - urban sprawling, drifts from rural to urban, new economic activities development and city services expansion in the fringes as while incidental effects and benefits that peri-urban areas gain from sprawling as drivers are listed as; improved communities means of livelihood, improved place identity, economic effects, new employment and

contracts for local businesses^{25, 27}. These factors which are transformative in nature, can be categorized into changes noticeable when peri-urbanization occurs; demography, physical and infrastructural, socio-economic and environmental conditions. They forms the major challenges of peri-urbanization development in Africa.

The major problem in the world today is that of environment. In seeking for more comfort, humans have increased their uncontrolled actions on the environment through use of technology. Many scholars are of the opinion that the industrial revolution accounted for harmful environment because prior to that, no environmental problem was experienced²⁸. The components that made up of an environment are natural and artificial occurrences. The environment is not static and always changing with or without the effect of human exercises.

Environmental degradation is the deterioration of the surroundings, or disintegration of the earth through consumption of resources – air, water and soil, the destruction of the resources and the eradication of wildlife. Environmental degradation is characterized by a change or aggravation to nature's pernicious or undesirable turf. It is an ecological created by expansion in human population and economic development. Environmental degradation is succinctly put, a depletion of resources (air, water and soil), destruction of ecosystem, habitat destruction, pollution and extinction of wildlife.

Degradation of the environment is said to set in when the environment is compromised, in form of extinction of species, pollution in the air, water and soil and rapid urban growth. Technological advancement also get environment splits up land areas especially streets, trails of wind through prairies. Environmental degradation is identified as one of the largest threats that are being looked at in the world today. It was characterized as the lessening of the limit of the earth to meeting social and environmental destinations and needs²⁹.

Land degradation in the peri-urban areas is a major impact of change in land use in the peripheral of cities. Urban system is naturally resilient until negative human activities imposed³⁰. Deterioration and degradation of urban systems occur when it could no longer bear the imposed activities and also as a result of torn urban

fabric. Natural and built environment must be managed sustainably to preserve non-renewable resources and also, ecosystem must not be depleted to prevent environmental degradation.

Understanding of the demographic change in the peri-urban will guide in provision of infrastructure for the transitioning interface. A socio-economic survey of the peri-urban area and also the infrastructure need must be carried out to prevent urban pressure on the limited resources¹⁷. These needs were emphasized by WHO 1997. They have profound impact on public health, economic growth and environmental (ecosystem) preservation. Inadequacy of infrastructure in the peri-urban will have impacts, often negatively on the peri-urban, resulting in rapid environmental degradation.

Economically, the peri-urban areas are new zones for development in real estate. Housing production is no longer seen as a social factor but rather as an investment, a money generating venture³¹. The lack of good regulatory body to curb the activities of land speculators is a springboard for scrupulous activities in the sector in the peri-urban. The peri-urban areas become attractive as it provides affordable vast land for easy acquisition from the original land owners, mostly converted agricultural land for their private schemes. These acquired lands by private real estate investors in the peripherals of Nigerian cities are sub-divided into plots and are ready for sale to the public for residential developments and for same to attract buyers, celebrities are being used to market to the public³².

The degradation of the land cover sets in as change in use through surface clearing causes deforestation to take place. As land degradation continues, urban livelihood of the original settlers are negatively impacted. Therefore, this study aimed at assessing the environmental, social and economic impacts of ecosystem degradation in selected peri-urban areas of Ibadan.

1.2 Statement of the Problem

Urbanization is the major driver of growth of peri-urban interface³³. The peri-urban interface in Ibadan is facing detrimental impacts due to land degradation. Land degradation refers to the deterioration and loss of land

productivity caused by natural processes and human activities. This phenomenon has become a pressing issue in the peri-urban areas of Ibadan, as rapid urbanization and population growth intensify the demand for land use³⁴. One of the major impacts of land degradation on the peri-urban interface in Ibadan is the loss of fertile soil for agricultural activities. As land is exploited for urbanization purposes, such as housing, infrastructure development, and commercial areas, the available arable land for farming decreases. Consequently, farmers in the peri-urban areas find it challenging to sustain their agricultural practices, leading to decreased food production and increased dependence on imported food.

Furthermore, land degradation exacerbates environmental challenges in the peri-urban interface of Ibadan. Inadequate land management practices, such as deforestation, improper waste disposal, and unsustainable resource extraction, contribute to soil erosion, water pollution, and air pollution. These environmental consequences negatively impact the health and well-being of the peri-urban residents, create ecological imbalances, and reduce the overall quality of life in these areas³⁵.

Another significant problem arising from land degradation is the loss of biodiversity in the peri-urban interface. As natural habitats are damaged or destroyed, numerous plant and animal species lose their homes, leading to a decline in biodiversity. This loss of biodiversity not only disrupts the delicate ecosystems but also reduces the ecosystem services that are essential for human well-being, including climate regulation, pollination, and nutrient cycling³⁶.

Additionally, land degradation affects the socio-economic welfare of the peri-urban communities in Ibadan. As fertile land diminishes and natural resources become depleted, local communities face reduced livelihood opportunities, increased poverty, and food insecurity. The lack of sustainable income sources and livelihood options forces individuals to migrate to urban centers in search of better prospects, further straining urban infrastructure and resources³⁷.

Overall, the impacts of land degradation on the peri-urban interface in Ibadan are wide-ranging and multifaceted, affecting agricultural productivity, environmental health, biodiversity, and socio-economic well-being. Addressing this problem is crucial to ensure sustainable development, protect natural resources, and improve the quality of life for peri-urban residents³⁸.

1.3 Justification of the Study

Studying the impacts of land degradation on the peri-urban interface in Ibadan is essential for several reasons:

1. Environmental Sustainability: Understanding the effects of land degradation in the study areas help to identify the key factors contributing to this issue. By studying these impacts, researchers can propose sustainable land management practices that can mitigate and prevent further degradation, ensuring long-term environmental sustainability³⁹.

2. Agricultural Productivity: The peri-urban areas are crucial for agricultural activities as they provide the food supply for the growing urban population. Investigating the impacts of land degradation on agricultural productivity in Ibadan will allow for the development of strategies to improve soil health, optimize land use, and enhance crop yields. This will help ensure food security and reduce the reliance on imported food.

3. Biodiversity Conservation: The peri-urban interface often acts as a transition zone between urban areas and natural ecosystems. Examining the impacts of land degradation on biodiversity in Ibadan will shed light on the species loss and habitat destruction occurring in these areas. This understanding can guide conservation efforts and the implementation of measures to protect and restore critical habitats.

4. Public Health and Well-being: Land degradation negatively impacts the peri-urban residents' health and well-being through increased pollution, reduced access to natural resources, and limited livelihood opportunities. Investigating the impacts of land degradation in Ibadan will provide valuable insights into the health risks and socio-economic challenges faced by the peri-urban communities. This knowledge can inform the development of policies and interventions to improve public health and socio-economic conditions⁴⁰.

5. Urban Planning and Development: As the study area continues to experience rapid urbanization, it is crucial to ensure sustainable land use practices and promote balanced urban-rural development. Understanding the impacts of land degradation on the peri-urban interface will aid urban planners and policymakers in making informed decisions regarding land management, infrastructure development, and resource allocation. This knowledge will contribute to more sustainable and resilient urban planning strategies⁴¹.

By studying and addressing the impacts of land degradation on the study peri-urban interface, researchers, policymakers, and stakeholders can work together to implement effective measures that promote environmental sustainability, enhance agricultural productivity, conserve biodiversity, protect public health, and support balanced urban-rural development. Ultimately, this research will contribute to creating a more sustainable and resilient peri-urban interface in Ibadan.

1.4 Aim and Objectives of the Study

Aim

The aim of this study is to assess the impacts of land degradation on the socio-economic characteristics of peri-urban settlements in Ibadan, Oyo State, Nigeria. In order to achieve the set goal for this study, the specific objectives are to:

- i. assess the socio-economic characteristics of the respondents in the study area.
- ii. identify and examine the drivers of land use change and degradation in the study area.
- iii. investigate the impacts of land degradation on the means of livelihood of the inhabitants of the study area.
- iv. examine the socio-cultural impacts of periurbanisation in the study area.
- v. investigate the level of impacts of land degradation on the health of the interface dwellers.

1.5 Research Questions

1. What are the socio-economic characteristics of the respondents in the study area?

2. What are the driving forces for land use change and degradation in peri-urban interface of Ibadan metropolis?
3. What are the effects of land degradation on the economy and means of livelihood of the dwellers of the study area?
4. What are the impacts of socio-cultural characteristics of the inhabitants and their influence on peri-urbanization development?
5. What are the effects of land degradation on the health of peri-urban dwellers?

1.6 Significance of the Study

The study's significance lies in providing valuable insights into the impacts of land degradation on the peri-urban interface in Ibadan. By understanding the specific factors and drivers of land degradation, researchers can propose improved land management practices. This can include measures like sustainable farming techniques, soil conservation methods, and reforestation efforts that will help reverse or prevent further degradation and promote sustainable land use.

As a policy guidance, the findings of this study will provide policymakers with evidence-based guidance for developing policies and regulations aimed at addressing land degradation in the peri-urban areas of Ibadan. This can include land use planning and zoning guidelines, regulations on the use of agrochemicals, and incentives for sustainable land management practices. By implementing targeted policies, the study can contribute to the creation of a more sustainable and resilient peri-urban interface.

The study will help to identify the socio-economic impacts of land degradation on peri-urban communities in Ibadan. By understanding how land degradation affects livelihoods, access to resources, and income generation, interventions can be designed to mitigate these negative effects. This can include initiatives to support alternative livelihood opportunities, provide access to clean water and sanitation facilities, and improve infrastructure development in peri-urban areas.

Also the study's significance lies in its potential to enhance the resilience of the study areas to climate change and other environmental challenges. By identifying the vulnerabilities and risks associated with land degradation, researchers can propose adaptation strategies that will make the peri-urban interface more resilient. This can include measures like water management systems, green infrastructure development, and early warning systems for natural disasters.

The study can also contribute to the involvement and participation of stakeholders in addressing land degradation in the peri-urban interface. By creating awareness about the impacts of land degradation and involving local communities, farmers, and other relevant stakeholders in the research process, the study can foster a sense of ownership and commitment towards sustainable land management. This can lead to the effective implementation of proposed interventions and long-term sustainability in peri-urban areas.

In conclusion, the study on the impacts of land degradation on the peri-urban interface in Ibadan is significant in several ways. It provides insights for improved land management practices, policy guidance, socio-economic benefits, enhanced resilience, and stakeholder engagement. Ultimately, the study aims to contribute to creating a more sustainable, resilient, and livable peri-urban interface in Ibadan.

1.7 Scope of the Study

The scope of this study is delimited to residential neighbourhood in peri-urban interface of Ibadan Northwest and Ido Local Government Areas of Ibadan. Two communities each were chosen from the identified neighbourhood. The selected communities within Ibadan Northwest are Eleyele and Adetokun; while Alafara and Ologuneru settlements falls within Ido Local Government areas of Ibadan. Furthermore, these areas are in proximity to three notable Government Reservation Areas in Ibadan: Jericho GRA, NIHORT GRA and Elenusonso GRA. Unfortunately, these communities lack government presence and as such have witnessed unprecedented and unplanned housing development in the last decades.

This notwithstanding, there are proliferations of private developers' gated estates in the region. Institutional housing estates such as Department of Security Service Housing Estate and Public-Private Partnership Estate at Alafara also exists in the zone. A major driver of land use change available in the zone include; the newly commissioned Lagos-Ibadan Railway line with a sub-station in the area. The ongoing Ibadan Outer Ring-Road Route construction by the State Government, traverses part of the area.

The peri-urban areas of Ido and Ibadan North West Local Government Areas (LGAs) in Ibadan, Nigeria, are experiencing rapid urbanization and expansion. These peri-urban areas, situated on the outskirts of the city, are characterized by a dynamic interface between urban and rural landscapes. However, this interface is increasingly vulnerable to land degradation, which poses significant challenges to sustainable development and the well-being of local communities.

Land degradation refers to the deterioration of the quality and productivity of land due to various factors, such as soil erosion, desertification, deforestation, and improper land use practices. In the context of peri-urban areas, the impacts of land degradation are particularly pronounced due to the competing demands for land posed by both urbanization and agriculture.

The study aims to investigate and understand the impacts of land degradation on the socio-economic characteristics of dwellers of peri-urban interface in Ido and Ibadan North West LGAs in Ibadan. Specifically, it seeks to assess the extent and severity of land degradation, identify the key drivers and factors contributing to land degradation, and examine the socio-cultural and environmental consequences of land degradation on local communities.

The four locations - Eleyele, Adetokun, Alafara and Ologuneru, comprises of 26no communities, 74no Community Developments Associations (CDAs) and 1,826 Housing Units out of which 346 of them were sampled, using Random Sampling Technique. A mixed-methods approach has been employed, combining remote sensing and Geographic Information System (GIS) analysis, field surveys, and interviews with key

stakeholders. Remote sensing and GIS analysis was used to identify and map the study catchment areas which stands at 3,632.04 hectares, land degradation spots, such as soil erosion, deforestation, and loss of vegetation cover.

Field surveys were conducted to collect primary data on land use practices, agricultural practices, land tenure systems, and socio-economic aspects of peri-urban communities. Key informants including core indigenes/farmers, community leaders, professionals and local government officials that were interviewed to gain insights into their perceptions of land degradation and its impacts.

The study on the impacts of land degradation in the peri-urban interface in Ido and Ibadan North West LGAs is a timely and significant research topic. By examining the extent, drivers, and consequences of land degradation in these peri-urban areas, the study has provided valuable insights for policymakers, planners, and local communities to address the challenges and promote sustainable development in Ibadan.

1.8 Limitation of the Study

There are several limitations encountered in the course of studying the impact of land degradation on the peri-urban interface in the Eleyele and Ologuneru areas of Ibadan, Nigeria. The non-availability of accurate and up-to-date data regarding land degradation, land use changes, and peri-urban dynamics in the study area was a challenge. This hindered the comprehensiveness and depth of the analysis, as researcher had to rely on limited or outdated data sources.

Conducting a study of the entire peri-urban interface in the Eleyele and Ologuneru areas was challenging due to the vastness of the region thereby creating a restriction of the study to a smaller area, potentially leading to a limited understanding of the overall dynamics and impacts of land degradation in the broader peri-urban interface.

The selection of study sites and participants tend to introduce bias into the research findings but caution was taken in selecting representative samples that accurately reflect the diversity of land uses, stakeholders, and socioeconomic conditions in the peri-urban interface.

Fieldwork data collection in peri-urban areas was logistically difficult. The research team was faced with difficulties in accessing private gated community areas, gathering primary data, and engaging with local communities due to factors such as security concerns, lack of cooperation, or cultural barriers.

Conducting a comprehensive study on the impact of land degradation requires extensive time and resources. Time constraints limit the thoroughness of data collection, analysis, and potentially leading to a less comprehensive understanding of the problem at hand. Also, conducting a study that examines the long-term impacts of land degradation on the peri-urban interface was challenging due to the absence of long-term, consistent data. This limitation restricts the ability to observe and analyze trends and changes up till 2023.

Engaging with various stakeholders, including local communities, policymakers, and land users, is essential for a comprehensive understanding of the impacts of land degradation. However, limitations in stakeholder participation and cooperation was impactful on the depth and accuracy of the study findings.

Despite these limitations, valuable insights were generated into the impact of land degradation on the peri-urban interface in the study area. These limitations are acknowledged and addressed in the research design and analysis, to enhance the robustness and validity of the study findings. The Nigerian political map showing Oyo State and the study areas within the two local government councils of Ido and Ibadan North West respectively are as contained in Appendix III.

1.8 Operational Definition of Terms

A City: is a place where there is concentration of people, infrastructural developments, administrative, commercial and industrial activities are situated.

Urban Center: is a bit controversial to define as what is termed an urban varies from country to country but can be determined by population, industrialization and statutory pronouncement.

Rural: a rural area is community where agricultural base is the main occupation of the inhabitants.

Urbanization: It is migration of rural dwellers into the urban centers.

Suburbanization: This occurs when an urban area begins to extend outwardly to the peripherals hinterlands.

Counter Urbanization: It is a situation whereby city dwellers prefer the peripheral rural areas and villages to the urban areas.

Urban Resurgence: This can be explained as bringing back the urban setting of a city with introduction of new developments. It could also be termed a regeneration of an urban center.

Reverse Urbanization: is all about cities emptying out into remote places driving people out of densely populated areas to the smaller cities and town.

Urban Sprawl: is used to describe a gradual extension in developments from the urban center into the fringes. It can be typified of informalities.

Urban Fringes: is the peripheries of an urban area

Peri-Urban: it is coined from the word, periphery which means the outskirts or the interface between an urban and rural area.

Peri-Urbanization: is a term used to describe a transformative process of rural into urban.

Interface: is the transition zone or the space between rural and urban area.

Sub Urban: or suburb is the country-side of a city.

Hinterland: is the zone where rural-ness is discernible.

Inner-City: it is the core of a city.

City Center: is a zone comprising the residential, administrative and where the economic activities are taking place.

Metropolitization: is a term used to describe expansion of a city into surrounding communities.

Villagization: is a concept by which government, through a military pronouncement or action of power of eminent domain, resettles a set of people in a designated village or remote area outside an urban setting.

Primate: the word primate is used to describe a city which is famous and often mentioned in the rest of the world.

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Chapter Two

Literature Review

This chapter basically dealt with empirical review of relevant literature. The views and opinions of scholars on the themes and subthemes of the topic of this research work were reviewed to establish its gap in knowledge. Each of the objective variables of the research work were thematically reviewed as shown in the literature

review framework in Figure 2.1 below. The conceptualization of the themes, sub-themes of the variables were also established through a conceptual framework. (Figure 2.14)

The concepts, theories and models already established by scholars on the keywords, themes, sub-themes of the five core objectives of this research work were dealt with. The approach involved a discourse on the global outlook of the issues, followed by the scholars' opinions in Africa continent before bringing the discussion down to Nigerian situation and invariably, the city of Ibadan and the selected peri-urban case study areas.

The needs that form bases of human settlements, stages, types, and sustainable urban development as exemplified by the United Nations Human Settlements and Sustainable Urban Development (Habitat I) established through a conference held in Vancouver Canada in 1976 shall be examined.

The linkage between the early and modern ages, the primitiveness of old ages and the globalization of the present with a touch of digital economy and information communication technology through scholarly expositions are explored. The modernity of our urban centers, the urbanization process, urban decay, urban resilience, urban sprawl, reverse urbanization, counter urbanization, suburbanization and urban resurgence are processes that are reviewed in this chapter.

The Gated Communities phenomenon that has pervaded the real estate development investments in recent years and the peoples' quest for a new and improved lifestyle, safety and security, access to community of participation and uniqueness of environment in a secluded and siren locations are innovation that is also reviewed.



Figure 2.1: Literature Review Framework

Source: Author's Field Work 2022

2.1 Conceptual Review

2.1.1 Land Degradation

Environment is a setting or terrain which include all forms of life (plants, animals, and human beings), air, water, land, buildings, vehicles, etc. while deterioration or decline in quality of environment is referred to as environmental degradation¹. A degraded environment is an unpleasant change in surroundings². Environmental issues have become a global concern since changes in human activities from pastoral living to technological based. From then, the environment has been in continuous deterioration³. The European Industrial revolution of the eighteenth century was a turning point to the modern economic advancement of the region but also the beginning of rapid global environmental degradation which was spread through colonialism and imperialism that destroyed the traditional human sympathy to natural environment⁴. As human actions continues to violate the natural environment, the current world will continue to witness disasters⁵.

The issues of the environment and problems associated with it can be interwoven but distinct. The World Economic Forum 2023 gave a distinction between the issues and challenges of the environment. The issues are listed as; extreme weather events, natural disasters, failure to climate change mitigation and adaptation, while

environmental problems inter alia includes; global warming, pollution (of air, water and soil, ecosystem), depletion of the ozone layer, climate change, loss of biodiversity, melting polar ice and rising sea level. Studies have also identified diverse environmental problems of the 21st century, focusing on current problems requiring the United Nations attention, and on those affecting coastal lines^{1, 2, 3, 4}. This therefore implies that, environmental degradation problems could be global or peculiar to a region.

Land degradation is a pressing environmental issue affecting Nigeria, a country characterized by diverse ecosystems and a significant reliance on agriculture for sustenance and economic development. Several factors contribute to land degradation in Nigeria. Deforestation, driven by demand for timber, expansion of agricultural lands, and the use of firewood for domestic purposes, leads to soil erosion, loss of biodiversity, and a decrease in carbon sequestration. Unsustainable agriculture practices, including indiscriminate use of fertilizers and pesticides, overgrazing, and inadequate soil conservation measures, exacerbate land degradation. Rapid urbanization, industrial activities, and pollution, particularly from mining and oil exploration, also contribute to the deterioration of Nigeria's land resources⁶.

The impacts of land degradation in Nigeria are far-reaching and affect various sectors. Agricultural productivity is significantly reduced, leading to food insecurity and economic losses for farmers and communities. Erosion-induced landslides and floods displace communities, damage infrastructure, and lead to loss of lives and property. Degraded lands also reduce the capacity for climate change mitigation, exacerbate greenhouse gas emissions, and undermine Nigeria's efforts to achieve its commitments under international agreements such as the Paris Agreement⁷.

Addressing land degradation in Nigeria requires a multi-pronged approach encompassing policy interventions, sustainable land management practices, and community engagement. Some potential solutions include: Policy and Governance: Strengthening land use planning and environmental regulations, enforcing legislation against illegal deforestation and land conversion, and promoting sustainable land management practices through incentives and subsidies. Also Sustainable Agricultural Practices, promoting the adoption of conservation

agriculture techniques, agroforestry, integrated pest management, and precision farming to minimize soil erosion, enhance soil fertility, and improve productivity⁸.

Reforestation and Afforestation is another approach to land degradation through implementing large-scale reforestation and afforestation programs to restore degraded lands, increase carbon sequestration, and promote biodiversity conservation. Community Engagement and Awareness could also be employed to educating and involving local communities in sustainable land management practices, emphasizing the importance of preserving natural resources and promoting alternative livelihood options to reduce pressure on land. Lastly, Research and Innovation approach involves investing in research on sustainable land management practices, developing appropriate technologies, and promoting knowledge exchange and capacity-building among stakeholders⁹.

Land degradation poses significant challenges to sustainable development in Nigeria, affecting agriculture, livelihoods, ecosystems, and climate change mitigation efforts. Addressing this issue requires a comprehensive and coordinated effort from government agencies, communities, civil society organizations, and other stakeholders. By implementing effective policies, adopting sustainable land management practices, and promoting awareness and engagement, Nigeria can mitigate land degradation and pave the way for a more sustainable future¹⁰.

Land degradation occurs naturally but human activities makes it worse. The sequence of which, as illustrated in the Figure 2.2 below, shows that artificial land degradation is man-made and the core sources are deforestation, lack of development management that serialized into development on flood plain, reduced infiltration, increased surface water and eventual resultant into flooding. Also for the same reason, informal developments occur, lack of waste services, dumping in water channel, changing of water channel and eventual flooding as result¹¹.

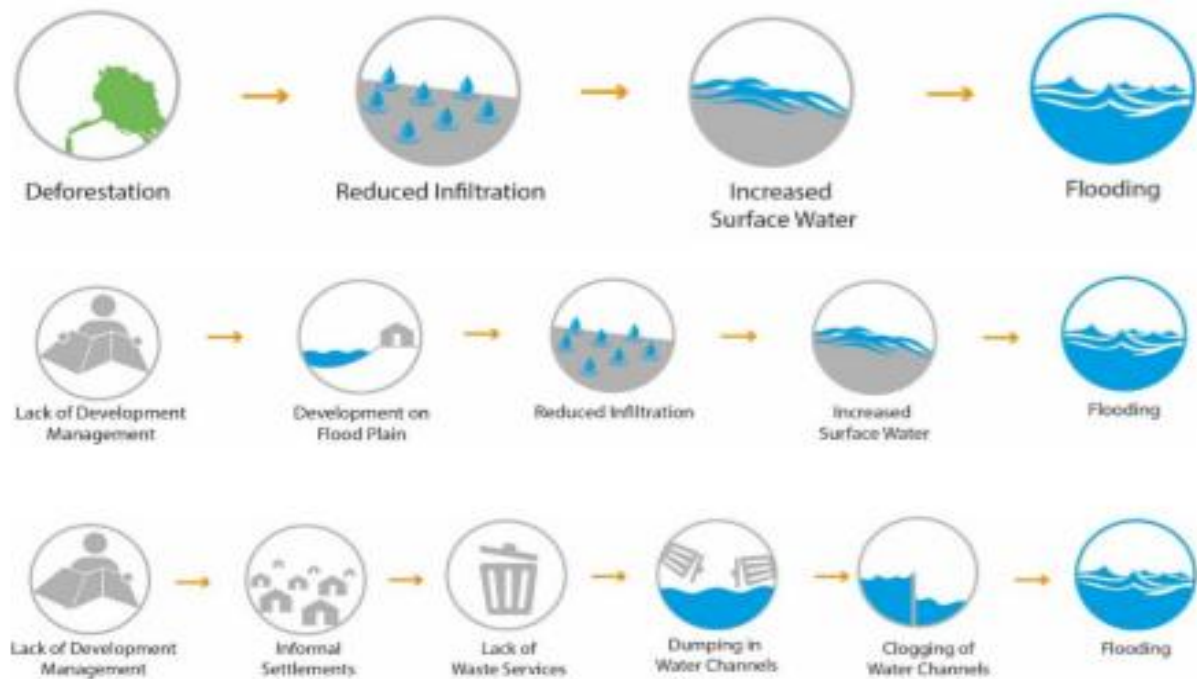


Figure 2.2: Land Degradation Sequences
Source: ¹¹.

In a precise expression, peri-urbanisation was described as a region identified with high class, and, in the other part of the world with significant poverty and social displacement, it is the burning issue between the city and the suburbs¹². Moreover, in between the developments in the city and the shape of the suburbs, peri-urban areas remain the transitional region with a range of socio-cultural, economic and environmental changes. The challenges of environment in peri-urban are unique and peculiar from one location to the other.

The peculiarity of an interface as a link or gap, between the urban center and the rural areas, depends on the morphology of its drivers, and the topography of the environment of the region. On this note, peri-urbanisation environmental challenges are not confined in the same limits, rather not also limited to the following factors: neglect and insensitive to environment planning of the areas, fall in ground water table due to excessive pumping and proliferation of bore-hole drillings, urban flooding due to indiscriminating development on wetlands, increase in the environmental pollution due to increasing industrial development in these areas, lack of waste management leading to adverse impacts of health of people and the loss of biodiversity¹³.

Land degradation is a pressing environmental issue that is of growing concern worldwide, including in urban areas¹⁴. In the peri-urban interface of Ibadan, Nigeria, land degradation has become increasingly prevalent. This comprehensive review aims to identify and analyze the drivers responsible for land degradation in the peri-urban interface of Ibadan.

1. Population Growth and Urbanization

One of the primary drivers of land degradation in the peri-urban interface of Ibadan is rapid population growth and urbanization. As rural residents migrate to urban areas in search of better opportunities, the peri-urban areas experience an influx of people. This results in faster urban expansion, encroachment on agricultural land, and increased pressure on natural resources.

2. Expansion of Infrastructure

The expansion of infrastructure and construction projects in peri-urban areas contribute significantly to land degradation. Road construction, housing developments, and industrial areas often disregard proper environmental planning and land use regulations, leading to deforestation, soil erosion, and habitat destruction.

3. Agricultural Practices

Unsustainable agricultural practices, including intensive farming, improper land management, and the use of chemical fertilizers and pesticides, have detrimental effects on the peri-urban interface. These practices lead to soil erosion, soil nutrient depletion, and reduced soil productivity, further exacerbating land degradation.

4. Overgrazing and Illegal Logging

Overgrazing, particularly by pastoralists or nomadic herdsman, is another driver of land degradation in the peri-urban interface. The continuous movement of livestock in search of grazing land results in soil compaction, erosion, and the degradation of vegetation cover. Moreover, illegal logging activities, driven by

unsustainable timber production and charcoal production, further contribute to deforestation and aggravated soil erosion.

5. Inadequate Waste Management

Poor waste management practices in peri-urban areas, such as improper disposal of solid waste and untreated sewage, result in land degradation. Dumping waste directly into open spaces or water bodies contaminates the soil, water, and air, leading to pollution, decreased soil fertility, and the loss of biodiversity.

6. Climate Change and Natural Disasters

The impacts of climate change, such as increased frequency and intensity of droughts, floods, and storms, further worsen land degradation in the peri-urban interface. Extreme weather events lead to soil erosion, loss of vegetation cover, and increased vulnerability to landslides.

7. Lack of Effective Land Use Planning and Policy Enforcement

Weak land use planning and ineffective policy enforcement contribute to land degradation in the peri-urban interface of Ibadan. Inconsistent application of zoning regulations, land use changes without proper environmental impact assessment, and informal settlements in ecologically sensitive areas exacerbate the degradation of land resources.

The drivers of land degradation in the peri-urban interface are multifaceted, encompassing both anthropogenic and natural factors. Population growth, urbanization, unsustainable agricultural practices, expansion of infrastructure, overgrazing, illegal logging, inadequate waste management, climate change, and weak land use planning and policy enforcement all contribute to land degradation in this region. Addressing these drivers requires collaborative efforts between government agencies, local communities, and relevant stakeholders to implement sustainable land management practices and enforce legislation that prioritize conservation and restoration of land resources in the peri-urban interface of Ibadan¹⁵.

2.1.2 Peri-Urbanisation Process.

Scholars of urban development have dealt with the term - peri-urbanisation and various concepts developed abound in literature. Peri-urbanisation is a process of the conversion of former rural lands, to assume, urban characteristics¹⁶. The word peri-urban was coined from the word periphery, which also associated with other terms like sub-urban, urban fringes, urban periphery or interface and hinterland. Unlike urban sprawl, the peri-urbanisation is transformative in character¹⁷. It effects physical, social and environmental changes thus necessitating spatial planning interventions^{18,13}.

Peri-urbanisation is a dynamic process changing the rural land in the hinterland gradually to urban¹⁹. Urban sprawl was distinguished from the peri-urban by taking the former as a phenomenon and the latter as its manifestation, connote that the sprawl has a resultant effects on rural areas turning to urban¹³. The over-spilling of the inner cities to the fringes and latter to the rural is termed as peri-urbanisation.

The factors considered as drivers of peri-urbanisation among others include; physical expansion of the city, urban sprawling, drifts from rural to urban, new economic activities development and city services expansion in the fringes.

The incidental effects and benefits that peri-urban areas gain from sprawling was listed as; improved communities means of livelihood, improved place identity, economic effects, new employment and contracts for local businesses. Transformative changes due to peri-urbanisation include change in demography, physical and infrastructural, socio-economic and environmental conditions^{13,20}.

The concept of peri-urbanisation was originally formulated as a result of rapidly expansion of cities in Africa and Asia but it recently becomes applicable globally as researchers identifies change and complexity in many areas of the global north that the traditional urban edge or fringe concept becomes inadequate²¹.

Periurbanisation was therefore conceptualized as a relationship between the poor, middle income earners and informalities²².

Peri-urbanization is characterized by a mix of rural and urban. The rural lacks presence of administrative structure and other infrastructures while the urban is overpopulated with limited spatial resources hence forcing a spillover into the rural areas. The term 'mixed spaces' was used to define peri-urban areas and explained further that, it is an interface, between urban and rural spaces²³.

In China, the peri-urban zone is measured from the city fringes to up till 150 kilometers from the core city to as far as 300kilometers. In the USA, the concept of peri-urban development consists of planned single-family developments providing homes for higher income households. There are also office parks and industries located in the peri-urban areas at reduced cost. The USA metropolitization contradicts the rest of the world because the peripheries are dominated by the very rich and powerful. In France, peripheries are transitional zones occupied by the middle income class and some dwellers²⁴.

In developing Africa, especially the Sub-Saharan Africa, the peri-urban interface is a bundle of contradictions. The peri-urban regions are confronted with a range of social, environmental and institutional challenges²⁵. The peri-urbanization process was viewed as the changes of agricultural lands outside cities, into other uses¹⁶. In the same vein, a review of the peri-urban areas of Ibadan shows that food security in the city was strengthened by the proximity of the peripheral to the inner city, but the importation of urban culture to the peripherals may take agriculture into extinction²⁶.

Peripheral settlement is characterized by a mix of rural and urban. The rural lacks presence of administrative structure and other infrastructures while the urban is overpopulated with limited spatial resources hence forcing a spillover into the rural areas. The core issues of peri-urban areas are categorised into five – the social function, contested land and natural resources, spatial dynamism, different regulatory environment, and quality of life²⁴.

Contested land and natural resources are issues that bothers on such areas where urbanization and industrial developments expansion takes over more land and water resources for expansion. The dynamic nature of peri-urban and its transformative nature is due to pressures of population growth, industrialization and globalization. The peripheral is mostly affected by poor institutional framework and governance. There is usually unhealthy living condition, environmental hazards, and degradation of natural resources in most African peri-urban²⁷.

The five phases of development as illustrated in Figure 2.3 are:

i. **City Centre or Urban Core:** This is the Central Business district of any city. Given the context of this study, the CBD in Ibadan is the Dugbe axis within which the one of the study local government peri-urban areas (Ibadan North West) is headquartered.

ii. **Inner Urban Area:** This constitutes the high density built-up areas especially the residential, commercial and some industrial concerns and open green spaces.

iii. **Suburban Area:** In sub-urban, the density is lower and always in close proximity to the inner urban areas. The housing developments in suburban areas are just about 15 to 20 meters apart including lock up shops, services, parks and recreation areas. This is common in peri-urban areas of Alafara, Ologuneru and Adetokun in Ido Local government areas.

iv. **Urban Fringe:** The edges of the built-up area of scattered pattern lower density settlement areas are referred to as urban fringe. It is also a zone with urban concentrations around transport hubs, large green open spaces such as urban woodlands, farmland, golf courses and nature reserves. The selected clusters of settlements of Adetokun, Eleyele, Alafara and Ologuneru can be found in this location.

v. **Urban Periphery:** It is a zone with lower population that surrounds the main built up areas, under functional urban area is called urban periphery. It is characterized of smaller settlements, industrial areas and other urban land-uses with a mixture of agricultural functionality.

vi. **Rural Hinterland:** these are rural areas revolving round the peri-urban area, but accessible within a practical commuting time. Their rural character is a function of residents with lifestyles and income from the urban center.

The diagram below shows the pattern of developments starting from the inner city center and its spreads to the peri-urban and or rural hinterland.

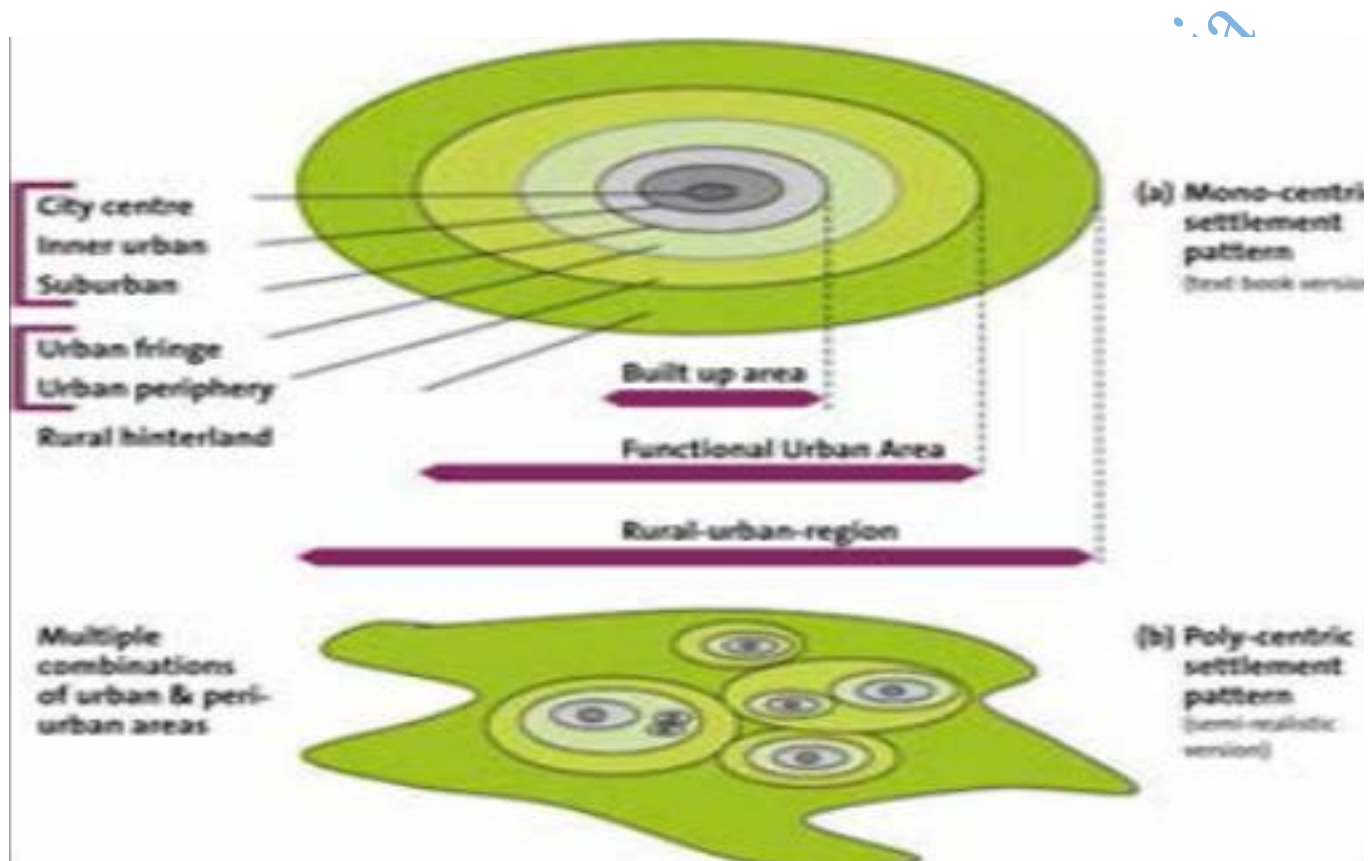


Figure 2.3. An Emerging Trend of peri Urban Sprawl
Source: ²⁸

2.2 Theoretical Framework

2.2.1 The William Alonso Theory – 1960 (Location & Land Cost)

Alonso theory formulated in 1960 was premised on the relationship between location and rentals or land costs from the inner city to the interface. The model explains the descending order of prices of cost of transportation to the industries located in the inner city in relation to the distance from where the workers lives. The model

could be used to measure, in relation to location, rent of workers' accommodations, transportation to and from inner city work place, and land costs.

The William Alonso (Location and Land Value: Toward a General Theory of Land Rent, 1964) is applicable to accessibility requirements to the core inner city by various land users – residential, commercial and industrial. The theory was premised on the requirement or maximum rent to which a land use type would yield for a particular location. See Figure 2.4.

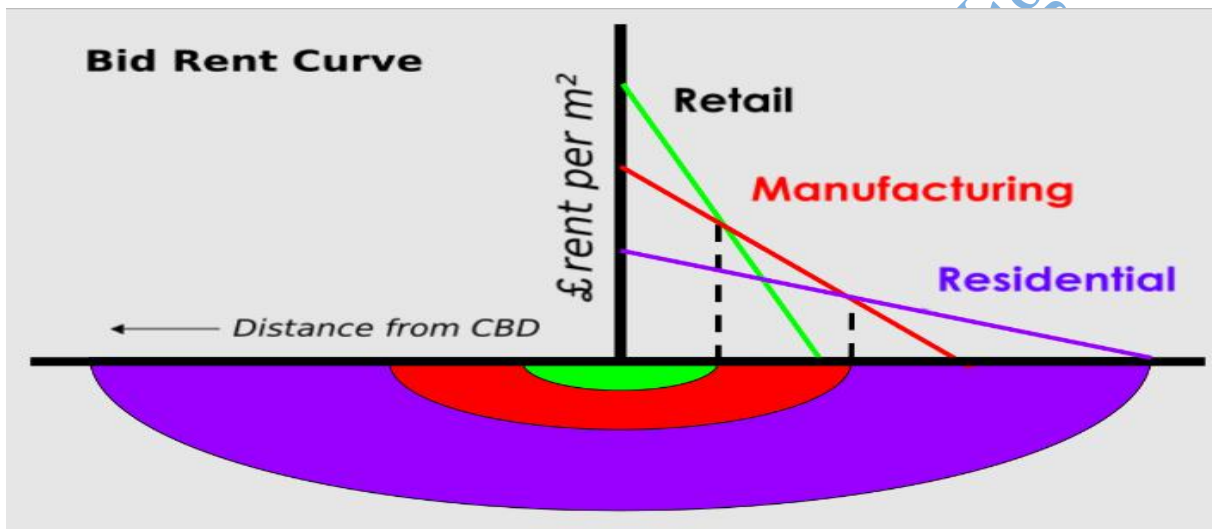


Figure 2.4: Bid Rent Curve

Source: ²⁹

The theory created a segregated land use system as households would not pay commercial and industrial rent for the inner city locations. He postulated cheaper land at the city fringes for those households with less need for city center accessibility as wealthy households, while poor households, need higher accessibility to the inner city and as a result locate near the center, competing with commercial/industrial²⁹. The relevant of this theory in this thesis points to the fact that low cost of land is a major driver of housing developments in the peri-urban areas.

2.2.2 The Theory of Social Cost and Land Degradation

The theory of social cost, developed by environmental economist Ronald Coase, in 1960 is a concept that explores the broader societal implications of an economic activity or decision beyond the private costs and benefits that are directly experienced by those involved. In relation to land degradation, the theory of social cost helps to illustrate how the consequences of land degradation extend beyond the immediate impacts on individuals or companies³⁰.

The neoclassical approaches on social cost provided by Ronald Coase and Arthur Pigou was provided with a more comprehensive and non-utilitarian alternative by K. William Kapp's theory of social cost and environmental policy³¹. When it comes to land degradation, there are various social costs that can arise. These costs may not always be reflected in the private costs incurred by landowners or resource extractors, but they still have significant implications for society as a whole. The theory of social cost highlights the need to internalize these external costs and account for them in decision-making processes and economic frameworks.

One example of a social cost of land degradation is the loss of ecosystem services. Land degradation often leads to the destruction of natural habitats, reduction in biodiversity, and disruption of ecosystem processes. This loss of ecosystem services can have wide-ranging effects on society, including reduced water quality, diminished pollination for agriculture, and weakened climate regulation. These impacts can lead to increased costs for water treatment, reduced agricultural productivity, and increased vulnerability to natural disasters, amongst other consequences.

Another social cost associated with land degradation is the displacement of local communities and the loss of livelihoods. Land degradation, particularly through activities such as deforestation or mining, can force people to move from their homes and disrupt their traditional ways of life. The resulting social and economic disruptions can have long-lasting effects on these communities, as they may struggle to find alternative sources of income or may be pushed into poverty.

Furthermore, land degradation can contribute to climate change, resulting in additional social costs. Deforestation, for example, leads to the release of carbon dioxide into the atmosphere, contributing to greenhouse gas emissions and global warming. This can lead to increased costs associated with climate adaptation and mitigation efforts, such as building infrastructure to withstand extreme weather events or implementing measures to reduce carbon emissions.

In summary, the theory of social cost provides a framework for understanding the broader impacts of land degradation beyond the direct costs incurred by individuals or companies. By considering the social costs associated with land degradation, decision-makers can better allocate resources, develop policies, and implement measures to address and mitigate these impacts. This approach acknowledges that land degradation is not only an environmental concern but also a social and economic one, requiring a comprehensive and holistic response.

2.3 Review of the Empirical Studies

2.3.1 Settlements in Human Civilization

Before the modern agglomeration of buildings where people live and work, humans are known to be wandering about. These are the Paleolithic and Neolithic era³². The basic needs of early men were food, clothing, and shelter. These are only physiological human need, while safety/security, love and belonging, esteem and self-actualization complete the list³³.

But in modern world, basic human need is measured by absolute poverty especially in the developing countries³⁴. United Nations described it as extreme lack of basic human needs – food, shelter, health education and information. It was also observed that anything that can physically and mentally connects people are their basic needs – food, drinking water and sanitation, health care, shelter, education and information communication³⁵. These human needs form the bases for their settlements.

Apart from the early men's quest for the basic needs, physical factors such as; vegetation, fertile land and mountains for defense are also considerations that bring about human settlements. Settlements, therefore is the agglomeration of people to live, work and recreate in a particular area. Settlement occur when humans developed within a specific area, a population center and with a long term community consideration³⁶.

Scholars gave various definitions and types of human settlements – a spot occupied, a cluster, impermanent camp, long-lasting; towns, urban communities, metropolis and megalopolis including its complex socioeconomic characteristics^{37, 38, 36}. The various types of human settlements are a function of population. The Urban settlement is compact, modern, organized with large expanse of land area.

Rural settlement depends on designation and definition of the nation and government it exists. Typically, rural settlements are found around natural resources like rivers, forests, costal line and fertile agricultural lands. They could be towns, villages, localities, hamlets and farms. Compact Settlements consist of closely built structures with zonings – residential, commercial and industrial. Dispersed settlements are underpopulated and in remote far away country side.

The three stages of human settlements – the primitive non-organize human settlement, primitive organized human settlement and static urban settlements or cities are classified³⁹. As the primitive non-organized era connote the Paleolithic and Mesolithic stone ages, primitive organized consists of farmers/herders, Neolithic or new stone age, and town formation period known as Bronze Age. The Static urban settlements is the iron age of formation of larger towns and cities.

Table 2.1 Stage of Human Settlement

Stage of Human Settlement		
Stage 1	i.	Primitive Man (Tree tops, branches, tree holes & cave) Paleolithic-Old Stone Age
Primitive Non Organised	ii.	Nomad Temporary Shelter (Hunts were built using mammoth bone,

Human Settlement	wood, straw & rocks) Mesolithic – Middle stone age
Stage 2	i. Farmers and Herders Permanent Shelter (Formation of Village) (The roof was usually made from timber beams with reed thatch covering)
Private Organised	Neolithic – New stone age
Human Settlement	ii. Conflict Between Man-Winner Became the King Formation of Town (People started migrating to this town center for better wages and employments) Bronze age
Stage 3	Due to Excessive Migration
Static Urban Settlements or	Formation of larger towns and Cities
Cities	(Development comes out of the front to accommodate more people giving rise to bigger settlements) Iron Age

Source: ³⁹

2.3.2 Urban Processes

For a settlement to turn into an urban center requires manifestation of some noticeable changes which are referred to as urbanisation components. These components includes a natural demographic increase or population growth of an urban area, migration from rural to urban centers (economic urbanisation), boundary change (spatial urbanisation), and (social urbanisation) reclassification of a previous rural area into an urban center thereby popularizing the urban lifestyle. These components are otherwise refers to as a city life cycle⁴⁰.

Given the complexity nature of urbanisation and its inherent and constant evolving processes, scholars have classified it into four stages as; urbanisation, suburbanisation (Ex-urbanisation), de-urbanisation (counter-urbanisation) and re-urbanisation. Urbanisation processes start with initial slow pace to an accelerated development and concentration of population on permanent migration into the cities. The process is a

concentration in the central areas while reducing that of rural areas and hinterland. Suburbanisation commences when the numbers of immigrants from the rural are unable to fit into the center thereby left with inhabiting the suburbs. The process assists in depopulating the center and thereby transforming into jobs and services creation in the suburbs.

De-urbanisation occur when the poorest inhabiting the city centers in a gradual process moves to the developing remote areas and few into the suburban. Through this process, the demolished and revitalized buildings, shopping centers are being erected on the property left behind. Reurbanisation which is the last phase occur when both the villages and the city centers gain new inhabitants. This stage sets only to depopulate the inner city^{41,40}.

Urbanisation – people move into a settlement, often accompanied by industrialisation

Suburbanisation – City spreads outwards into surrounding hinterland

Counter urbanisation – people move out of the city and back into surrounding rural areas and villages

Reurbanisation – regeneration/redevelopment in cities brings people back into the urban area

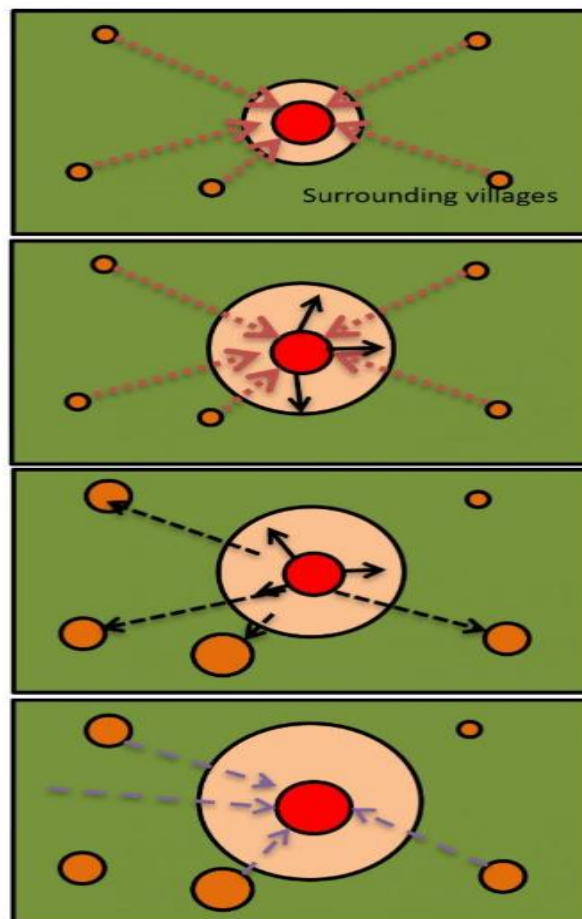


Figure 2.5: Urban Processes

Source: ⁴¹

2.3.3 Urbanisation

Urban growth occurring mainly in many cities of the world is becoming increasingly important to monitor. Medium-sized cities have also begun to transform due to government policies and socio-economic activities, along its radical approach to changing rural areas into cities. The process is termed global urbanization, which presents new social and environmental challenges⁴².

Urbanisation is widely accepted by scholars as an increasing number of migrants from rural to urban centers, not only that, large concentration of people in an urban center, by itself is also expanding the city's population due to some other factors especially, unplanned reproduction⁴³.

Urbanisation is a phenomenon that establishes a relationship between urban population growth and urban land change⁴⁴. Within a very few decades ago, the increase in number of people in cities have become remarkable, emanating urban planning challenges and policy problems. About 58% of the world's population amounting to approximately 4 billion people are presently living in urban centers and likely, more areas would become urbanized very soon in the coming years⁴⁵.

There are challenges associated with urbanisation as identified in Figure 2.6 below: These challenges occasioned by population explosion, lack of physical planning generating into urban stress and consequently impacting on well-being of the city dwellers, informal development, encroaching, congestion, pollution, missed employment opportunities, all resulting into increasing difficult issues to address.

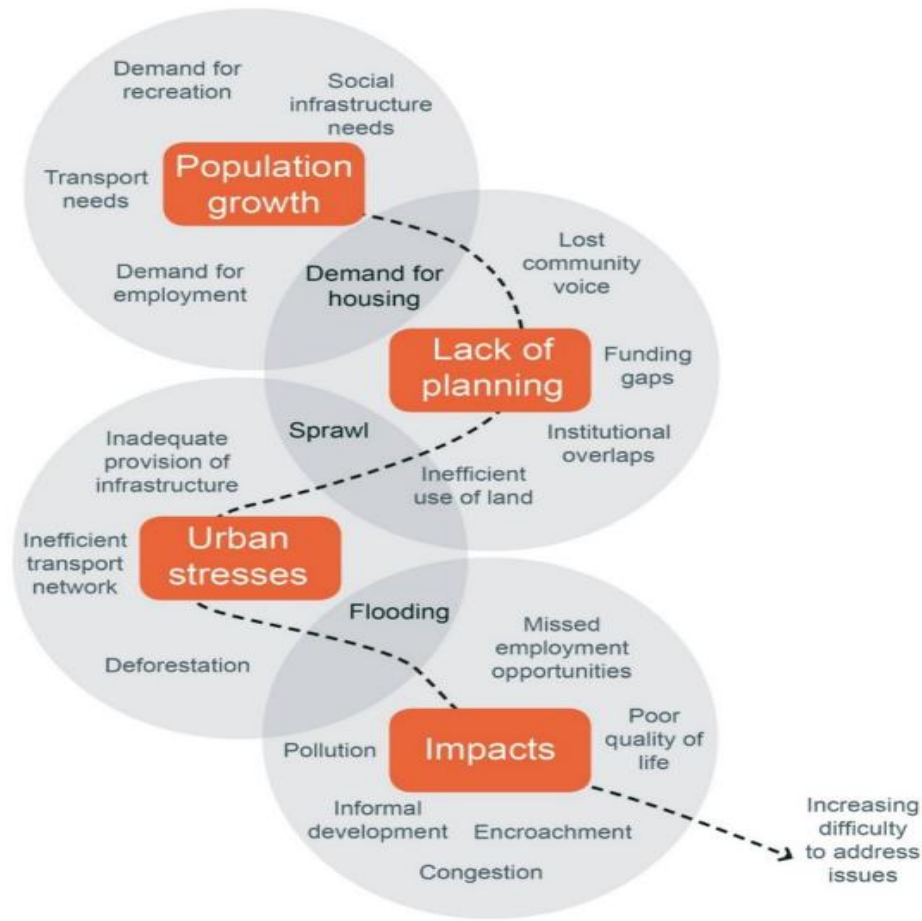


Figure 2.6: Challenges of Urbanisation

Source: ¹¹

This rapid global urbanization growth was further emphasized in another study positing that in 1990 only 10 cities in the world had more than 10 million inhabitants, but by 2018, the number had tripled to 33 and 19 of which are in Asia for the same reason of socio-economic and increasing rural-urban drift⁴⁵. The character of urban growth, spreading developments to the cities' edges and surrounding towns in many parts of Europe, cannot be taken as strictly urban or rural as, lifestyle dynamics, improved infrastructure, increased mobility and growing economy are factors that led to a reduced urban development but expansion into the low density areas^{46, 47}.

In the United States of America, about 82.66% of the total population now lives in the cities and urban centers. Urbanization in America took place a lot later than in other developed nations due to sizable numbers of settlers and migrants that populated the region⁴⁸.

2.3.4 Urbanisation in African Context

In Africa, the North African countries are the most urbanized with 78 percent of the citizens living in urban centers, North African countries of Egypt and Libya remains most urbanized with 93 and 81 percent respective population living in urban areas. This is against Niger (17 percent), Burundi (21 percent) and Eritrea (24 percent) as the lowest urbanized African countries⁴⁹.

It is interesting to know that Africa still remains the least urbanized places but its urban growth rate would continue as one of the fastest in world regions in few years^{50, 51}. Figure 2.7 below shows the trend and percentage of Africans living in rural and urban areas. Succinctly, it shows the historical trends and future projections for total population (a) and percentage of total population living in urban areas (b) in Africa and its three regions. The regions are based on United Nations (UN) regional categorization; mid-latitude Africa is the Western, Middle, and Eastern Africa regions. Grayed-out areas represent the projection interval. Data are from the United Nations' World Urbanization Prospects, 2014 Revision [1].

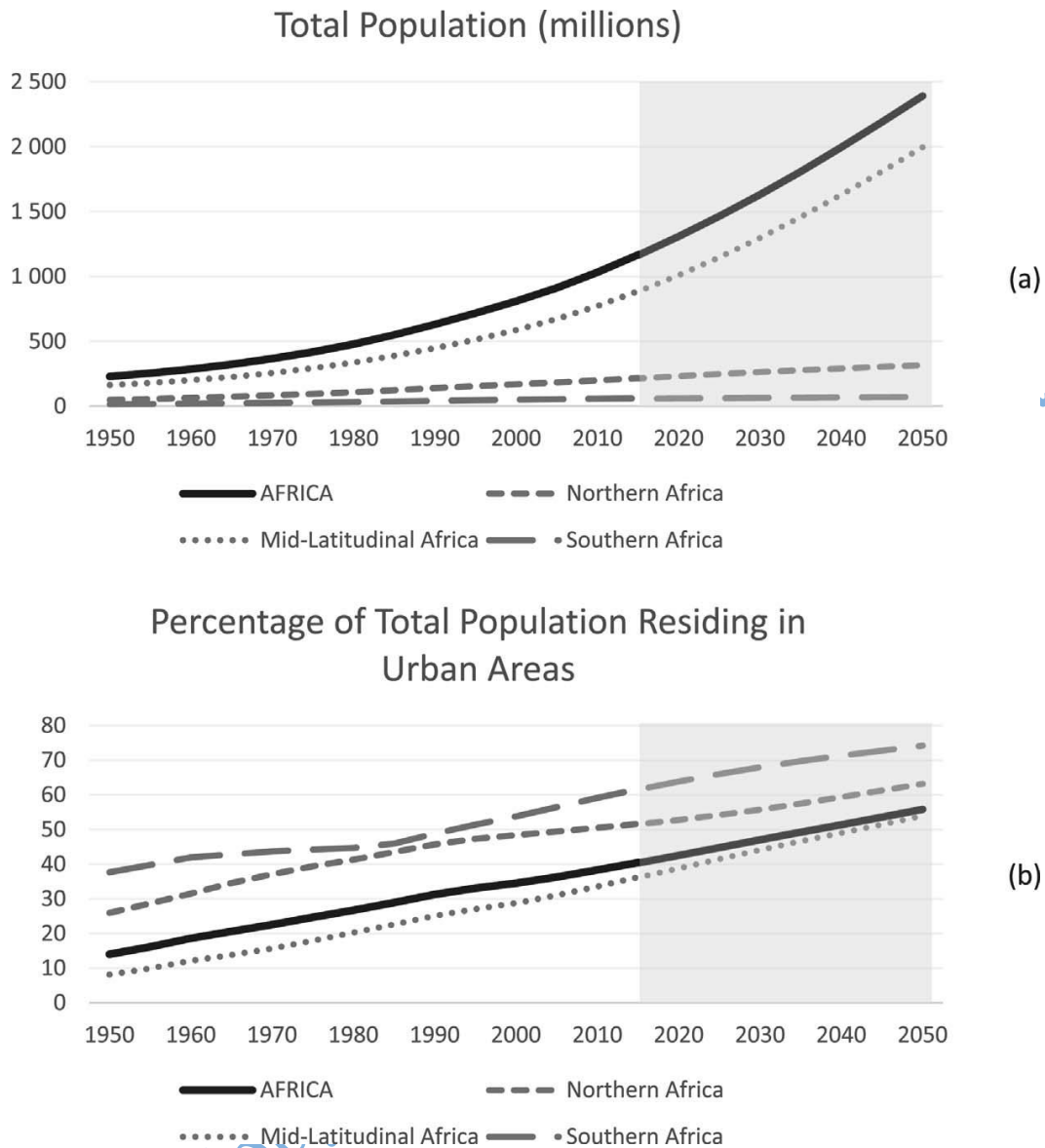


Figure 2.7: Trends of African Population in Urban and Rural Areas

Source: ⁵¹

2.3.5 Challenges of Urbanisation in Africa

The huge problems and challenges that rapid urbanization in Africa is triggering are similar and situation are the same in most African countries. Unplanned and unregulated growth, urban poverty, increasing unemployment rates, increasing urban costs, housing affordability issues, weak urban governance, urban

crimes are bane of urbanization in Africa⁵². The phenomenon viewed from urban health angle depicts poor nutrition, pollution-related health conditions and viral diseases, poor sanitation and housing condition are part of challenges posed by African urbanization⁵³. Urban centers are synonymous with playing multifaceted functions for the societies. As they form the economic and technological growth centers of societies, they are as well an incubating machinery for poverty, environmental hazards, inequality and viral diseases⁵⁴.

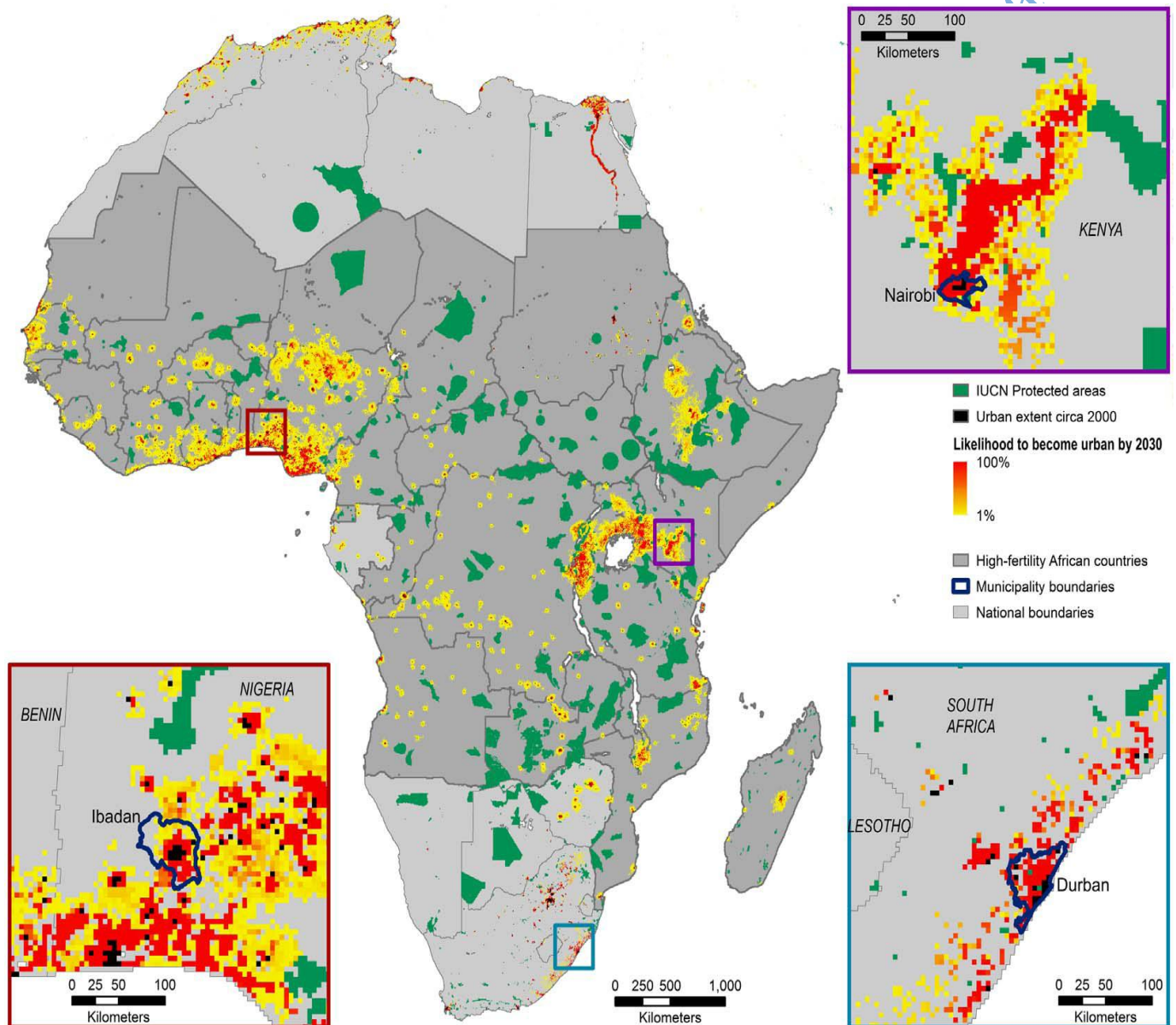


Figure 2.8: African Urban Expansion Forecast

Source: ¹⁰

The Figure 2.8 above explains a forecast of probabilistic urban expansion by 2030 in Africa was estimated for each locations by calculating the urban growth of locations through percentage of 1,000 spatially explicit simulations of such that becomes urban. Probabilities vary from 1% to 100% from yellow to red on the maps. High rates of urban expansion are expected along the Nigerian coast and within the Lake Victoria Basin. Even in relatively lower-fertility countries such as South Africa, major urban centers are expected to grow well beyond their current municipal boundaries.

2.3.6 The Peri-Urbanisation Typologies

By composition, five typologies of peri-urban settlements were identified^{55, 56}. These are:

- i. Village Peri-Urban:** geographically, these are the immediate areas that are closest to the urban areas with substantive urban characteristics. They are mostly found in the developing countries.
- ii. In-Place Peri-Urban:** these are areas also approximate to the urban area and results from infusion of urbanization, occasioned by population growth and annexation or reclassification of town and villages. The existing customs and traditions remains unchanged.
- iii. Chain Peri-Urban:** It occurs as a result of in-migration from a same location to another. It is as a result of change in geographical location of a village into a particular location in the peri-urban. The tradition and customary beliefs of the people are carried along to the new location. Mostly with high degree of ethnic homogeneity. The urban institutions are integrated into such community with tendency to enclave and reproduce their traditional beliefs. This is comparable to squatter settlement or informal settlements in developing countries. The kinship and co-ethnicity is very strong in such communities.
- iv. Diffuse Peri-Urban:** This occurs when migrants from different places of geographical source, rural and urban areas come together. It is spiced up with greater ethnic homogeneity, customary institutional beliefs forms their major characteristics. It is a reflection of urban formation.
- v. Absorbed Peri-Urban:** this could be an adaptation of in-place peri-urban, and or chain peri-urban when observed from the macro level before its urbanism is absorbed politically or socio-psychologically even

administratively. In this regards, the original settlers still maintains their customary or traditional beliefs. In it, urban context is discernible. The original settlers are later gentrified due to diffusion of residential ethnicity and culture.

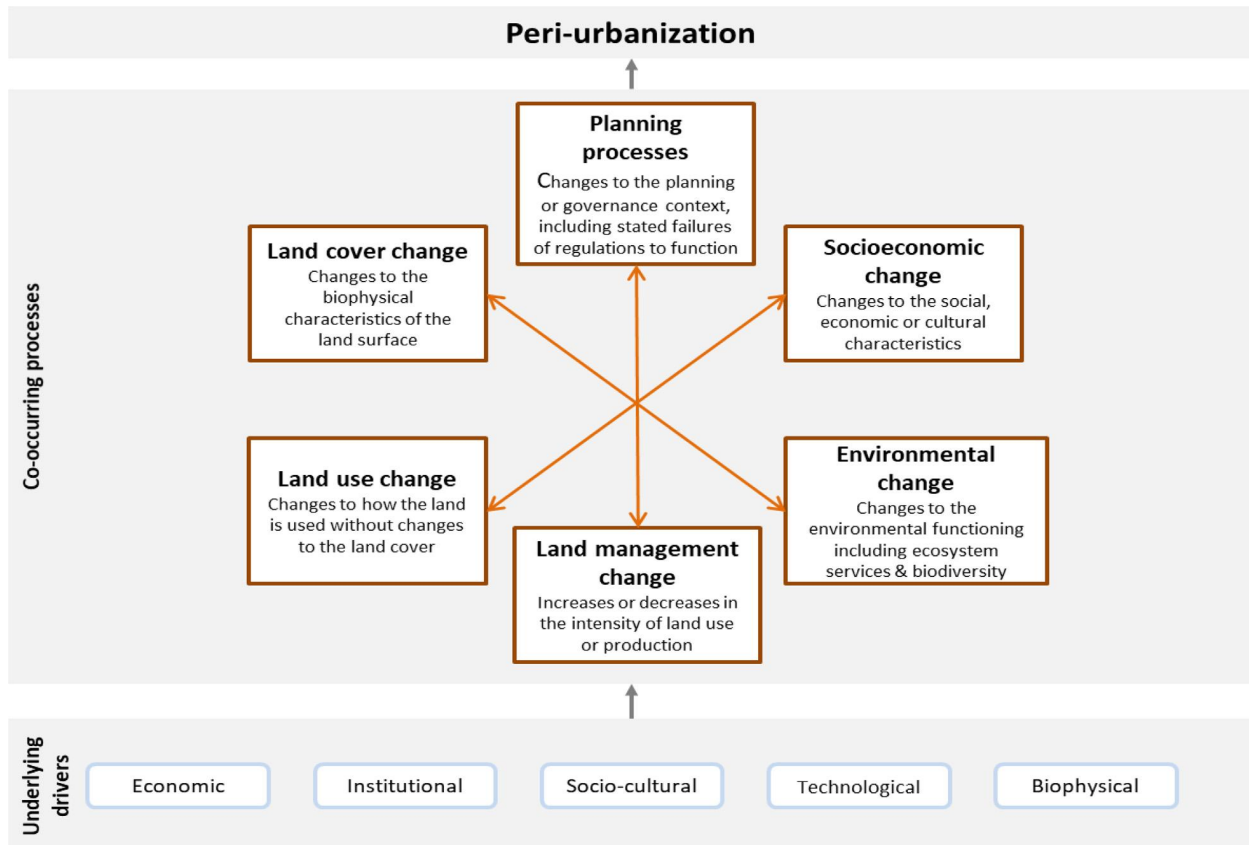


Figure 2.9: Peri-Urbanization Process
 Source: ⁴⁷

Peri-urbanization as a process involves, variables with interchanging functions. It's propensity for unplanned developments and or alterations to the planning and government regulatory (as shown in Figure2.9 above) impacts on land use and cover change with decrease in agricultural use and increase in other uses to make land management cumbersome. In connection to these, changes in socioeconomic activities in the region would invariably impact that of the environment.

2.3.7 Drivers of Peri-Urbanisation

Many factors are responsible for the development of peri-urbanization, some are positive while others are negative. They are push and pull factors. Identified factors, is the future growth of the population which would occur within the identified urban field and secondly, centrifugal forces will propel movement from the identified urban field in to the existing peripheries. Urban centers will continue to increase in population, with demand for agricultural needs and land for industrialization⁵⁷. There is a linkage between urban and the rural interface. The peri-urban also delivers products of industries and agriculture in exchange for consumer good and access to big markets.

Negative impacts of the peri-urban development include pollution from industrial effluents and sewerage waste from the urban centers discharged into the peri-urban water body thus, affecting both surface and underground water. Other negative impact include land degradation and poor land administration. Also industrialization has historically led to urbanization, modernization, globalization, marketization and administrative/institutional power.

Table 2.2: Summary of Drivers of Peri-Urban Development in African Context.

COMMUNITIES	RECREATION	INSTITUTIONS	ECONOMIC ACTIVITIES
Vacation Village	Resorts	Universities	Warehouses
New towns	Parks	Boarding schools	Agro-business
Historical communities	Outdoor sport areas	Museums	Information
Country homes	Camps	Cultural centers	Technological Centers
Art/theatre village	Forests	Research stations	Airports
Holiday communities	Wilderness areas	Hospitals/Sanatoria	Insurance companies
Religion communities	Quietest retreats	Government secretariat	Manufacturing industry

Source: ⁵⁸

2.3.8 Peri-Urban Interface and Housing Development

Distinction has earlier been drawn on the characteristics of developments in the peripherals in both developed and developing countries of the world. The developments in the peri-urban areas could be multi-dimensional and as such comprises of; housing, industrial, recreational and institutional⁵⁹. As observed, the housing development in peri-urban interface is bound to have impacts on the quality of the environment and the social demography of the dwellers of area¹⁸.

Housing development in developing countries of Africa has some peculiarities which are discernible in its informalities, poor housing qualities, unplanned and hydra-headed environmental issues. The high rentals in the cities had been a factor that forces populace to the peri-urban interface. The rental affordability in the interface and the possibilities of evasion of government approval, land affordability and ease of conversion of agricultural land to residential has been part of the attractions of the region to the medium and low income earners.

The conglomeration of diverse ethno-cultural populace coming together in a peri-urban area is part of its peculiarities. The need to balance their economic assets, natural resources and social priorities could be herculean task. However, the interface areas would continue to prosper by attracting and retaining businesses and people through offering individuals of all incomes, races and ethnicities access to the opportunities, services and amenities they need to thrive.

2.3.9 Social Challenges of African Peripherals

Social problem could be explained as a process which, rather than a type of condition requiring a particular attention, involves or affects everyone. It is a general or group of common issues in a society. It is also a conflicting opinion issues as what is perceived as morally correct to someone could not be in tandem with other's opinion. Notable amongst these are; crime, epidemics, slums, housing quality and so on. Peri urban interface social problems, could a bit differ from the urban center but the effects of urbanization processes

creates social issues in the peripherals, identified as; poverty, illiteracy, unemployment, homelessness, crime, social evil, lower living standard, lack of facilities, services and health⁶⁰.

Moreover, there are negative impacts of urbanization on peri-urban areas. Despite being away from political power, urban status and lack in institutional capacities that could have assisted the region to responding to change processes in a positive way, many of the urban vices are being transported into the peri urban, thereby creating social problems such as; poor infrastructure, low level of economic activities, poor land use planning, encroachment, slum dwelling, inferior housing, psychological break down of people⁶¹.

In addressing factors accounting for disparity in peri-urbanization process in Lagos, socio-demography of the population was identified as one of the vices bestowed on peri-urban areas by the urbanism processes⁶².

2.3.10 Economic Challenges in Peri Urban Areas

Measuring economic performance of a country at micro or macro levels, depend on production of goods and services. The country's economic indices arising from this assertion are; what to produce and in what quantity? How to produce? For whom to produce? Answering these questions would determines the buoyancy of the nation's economy. In general, economic principles of scarcity of resources - labour, land and capital are always not in commensurate with the demand⁶³. Historically, the economic growth through industrialization is the major factor that led to urbanization⁶⁴.

Unlike urban centers, peri-urban areas are zones of transition from rural to urban land uses with porous boundaries⁶⁵. With this distinctive characteristic, peri-urban economic indices could be unique from the urban economy. The inadequacy of land resources in the urban center pushes development into the peri urban interface and along with its socio-economic characteristics⁶⁶. These socio-economic problems are; poverty, unemployment amongst rural immigrants, beggary, thefts, dacoits, burglaries and other social evils. The economic challenges of peri-urban interface dwellers ranges from poor local governance, weak finances, inappropriate planning and shortage of critical infrastructure like; erratic water to power supply⁶⁷.

The above are what literature offers as economic challenges facing the dwellers of the peri-urban areas. A cursory look into economic challenges of a typical peri-urban interface dwellers in a primate city like Ibadan is part of the phenomena/hypothesis to be tested in this research work. On a face value, there is noticeable changing economic activities in peripherals as the developments spread in, farmers are turning into artisans, farm produce sellers are now engaging in building materials merchandize. New trades like telecommunication products, small scale gas filling centers and increase in entertainment joints are discernible in the peripherals. Informalities in peri-urban interface.

2.3.11 Institutional Challenges of African Peripherals

Poor local governance remains a major factor dictating institutional challenges of the peri-urban areas in developing countries. Issues bothering on land tenure, poor documentation, unguided tree cutting, unplanned development and lack of policies to support the continuous rapid development of the peripherals remains major challenges.

Urban and peri-urban forestry and greening, observed that there is no specific legislation guiding urban/peri-urban green areas but general laws and provisions at national or regional levels in many countries applies. Implementation of these provisions in developing countries has been part of challenges facing developments in the peripherals. Tree cutting for construction, in some countries is regulated⁶⁸. It was observed in Germany for instance, Land Brandenburg municipal legislation prohibit cutting of trees with girth of 60cm in 100cm height. Such regulations on the protection, conservation and preservation of trees are needed in developing countries of Africa⁶⁹.

Environmental legislation, land use planning and land ownership, forestry legislations, regulations and by-laws on trees are some of the legal indices to tackle the institutional challenges in the African peripheries.

2.3.12 Causes of Land Degradation

As humans continues to quest largely, to meeting requirements for food, water, and raw materials of an increasing population, there would always be a change to the ecosystem⁷⁸. The major causes of environmental degradation is the consequence of human actions and inactions to natural resources. The extent of human actions that causes deterioration of the environment varies globally. In advanced countries, environmental degradation is driven by technological advancement but poverty, excruciating and severe economic situations in the developing nations are major issues⁷⁹.

At the global level, causes of environmental degradation has been dominating the discussions, conferences and researches by the United Nations since the Kyoto Protocol of 1997 and 2015 Paris Conference on Climate Change. The goal of these conferences was to have a free, safer, secure and prosperous world through adaptation and mitigation of climatic change effects of higher temperature that is being experienced world over⁸⁰.

Apart from climate change and global warming, other causes of environmental degradation are; loss of biodiversity, public health problem, human overpopulation, urban sprawl, natural disasters, nuclear power plants, and interference in matter cycles³.

Causes of land degradation can be categorized into natural and anthropogenic factors. Here are some of the main causes:

- 1. Deforestation:** Large-scale cutting down of trees and clearing of forests leads to erosion, loss of soil fertility, and decreased biodiversity, contributing to land degradation.
- 2. Agriculture:** Unsustainable agricultural practices such as overgrazing, excessive use of chemical fertilizers and pesticides, improper irrigation, and monoculture can cause soil erosion, salinization, nutrient depletion, and desertification.

3. Urbanization and Infrastructure Development: Expanding urban areas often result in the conversion of agricultural land into road networks, buildings, and other infrastructure. This leads to soil compaction, loss of valuable topsoil, and reduction in the ability of the land to absorb water.

4. Mining Activities: Extractive industries such as mining for minerals, oil, and gas can cause significant land degradation. This includes the destruction of vegetation, soil erosion, contamination of water bodies, and disturbance of ecosystems.

5. Industrial Activities: Industrial pollution, improper waste disposal, and the release of toxic chemicals into the environment can contaminate the soil, water, and air, leading to land degradation.

6. Climate Change: Rising temperatures, erratic rainfall patterns, and extreme weather events associated with climate change can exacerbate land degradation. This includes increased desertification, soil erosion, and the loss of productive agricultural land.

7. Population Growth and Overconsumption: The increasing human population and the demand for food, water, and resources put immense pressure on land. Overexploitation of natural resources for agriculture, fuelwood, and construction contributes to land degradation.

8. Poor Land Management Practices: Inadequate land management practices, such as improper land-use planning, lack of land conservation strategies, and absence of sustainable land management techniques, contribute to land degradation.

It is important to address these causes and promote sustainable land management practices to prevent further land degradation and ensure the long-term productivity and vitality of our lands.

2.3.13 Dimension of Land Degradation Impacts in Peri-Urban Interface

The prime discernible occurrence on land use change in peri-urban areas is the conversion of agricultural land and biodiversity into other users – industrial, housing, commercial and institutional. Human activities resulting

into land use and land cover change affects not only the agricultural area but the forests reserve and the water body. Our preference for economic growth over sustainability of biodiversity has led to the depletion of quite large percentage of our natural resources like forest, water body, minerals soil, etc^{70, 71}.

Urbanization as a process, has a core role of economic growth of metropolitans and their expansions into the peripherals⁷². Peri-urbanisation in cities of most African countries typifies the urbanization process that brings about the phenomenon of rapid physical development in transition areas between the urbanized zone and predominantly agricultural use zone⁷³. Uncontrolled urban spilling into the suburbs and fragmentation has a direct impact on the local climate change, water balance and eco-system losses⁷⁴. Also the fragmentation of agricultural land would lead into land surface sealing, and vegetation removal which its impact transforms into soil erosion, urban floods and heat waves⁷⁵.

The workers migrating from rural to urban centers as a floating labour pools are tools for urbanization processes and as well desires a cheaper housing in the suburbs^{76, 26}. City developments and its ability to meeting up with infrastructure and housing becomes a variable factor in expansion of traffics and change in land use and conversion of productive agricultural lands. The modernity in communication and mobility has enabled urban workers to seeking cheaper housing rentals and land costs in the far less developed distance in the peripherals⁷⁷.

2.3.14 Peri-Urban Land Degradation and Livelihood – The Nexus

Ecosystem destruction, land use and land cover changes are the occurrences to natural resources through human activities. The nexus between land degradation and means of livelihood of peri-urban dwellers are interwoven. The peri-urban region as a transition zone between the inner urban center and the rural hinterland are characterized of agricultural use as the major occupation of the inhabitants. Viewing urban sprawl as one of the major drivers of peri urban development would not be out of context.

Urban sprawl concept was described thematically by many scholars as; economic sprawl, geographical sprawl, and transportation sprawl^{81, 82, 83}. It is a pattern of unplanned development around the city peripherals and it remains the growingly common feature of the built-up areas in the industrialized countries. Urban sprawl reduces the physical development orderliness that brings viable economic land use and management at the fringes. As expansion takes place on cities, it impacts directly on peri urban zones. The demand for land use and uncontrolled nature of developments as a result of urban sprawl impacts on the social, economic and the deterioration to land in peri urban areas⁸⁴.

2.3.15 Ecosystem Disruption

Our fauna and flora, with the urban and peri-urban, forms an ecosystem that not only include vegetation but also soil, water, animals, utilities, buildings, transportation systems and people. Its elements within an environment consists of community gardens, street corridors, green visual linkages, vacant land and productive land in urban and peri-urban areas. The disruption of these natural resources, as panacea for new developments is at alarming rate especially at the peri-urban areas where urbanism is gradually taking over⁶⁷.

Pressure from population growth in urban centers is directly impacting on natural resources and high demand for ecosystem services is leading to environmental degradation⁸⁵. The land use and land cover change as a result of urbanization is decreasing the benefits humans derives from ecosystem namely; food, water, raw materials, life support, physical, mental and spiritual well-being⁸⁶.

Moreover, an effective urban governance, which is a system of administering a city to ensure that infrastructural facilities are functioning and grievances arising from it are judiciously heard and adjudicated upon⁸⁷. The provision and functionality of infrastructural facilities in the peri-urban areas more than necessary to preserve our ecosystem.



Figure 2.10 Land Degradation through Loss in Biodiversity

Source: ⁸⁸

2.3.16 Social Impact of Changes in Peri-Urban Interface

The exposure to housing development in vulnerable peri urban areas was as a result of urbanization processes due to increasing numbers of informal settlements. The cause of vitalities and tragedies of socio-cultural patterns in peri-urban areas, was premised on effects of urbanization processes⁸⁹.

The informal social construction in African urban places was as a result of fluidity, contingency or creativity of the urban poor. Unplanned nature of developments in peri-urban areas and efforts to re-make planning by these informal means could only lead to a catastrophic state⁹⁰.

Empirically, urbanization remains the root cause of the socio-economic changes as well as ecological in the peri urban areas of the developing nations. The increasing heterogeneous pattern in the cities and its spilling

into the fringes tend to challenge the local social values, norms and community spirit. The social factors such as; educational facilities, access to healthcare, modern housing, recreational facilities, road infrastructure, waste disposal means are all as a result of social changes which was brought about by growth in population of the area⁹¹.

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 railway lines in Idi Igbaro and Farm-Settlement PUA in Ido Local government Area. While sand lifting activities are still going unabated, buildings on the oil pipelines and power-lines are also on the increase, especially, commercial activities.

However, a noticeable numbers of housing development were found on mountains and hilly sides of Eleyele area of the study. An average of 60 – 80% of World's freshwater comes from the mountains⁹². As also the case in the study area (Okebadan shrine), mountains, in some countries have been regarded as deities apart from only being a peak to climb, they are considered like volcanoes, as spirits that can be annoyed.

Climate variations, given mountains altitude, sun orientation and slope, do easily disrupts their ecosystems making animals and native plants to struggle to survive and losing their habitat respectively. More so, land degradation is a major threat to our mountains. Over exploitation and natural disaster all have far reaching devastating effects on mountainous communities.

This notwithstanding, amongst others, mountain provides direct sustenance to 1.1 billion of people around the world, home to 15% world population, 60 – 80% of world freshwater, high quality food production and accounts for 15 - 20% of world's tourism. Others include; its role in provision of renewable energy, 20 species of plants that supplies good food all over the world has their source from the mountains. Mountains hold cultural values⁹³. See Figure 2.11 below.

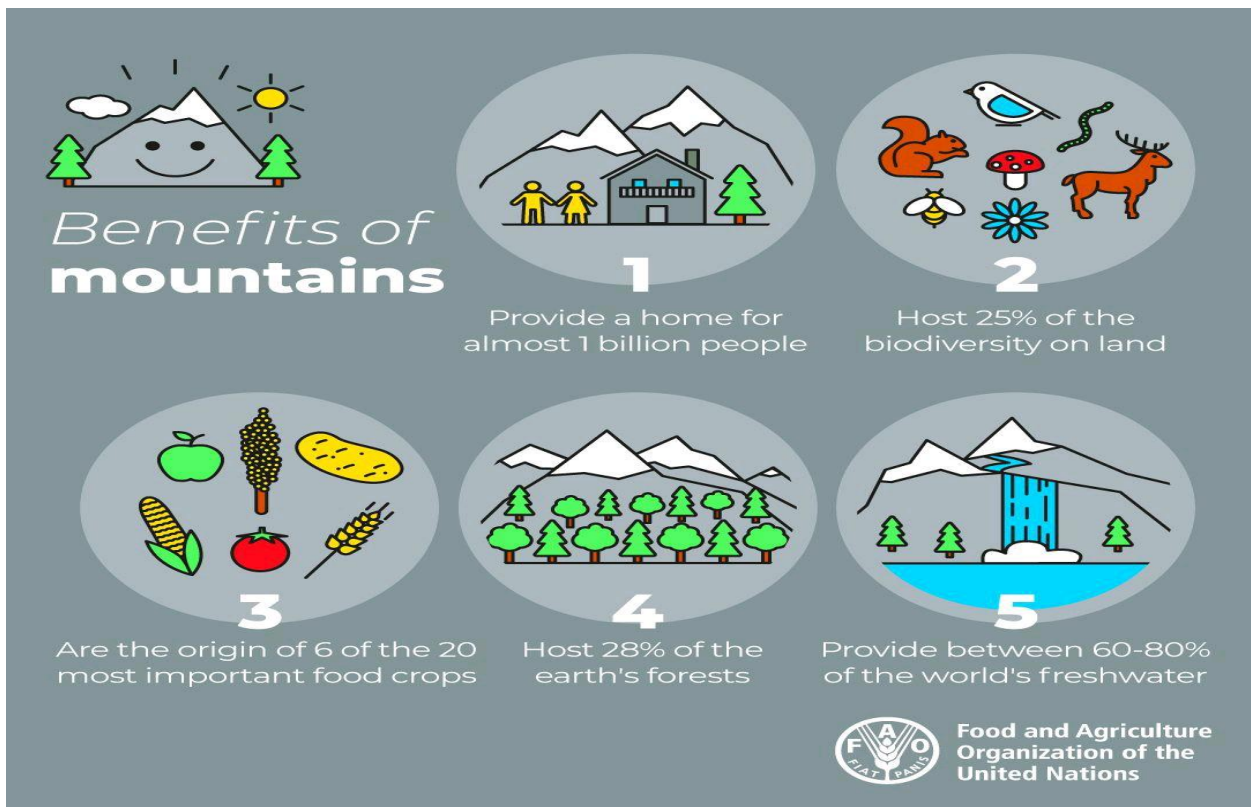


Figure 2.11 Benefits of Mountains

Source: ⁹³

2.3.17 Poor Health of the Residents and Urban Quality

Urban health is the study of totality of urban characteristics namely; social, physical environment and urban resources infrastructure⁹⁴. Urban health is the comprehensive activities of monitoring of well-being of the urban dwellers. Much of urban health variables are the living conditions, housing quality, and poverty. In other to achieve a totality of understanding of urban health, behavioral, biological, cultural, economic, social, physical and political factors are all required⁹⁵.

The urban centers in developing nations face high infant and child mortality rates. In the same vein, serious air and noise pollution, increase crime rate, disparity in income and high immigrants with its attendant

unemployment⁹⁶. These conditions typical of crowded environment results into diseases such as; tuberculosis, measles, diarrhea, physical injuries, traffic accidents and that of industries.

There is substantial differences in rural-urban health characteristics in both developed and developing countries⁹⁷. But in general, rural populations are more vulnerable to poor health care than urban centers with appropriate health services. The rural health disadvantage is as a result of cluster of underlying risks factors that requires social interventions rather than health-related programs. Mention must also be made of the effects of climate change on the health of both urban and rural dwellers especially in developing countries. The phenomenon called climate change is global and will affect the whole planet. Most of the activities causing climate changes are found to be committed in the urban areas and urban people are the most directly affected⁹⁸.

2.3.18 Economic Impact of Land Degradation in Peri Urban Areas

The economic performance in the peri-urban areas is largely a function of the centrifugal forces from the city centers that trigger developments in housing, industrial, environmental, socio-cultural and other land use changes in the peripherals. Both globalization and liberalization processes have therefore improved the economy of the peripherals⁹⁹. In a recent study, a rising globalization of economy and society and digital transformation, are some of the reasons that workers are less depending on distance, location and time as reasons for co-working. In other words, location as determinant of co-working and housing needs as drastically reduced. More peri-urban dwellers are becoming economically viable than before¹⁰⁰.

The rising development in globalization of ICT has brought about a change in working pattern as people now has choice of when, how, and where to work as co-working spaces contributed to the development of peripherals and inner city areas as demonstrated during the Covid-19 pandemic¹⁰¹.

Peri-urban areas, measured by, typology of spatial distance from the city or through the urban fringe agricultural dichotomy, land degradation in both have impacts of their economic activities. The livelihood of the majority of peri urban dwellers depends upon agricultural activities and land degradation could have On-

site and Off-site effects as postulated in a research¹⁰². The On-site effects of land degradation concerns those directly related to the land and properties affected by erosion while the Off-site effects are those including damage to infrastructure, reservoir sedimentation, and hydro-power. The economic impact of both must be assessed.

In a similar report, it was estimated that the global economy is likely to lose about US\$23 trillion by 2050 due to land degradation, while it would take an estimate of US\$4.6 trillion as cost of taking immediate preventive measures¹⁰³. Land degradation and its management is a global phenomenon and as part of its findings, the report suggested sustainable land management to achieve a multiple benefits thereof, especially, Goal 1 (No poverty), Goal 2 (Zero hunger) Goal 8, (Decent work and economic growth) and Goal 13, (Climate action) of the UN SDGs.

2.3.19 Loss of Livelihood for Peri Urban Dwellers

As agricultural activities remains the bedrock of peripheral dwellers vocation, they also engages in many other jobs – artisans, factory workers, drivers in the cities and other ancillary city workers²⁶. Land degradation is a factor leading to low agricultural production and reduction in the income of the farmers in an agrarian urban fringe areas. The daily vegetable and other produces are taking to the city and return in the evening. As African urban centers continues to experiencing unprecedented urban and peri urban developments, the resultant effects is the land degradation and possible loss of vegetation cover at a rate that sociological studies on trees was recommended¹⁰⁴. The economic linkage between urban development and the livelihood of peri urban dwellers was unconnected with factors driving developments to the region and evicting farmers from their means of livelihood. The economic welfare was a pull factor while economic impact taken as a push factor. Economic welfare is explained as the pull factor of urbanization creating opportunities to the peri urban areas while economic impacts are those push factors of urbanization resulting into loss of income, food insecurity, live in poverty and loss of good site locations¹⁰⁵.

2.3.20 Loss of Agricultural Farmland

When soil degrades and it becomes unusable, as a result of wind or water erosion that transport soil nutrients to other places, for this reason, approximately 3 million hectares of agricultural lands, are being lost annually, worldwide¹⁰⁶. Peri-urban agriculture was defined as ‘agriculture practices within and around cities which compete for resources – land, water, energy, labour, that could also serve other purposes to satisfy the requirements of the urban population’¹⁰⁷. Peri urban agriculture is quite difficult to demarcate by geography, density of the population and labour force percentage, but rural-urban continuum are used for indication purposes.

Majorly, agricultural lands could be lost due to degradation in land, especially, erosion that washes soil components from one place to the other. Also land use change of agricultural lands and its conversion into other uses such highways, housing and factories and institutional projects reduces its availability. Apart from these, it was observed that the elusive nature of peri-urban coupled by its neglect by urban planners accounted for its uncontrolled and unplanned landscapes which invariably affects agricultural land in the region¹⁰⁸. Also, as the demand for food rises, due to corresponding increase in population, cultivable agricultural land continues to decline¹⁰⁹. Against this background, emphasize was laid on the need for proper understanding the nexus/dynamic nature of urbanization and its impact on agricultural land use within peri-urban areas¹¹⁰.

2.3.21 Pollution of Water Bodies Leading to Reduction in Farming and Crop Production

The urban farming, as well as some agricultural practices, in the peri-urban areas are being done in the wetlands and streams/river banks. Some employs irrigation for all year farming of certain produces such as vegetables. The expansion of industrialization, as observed, from the urban centers into the peri-urban agricultural lands would adversely affects the soil physical, chemical and biological properties¹¹¹.

Urbanization is the cause of environmental degradation and due to this, the quality of soil also degrades from year to year within the peripherals and causes farmers to face such issues as; heavy metal accumulation, soil pollutants, even in drinking water, acidification or alkalization, salinity and land use change¹¹². All these in turn affects crop productivity and its level of production. Anthropogenic activities – compaction, mixing, construction, land filling, on urban soil usually causes topsoil to lose fertility as well as depletion in soil microbial activity that alters natural soil characteristics^{113, 114}.

Water pollution, especially in the peri-urban areas occur due to a number of sources – sewage treatment plants, factories, mining activities, road paving, and agricultural runoff¹¹⁵. Pollution of water bodies does not only affect the crops growth but they could also absorb dangerous chemical from the water and pass to humans that consume them. Apart from run-off chemical water from urban industries into the peri-urban water bodies, acidic rain that contains sulfuric and nitric acid could as well causes foliage and bark damages in plants. Photosynthesis process in aquatic plants is also prone to be disrupted by substances from polluted water.

2.3.22 Urban Quality of Life in African Peri-urban

An attempt on tracing the causes of poor urban quality is also an attempt to tracing the root of slums in developing African countries. Issues of rapid urbanization, urban poverty and slums expansion, urban sprawling and city blight are all roots of poor urban quality of life.

In between the urban fringes and rural fringes is the interface and the need to examine the concept of urban quality of life becomes necessary. Urban quality of life is a term or concept adopted to solving the urban areas' problems, control of urban spilling and environmental degradation. Quality of life itself is one of the most vital dimensions for any urban development sustainability¹¹⁶. Planners must focus on a desire to improve the quality of life in a particular place for a set of people or individual¹¹⁷. Moreover, the relationship between our physical space and well-being is a means of informing our attachment to our environment¹¹⁸.

The available literature reveals about seven main dimensions of concept of urban quality of life. These are; Environmental Urban Quality of Life – which refers to the natural aspects, physical urban quality of life – connoting the basic amenities/infrastructure, services, land use and urbanism, Mobility Urban Quality of Life – affects the accessibility, the road networks and traffic. The fourth dimension is Social Urban Quality of Life. It resonates on social interactions of the people, communication and individual choices. Psychological Urban Quality of life addresses the individual and collective feelings of the people towards the neighbourhood. Economic Urban Quality of Life and Political Urban Quality of Life deals with economic activities on one hand and city policies and their implementations on the other, respectively¹¹⁹.

The interrelationship and dependence of these dimensions are as contained in the heptagonal display in figure below.

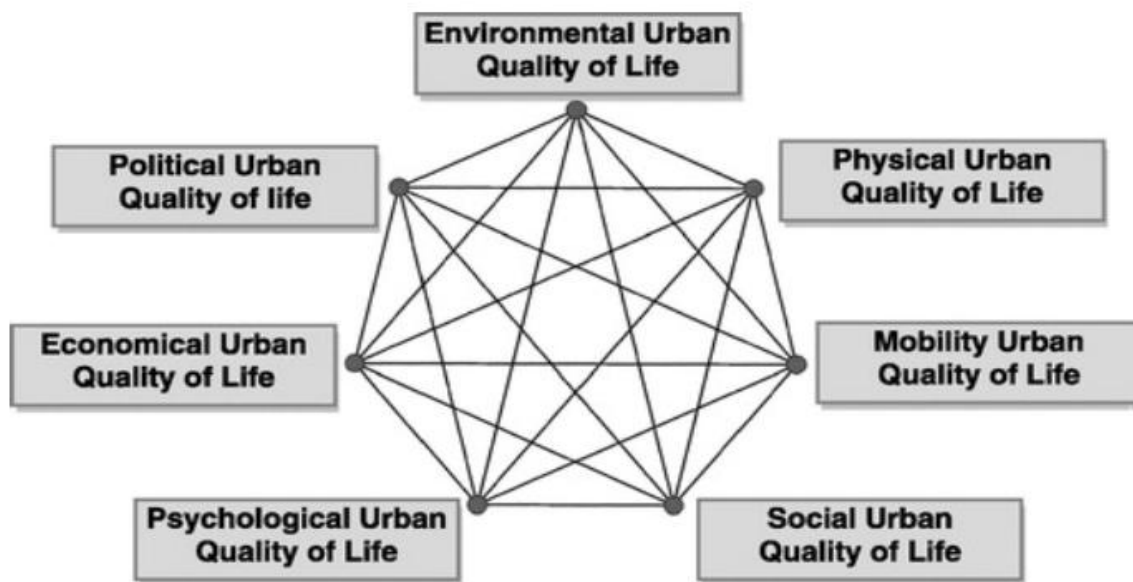


Figure 2.12 Interrelationship of Types of Urban Quality of Life
Source: ¹¹⁹

2.4 Conceptual Model

The conceptual framework for this study was premised on the interrelationship between the aim of the study and the sequence of the objectives. Each of the objectives variables are highlighted in the conceptual framework to reflect their flows. The aim is to assess the impacts of land degradation on the socio-economic

characteristics of peri-urban settlements in Ibadan. In achieving this, the socio-economic factors and the drivers of land use change and degradation are highlighted along with their variables.

The factors considered as the socio-economic characteristics are the demographic composition of the peri-urban interface inhabitants namely; their gender, age, occupation, home ownership status, household size and their monthly income. In the same vein, factors such as; demographic growth, urban sprawl, developments (institutional, infrastructural and new town), are considered as the drivers of land use change that brings about land and spatial degradation in the area.

Secondly, the flow of both socio-economic characteristics and the drivers of developments, as well as land degradation, are considered to have impacts on the means of livelihood of the dwellers of peri-urban interface. It also impact their socio-cultural activities such as culture and tradition, recreation and festive periods, and participation in community development associations.

Their means of livelihood is affected by these drivers. There is change in occupation from agricultural based to trading and other modern vocations. Lastly their well-being are equally impacted due to their exposure to vulnerable areas, increased and indiscriminate refuse dump, increase in heat waves due to deforestation and occasional flooding due to improper planning. These factors are considered as challenges of environmental degradation and are all aimed at examining and proffering solutions and recommendations for in this study.

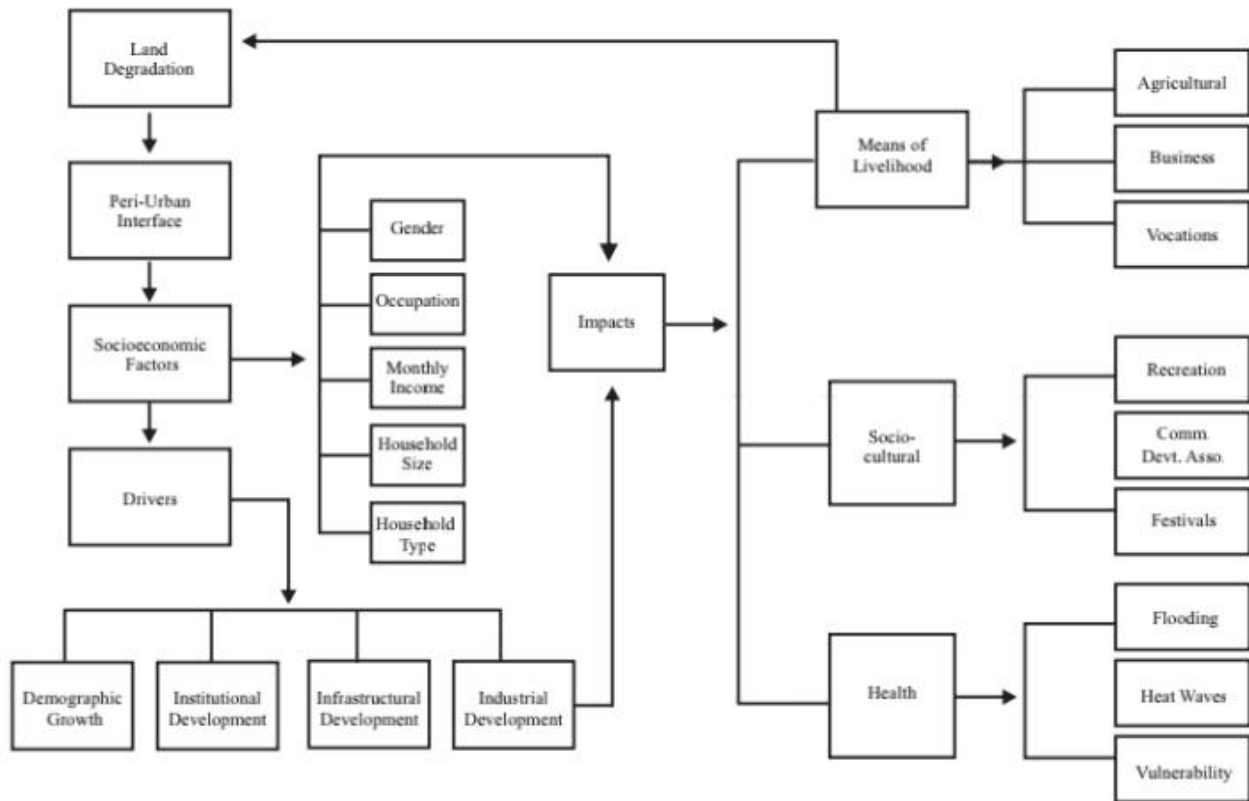


Figure 2.13 Conceptual Framework, Analysing Land Degradation Impacts on Peri-Urban Areas

Source: Author's Fieldwork 2023

2.5 Summary of Gap in Literature Reviewed

The literature reviewed on the impacts of land degradation on the peri-urban interface in Ibadan reveals several gaps that need to be addressed. Firstly, there is a lack of comprehensive studies that specifically focus on the peri-urban interface in Ibadan. Although there are studies discussing land degradation and its impacts in Ibadan as a whole, few studies exclusively examine the peri-urban areas. Given the unique characteristics and dynamics of peri-urban regions, there is a need for research that specifically targets these areas to gain a better understanding of the extent and consequences of land degradation in this context¹²⁰.

Secondly, there is limited research that explores the sociocultural and economic impacts of land degradation on the peri-urban interface in Ibadan. Many existing studies tend to focus on environmental aspects such as soil erosion or deforestation, but fail to examine the broader implications for local communities living in these

areas. Understanding the social and economic consequences of land degradation is crucial for developing effective strategies to address the issue and enhance the resilience of peri-urban communities.

Furthermore, there is a dearth of research on the drivers of land degradation in the peri-urban interface in Ibadan. Identifying the underlying causes and factors that contribute to land degradation is essential for designing targeted interventions and policies. Without a thorough understanding of these drivers, it becomes challenging to implement effective measures to prevent or mitigate land degradation in the peri-urban areas.

Lastly, there is a lack of studies that assess the potential solutions and strategies to address land degradation in the peri-urban interface. While the literature reviewed acknowledges the problem of land degradation in Ibadan, there is a paucity of research that explores feasible and sustainable approaches to combat the issue. Investigating best practices, innovative techniques, and successful case studies from other similar contexts could provide valuable insights for developing appropriate interventions tailored to the peri-urban interface of Ibadan.

Overall, the literature gap identified in the review underscores the need for more focused research on the impacts of land degradation on the peri-urban interface in Ibadan. Future studies should aim to address these gaps to inform policy-making, enhance land management practices, and promote sustainable development in peri-urban areas.

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Chapter Three

Methodology

3.1 Research Design

The research design adopted here is cross sectional exploratory for easy survey data collection. is a case study method. A mixed-methods research approach has been employed, combining remote sensing and GIS analysis, field surveys, and interviews with key stakeholders. Both quantitative and qualitative analytical approaches were used for the assessment of various data obtained from the questionnaire administered, the semi-structured interview of the professionals and government personals in relation to the study area. The Spatial Analysis and remote sensing capturing of the satellite imagery of the study area, was embarked upon to know the land coverage, land use classifications and growth trend for 2005, 2010, 2015 and 2020 of the peri-urban settlements in the study area.

The choice of the case study method is to capture the in-depth investigation, relationship between the phenomena and to understand the perspectives of the participants' interviewed¹. Through the mixed method approach, comparison of the available phenomenon including their theoretical evolution in the peri-urban areas in two local government councils study area was made.

The research process and method adopted include the identification of research problems, review of the relevant literature, an analytical review, document selection and analysis, interview analysis, results - literature review findings, case study findings, interview findings and lastly, the research contributions to knowledge; practical and theoretical before recommendations and conclusion is made. The research process and methods is illustrated in the Figure 3.1;

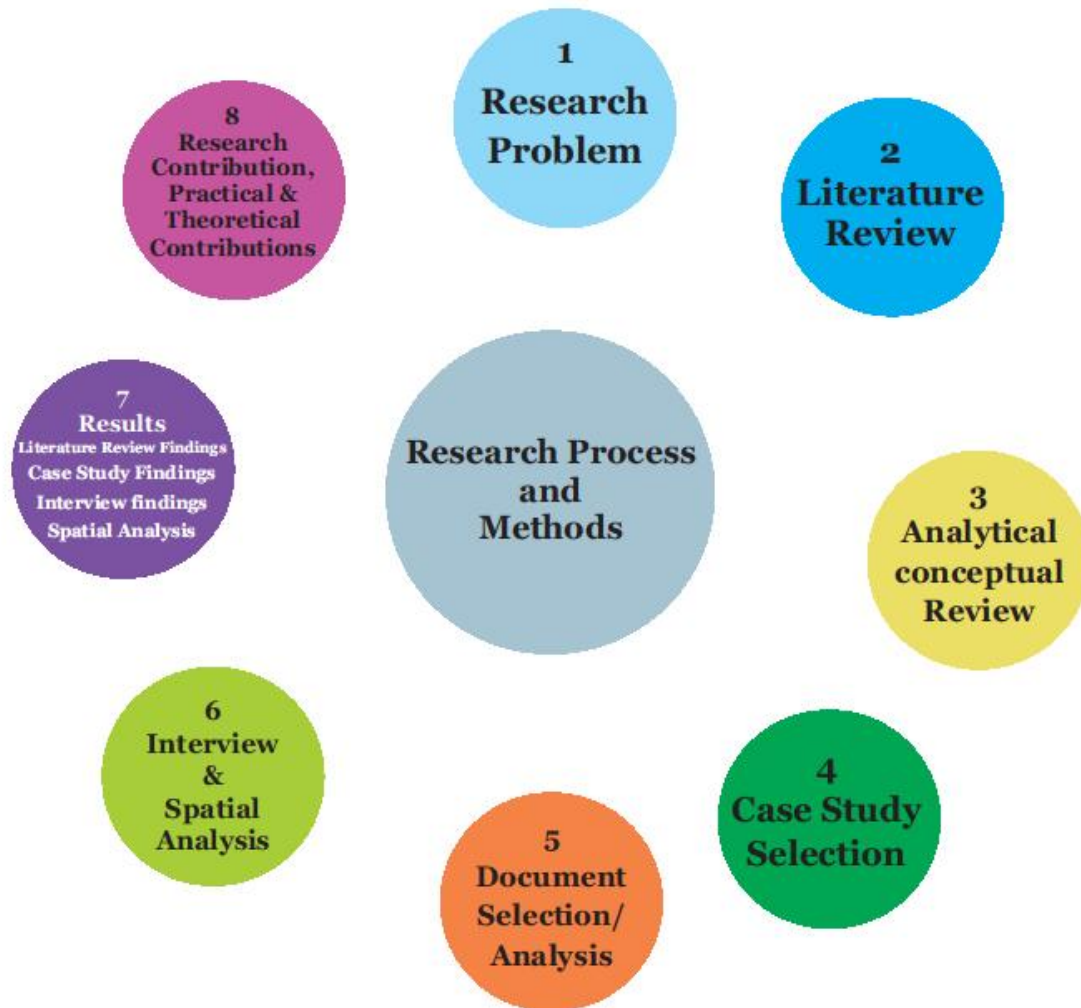


Figure 3.1 Summary of Research Design

Source: Author's Fieldwork 2023

The research framework comprises of the interrelationship of research questions with the objectives, variables, data type, data sources and research instrument employed to analyze the data. These key elements of this

research work, the objectives, research questions, variables, data source and data analysis methods are as contained in Table 3.1.

Table 3.1 Research Framework

Research Question	Research Objectives	Variables	Source of Data	Data Analysis Methods
What are the socio-economic characteristics of the respondents in the study area?	assess the socio-economic characteristics of the respondents in the study area	Population	Survey/Questionnaire	Quantitative and Qualitative Analysis
		Gender	Questionnaire	
		Age	Structural Interview	
		Income	Land Use Map	
What are the driving forces for land use change and degradation in the study areas?	examine the drivers of land use change and degradation in the study areas	Population	Survey/Questionnaire	Quantitative Analysis
		Infrastructure	Questionnaires	Qualitative Analysis
		Institutions	Structural Interview	
		Nature	Satellite Imagery	Spatial Analysis
		Housing Devt		
What are the effects of the changes on the means of livelihood of the dwellers in the areas?	To assess the effects of land use change and degradation on the means of livelihood of the inhabitants	Employment	Survey questionnaire	Quantitative Analysis
		New vocation	Photographs	Spatial analysis
		Climate Change	Satellite imagery, Observation	
		Land/rental cost	Structured interview	
		Leisure		Qualitative Analysis

What are the impacts of socio-cultural characteristics of the inhabitants and their influence on peri-urbanisation development?	To measure the socio-cultural impacts of per-urbanisation in the areas.	Housing type Crime activity Ethnicity Occupation	Structured Questionnaire Questionnaire Structured Questionnaire	Quantitative Analysis
What are the effects of land deterioration on the health of the peri urban dweller?	To investigate the level of impacts of land degradation on the health of the interface dwellers	Air quality Water quality Soil degradation Urban health	Structure Questionnaire Photographs Satellite images and aerial photographs. Observation Structured interview	Quantitative and Qualitative Analysis Remote Sensing Spatial Analysis

Source: Author's Fieldwork 2023

3.2 Population of the Study

The study population in this research is the target numerical numbers of respondents or the households in the study area. Though, population in research is the holistic group from which certain information would be extracted². In this work, the study population has been defined by the geographical locations through satellite imagery maps, households, age, gender and other socioeconomics attributes.

The demographic details of the study areas were gotten during the field work. The Community Development Associations' register along with the information obtained from the Oyo State Ministry of Lands, Housing and Urban Development were used to arrive at the total population of the households. The households, on which questionnaire were administered, spread across 74 Community Development Associations with 1,826 housing units within the selected peri-urban areas in Ibadan North West and Ido local government Councils³.

3.2.1 The Case Study

Ibadan, one of Nigerian primate cities is the largest indigenous city in West Africa and capital of Oyo State. Its metropolitan area covers 3,123.30 square kilometers landmass from which the local governments in the urban

areas covers 463.33 km². The city ranked 3rd in the country, has a population in urban area, 3,742,970 and city area, 3,649,000 totaling 7,391,970 with density of 985.13 per square kilometer^{4, 9}.

Ibadan is within the Tropical Savanna climate region. It is the capital of Oyo State and the biggest city in the Sub-Sahara West Africa and fourth largest in Africa. It has a land mass of 6000 square kilometers. Politically, Ibadan is the political and administrative headquarters of Oyo State of Nigeria⁵.

The Ibadan region at present has 11 local government areas. There are 5 in the metropolitan and 6 at the peripherals. The whole of Ibadan was formerly under a municipal called Ibadan Municipal Council (1989). The breakdown which occurred in the Federal government creation of new local council areas, increased the numbers to the present 11 out of the 774 local government areas in the federation⁶.

3.2.2 The Study Area

For this research, some communities within two local government councils in Ibadan metropolis were chosen as the study area⁷. The sobriquet name of 'the study area' is adopted to cover the spatial areas of the settlements as dominant location. These settlements are found in both Ibadan North West and Ido Local Government Councils of Ibadan respectively.

The study area is a peri-urban interface comprising communities such as; Iletuntun, Adetokun, Alafara, Agbofieti, Elenusonso, Gbopa, Idi Igbaro, Elenusonso, Idi Isin and Abaa Panu. All these communities are headed by a recognized traditional village heads (Baales) with distinct jurisdictions. The region is an interface to three notable Government Reservation Areas – Jericho GRA, NIHORT GRA and Elenusonso GRA. The Jericho GRA is one of the oldest residential reservation areas in Ibadan while NIHORT and Elenusonso GRAs have just been allocated with light construction activities ongoing. NIHORT GRA is abutting Jericho GRA after Idi-Isin community while Elenusonso is not yet developing due to its distance of above a 9 kilometer away from the two.

A distinction of communities under each local government areas considered for this research work consists of; Ibadan North West Council – Idi Isin, Iletuntun, Adetokun, Ajobiewe, AbaaPanu and Eleyele axis while Ido Local Councils has communities like Agbofieti, Ologuneru, Gbopa, Alafara, Elenusonso, Idi Igbaro, and Ido town to which the council headquarters is located.

Apart from the mentioned state government reservation residential areas, there are proliferations of private developers’ gated estates in the region. Institutional housing estate such as; Department of Security Service Housing Estate and public-private partnership (Transformation) Estate at Alafara also exists in the zone.

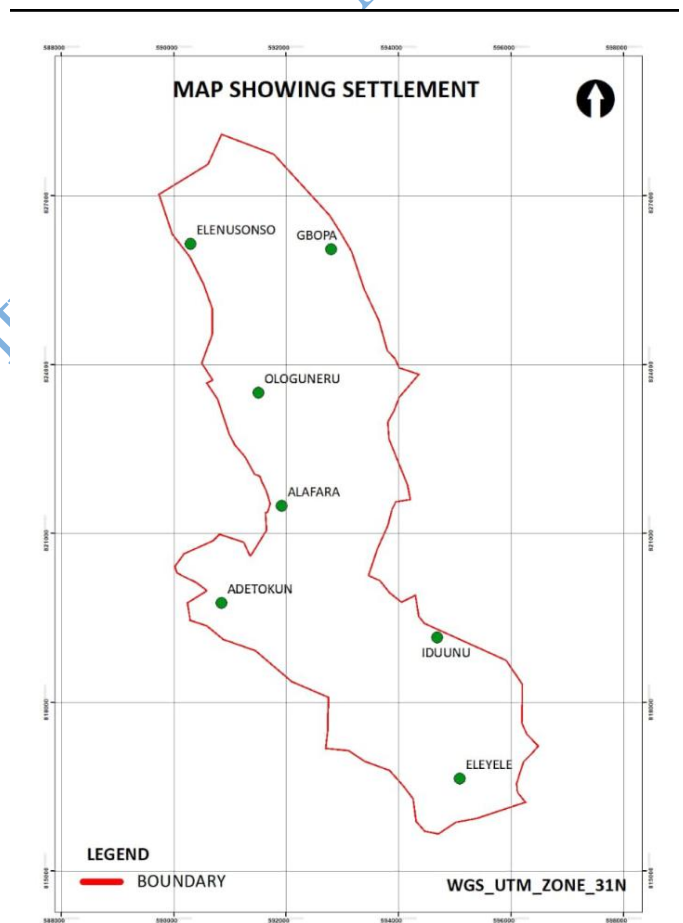


Figure 3.2: Study Area Marked Red in Oyo State Map

Figure 3.3: Settlements in the Study Area

Source: Fieldwork 2023

Source: Fieldwork 2023

3.2.3 Geographical Features and General Characteristics of the Study Area

A major driver of land use change available in the zone include the newly commissioned Lagos-Ibadan Railway line with a sub-station at Idi Igbaro. The Ibadan outer ring-road route (contract awarded by the state governor) traverses part of the area. As one of the characteristics of peri-urban interface is its spread into two or more local government areas, and the case study in this research involved Ibadan North West and Ido Local Government Areas.

Another unique physical features of the study area is the presence of both the mountainous and riverine areas in the peri-urban interface of Eleyele with residents of different socio-economic background. The riverine areas of Idunnu lies on the valley of Eleyele Lake Water and the easiest route to the main city by the residents is through water transportation. The buffer zone of the artificial lake dam and mountainous area high altitude cool breeze in Idunnu and Obaido have added to their serenity respectively.

Given the satellite imagery and remote sensing result for 2005, 2010, 2015 and 2020 land use classifications, transformation of the region in the last 18 years has been tremendous and as a result, with other reasons above, will suffice as scope and limitation to the studies in this research work. Apart from the above criteria, the selected study areas' locations have in common, the interface to the inner city distance of about 15 to 20 kilometers.

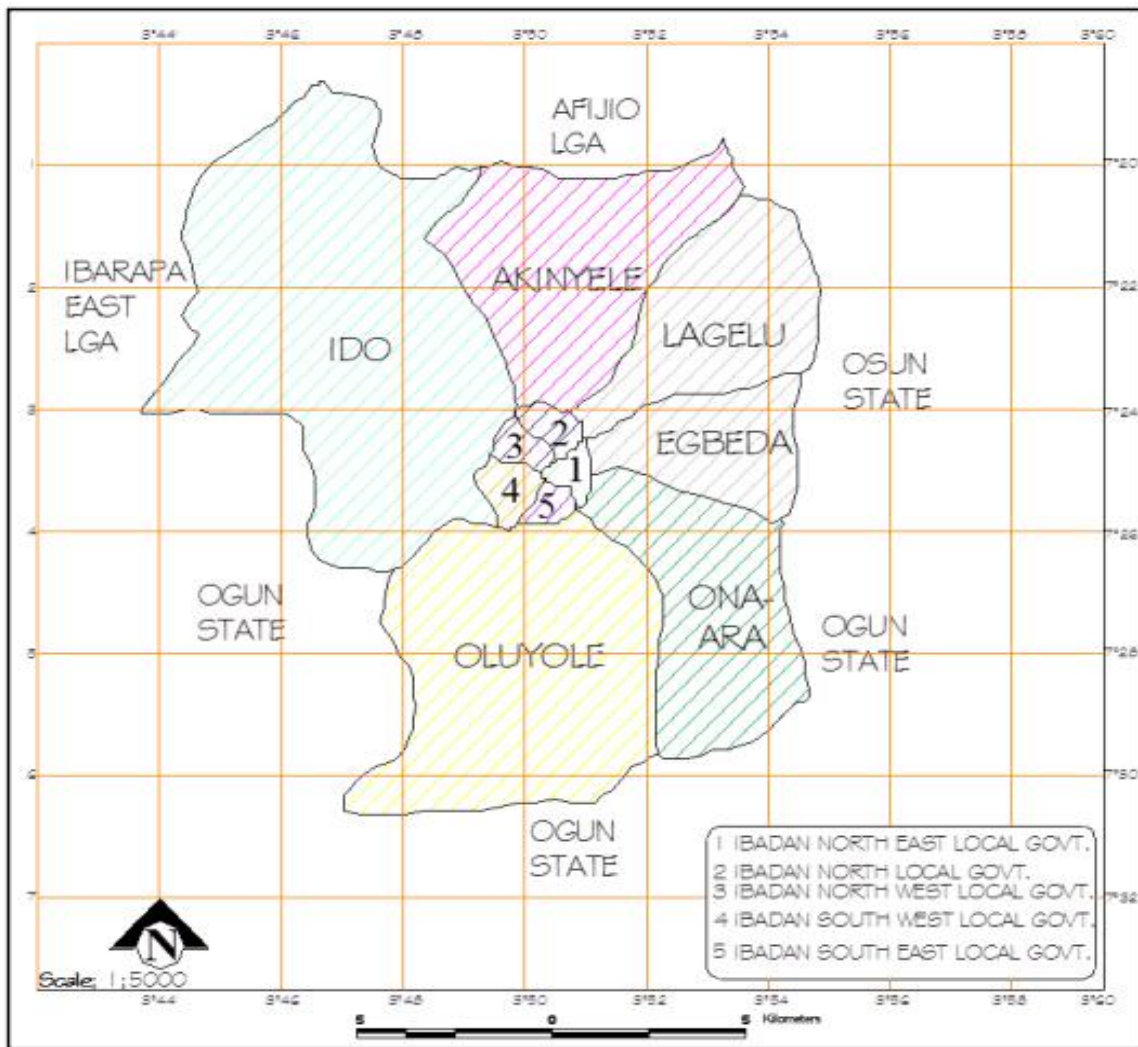


Figure 3.4 The Eleven Local Government Areas of Ibadan Region
Source:⁸

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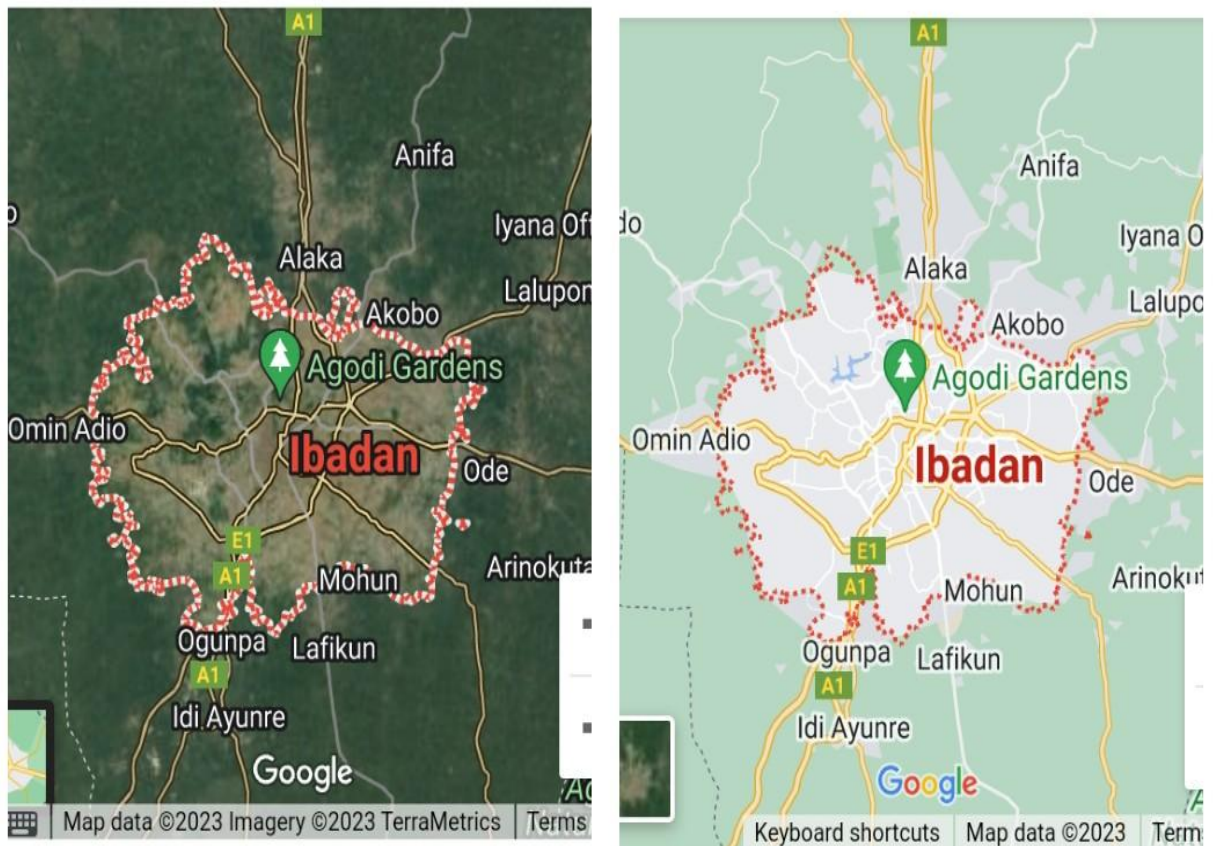


Figure: 3.5 Satellite Imagery of Ibadan Region

Source:⁹

3.2.4 The Socio-Cultural Composition

The peri-urban areas in the two local government areas under study are made up of mixed races, (indigenes, non-indigenes and others) but with dominance of Yoruba people (though not the indigenous Ibadan but other Yoruba) of the South Western Nigeria is overwhelming . Other specific major tribes in the study area as discovered from the findings, were the Ebira, Igbos, Fulanis, Hausas, Binis, Ijaw, Ilaje, Tapa, Ibibio, Iboms, Ebira and Igede.

Occasionally, the tribesmen do embark on traditional ceremonies like masquerades, idol worshipping ceremony and even Christmas with a touch of tradition such as; Christmas made in Warri being replicated in the study areas¹⁰.

A typical traditional wedding of Ebira extract where their culture and tradition would be at full display do occur according to the Baales interviewed on the field, in the study areas.

3.2.5 Criteria for the Selection of the Case Studies

The choice of peri-urban settlement sides of Ibadan North West Local Government and core peri-urban areas of Ido Local Government areas was premised on certain factors. The administrative difference and policy changes in the two local government councils, sharing of boundary, interwoven infrastructural developments, are part of peri-urbanisation development characteristics.

Rapid population growth that drives settlers in to the two peri-urban interface and the mixed developments of public-private estates, new government GRAs and proximity to old Jericho GRA were also considered. The Ibadan outer ring road project and newly completed Lagos-Ibadan railway lines with its second terminal at Idi Igbaro (one of the communities in Ido local government council area) are the major justifications for the selection of the case study areas.

The need for comparison and availability of some variables physically existing in both peri-urban interface of the two local government areas is considered as part of the criteria¹¹. These variables which are in line with the objectives of this research work are; sand lifting activities, undiscerning refuse dump in the rivers and streams, lack of replanting of cut trees, climate change effects, building on high tension power line, flooding, encroachment on pipelines and government reserve area acquisition.

3.3 Sample and Sampling Techniques

The research work was carried out in selected peri-urban areas of Ibadan metropolis. The peri-urban interface of Ibadan North West and Ido Local Government Areas were specifically researched upon. The selected areas are; Eleyele and Adetokun communities on one part, Alafara and Ologuneru on the other part. The former are in Ibadan North West Local Government area while the later are in Ido.

These four locations comprises of 26 number communities, 74 number Community Developments Associations (CDAs) and 1,826 Housing Units out of which 346 of them were sampled, using Systematic Random Sampling Technique.

Table 3.2 Location, Sample Size and Housing Units

SN	Location/Community	Features	No CDAs	Housing Units	Sample Size
Ibadan North Local Govt.					
1.	Eleyele PUI				
	Waterside	Riverine	3	65	12
	Okebadan	Mountainous	4	40	7
	Mechanic Village	Powerline	2	42	7
	Aafin Iyanu	Valley	6	180	35
	Gbamongbo	Sand lifting	3	50	9
2.	Adetokun PUI				
	Idioro Elewa	Sand drilling	2	60	11
	Ajadi	Sand drilling	3	80	16
	Abaa Paanu	Boundary	2	22	5
	Carpenter Zone A, B & C	Indigenous	3	70	13
	Temidire - A, B, C & D	Acquisition	4	180	35
	Alaguntan Zone A, B, C	DSS Estate	6	120	23
	Abaa Ela	Flooding	1	70	13
	Aba Asa	Institute	2	40	7
	Iletuntun	Powerline	5	90	18
	Idi Ishin			40	7
Ido Local Govt Area					
3.	Alafara PIU				
	Temidire	Shalom	4	98	19
	Adejumo	Estate	2	30	5
	Alaja	Gated Estate	1	45	8
	Elenusonso	Ring Road	5	86	17
	Ologolo	2 nd R/Road	3	92	18
	Agbofieti	New GRA		70	13
		Thick forest		31	6
		Pipeline		452	
Ologuneru PIU					
4.	Idi Igbaro	Rail line	5	65	12
	Gbopa	Ring Road	3	70	13
	Olunde	Rail terminal	2	60	11
	Farm Settlements/Camp	Oysada		30	6
				225	
Total			70	1,826	346

Source: Author's Field Work 2023

3.3.1 Sampling Technique

The Systematic Random Sampling Technique was adopted for this research work. It allows a selection of population members at regular interval¹². In this regard, 5 houses interval was randomly chosen in the selected 26 settlement clusters to which 346 questionnaire were administered. The unit of population in the 26 clusters are derivatives of the 1,826 housing units that represents the larger population.

Table 3.3 Research Sample Size and Rate of Return (RR)

SN	Community	Features	No of CDAS	Housing Units	Sample Size	Missing Sample	Actual Sample Returned	% of Sample Returned
Ibadan N.W L.G.								
1.	Eleyele PUI	Riverine	3	65	12	2	10	83.33
	Waterside	Mountainous	4	40	7	0	7	100
	Okebadan	Powerline	2	42	7	1	6	85.71
	Mechanic Village	Valley	6	180	35	3	32	91.42
	Aafin Iyanu	Sand lifting	3	50	377 9	0	9	100
	Gbamongbo							
2.	Adetokun PUI							
	Idioro Elewa	Sand drilling	2	60	11	1	10	90.90
	Ajadi	Sand drilling	3	80	16	1	15	93.75
	Abaa Paanu	Boundary	2	22	5	0	5	100
	Carpenter, A, B & C	Indigenous	3	70	13	1	12	92.23
	Temidire - A, B, C, D	Acquisition	4	180	35	2	33	94.28
	Alaguntan A, B, C	Stream	6	120	23	1	22	95.65
	Abaa Ela	DSS Estate	1	70	13	0	13	100
	Abaa Asa	Flooding	2	40	7	0	7	100
	Iletuntun	Institute	5	90	18	1	17	94.44
	Idiisin	Powerline	1	40	772 7	0	7	100
Ido L.G Area								
3.	Alafara PUI							
	Temidire	Shalom Est	4	98	19	2	17	89.47
	Adejumo	Gated Estate	2	30	5	0	5	100
	Alaja	Ring Road	1	45	8	0	8	100
	Elenusonso	2 nd R/Road	5	86	17	1	16	94.11
	Ologolo	New GRA	3	92	18	1	17	94.44
	Agbofieti	Thick forest (Pipeline)		70	13	1	12	92.30
				31	452 6	0	6	100
4.	Ologuneru PIU							
	Idi Igbaro	Rail line	5	65	12	1	11	91.66
	Gbopa	Ring Road	3	70	13	1	12	92.30
	Olunde	Rail terminal	2	60	11	1	10	90.90
	Farm	Oysada	2	30	225 6	0	6	100

Settlements/Camp						
Total	74	1,826	346	21	325	Av 94%

Source: Author's Field Survey 2023

3.3.2 Sample Size Schedule

As contained in Table 3.3, The Sample Size Calculator was used to assist in getting the required sample size from the population of households. The formula allows a researcher to arrive at the ideal sample size putting into consideration a desired level of precision, confidence level and an estimate of proportion of attributes in the existing population¹³. The Chocran formula could also come in handy in situation with large population¹⁴.

The Sample Size Calculator adopted and contained in the research sample size and case study Table 3.03 above was arrived at using the below information analysis.

Population of the study area	1,826
Level of Confidence	95%
Precision Rate	0,05
Sample size	346

Population, as used in the Sample Size calculator is the total summation of the respondent which could be groups, individuals and household to which information is required to conduct a research into a phenomenon. It could also be referred to as the scope of the survey that a sample is obtainable from the population. Confidence Level can be explained as the level of certainty to which an estimate of true population value is examined. A percentage of values between 80 and 99 is usually selected to give a 80, or more chances out of 100 that the true value of the estimate is in the confidence interval.

Precision Rate is the standard error expressed as a percentage of the estimate. The required standard error which gives an indication of percentage of error is the useful measure of accuracy and is given at 0.05.

Therefore, the sample size is the number of respondents needed to achieve the required level of accuracy¹³.

3.4 Description of the Research Instruments

The various data collected for this research work are grouped into three categories. The structured questionnaires administered on the sampled population in the case study, the structured interview guide administered on the professionals, government officials and the community leaders, others are the observatory schedule and literature review data.

3.4.1 Administration of Questionnaire

The administration of the questionnaire, structure interview guide and observatory schedule was not complete without some pitfalls. The pitfalls were categorised and mentioned amongst others; burden of questions to a respondent, grammar issues, coercing respondent and request for incentives, which may lead to bias information¹⁵. The two teams experienced some of these and reluctances from few of the respondent during the exercise but we were able to scale through with convincing explanations.

Specifically, all requests to leave the questionnaire and come back to collect, grudges amongst neighbours, demands for incentives and suspicion about researchers being government agents seeking information to impose taxes, and female respondent reluctance to attend to us are part of difficulties encountered during the exercise.

3.4.2 Observation Schedule

Observation schedule was conducted during the pilot survey and at the field survey. It is a schedule of form prepared for collection of data on situational features which could only be observed and recorded by the researcher during the reconnaissance survey of the study area¹⁶. In this study, all the peri-urban units of Eleyele, Adetokun, Alafara and Ologuneru were duly observed and many variables not captured in the

questionnaire survey were discovered. Some of these features are the water transportation on Eleyele lake Water, the mountainous areas of Obaido and the new housing developments along with amenities that come with the new railway infrastructure in Ologuneru area. The Observation Schedule adopted for this study as contained in Table 3.4.

The schedule was in segments for ease of capturing the variables along with each peri-urban locations in the case study. The segment of the peri-urban locations, the challenges – environmental, institutional, social, land use changes and others. The variables in line with each challenges as required were marked by the researcher.

Table 3.4 Observation Schedule

Ped Urban Interface PUI	Environmental Challenges	Tick	Institutional Challenges	Tick	Social Challenges	Tick	Land Use Changes	Tick	Others	Tick
	Flooding		Security Post		Slum Development		Residential		Government Acquisition	
	Sand Lifting		Health Facility		Neglect of Agriculture		Commercial		Land grabbing	
	Wetland Disruption		Road Access		Population Growth		Industrial		Infrastructural Deficiency	
	Deforestation		Electricity Grid		Rent/Land cost Increment		Agricultural		Game extinction	
	Climate Change Effect		Water mains		Segregation		Recreational		Traffic congestion	
			Refuse Management		Conversion of Open space					
			Unplanned Development		Specification					

Source: Author's Field Work 2023

3.4.3 Semi-Structured Interview Guide

This is a quantitative method of research adopted for this study. The purpose of semi-structured interview used in this research work, was to understand and identify knowledge gap in peri-urbanisation environmental

degradation effects. The questions and investigation are related to the objectives of the study. It is a tool that offers crucial background information and answer the research question on occasions where specific data were required. It is also a key element of analytical framework and it identifies level of understanding and recognition of peri-urbanisation phenomenon.

As contained in the appendix II to IV, the various groups of personnel interviewed included the professionals in the built environment operating in the study areas such as; Architects, Town planners, Estate Surveyors and Valuers, Legal Practitioners and Real Estate Consultants. The traditional rulers called Baales in Adetokun, Alafara and Eleyele were interviewed. Useful data were obtained through guided interview of the government officials in various environmental and physical planning offices – local government, state and federal government offices in Ibadan. In all, 36 participants were interviewed comprises of the 3 sets - original land owners, professionals and government officials. The essence of this is to get more valuable data added to the research data pool. It also help in understanding other side of peri-urbanisation housing development.

The experts from the various background were interviewed through; focus group discussion (face to face), telephone conversation, contact protocol, voice recording consent form signed, and transcription of voices done by the researcher and tested for accuracy and relevance to questions.

3.5 Validity of the Research Instrument

The validity test subjected the questionnaire into was a pilot survey of selected samples in the Adetokun and Ologuneru Areas of Ibadan North West and Ido Local Government Councils respectively. A total number of 96 units of questionnaire were administered on residents in the selected peri-urban areas, 92 was recovered leaving out 4 missing. The results from the 92 returned questionnaires were analyzed and pretested result was subjected to necessary adjustments for reliability.

3.6 Reliability Tests of the Research Instrument

Reliability test is aimed at checking the stability, accuracy and level of precision of measurements. A questionnaire that is valid must give results that are similar when administered at different times. In other words, the reliability test assists in checking biases and errors in a design of questionnaire. During the pilot survey, questionnaire in three different formats with same aim of extracting same information were administered in the selected peri-urban settlements. Reliability test helps in checking biases and errors in design of a questionnaire. Clarity of understanding from the responses was checked on some questions especially questions on exposure to hazards in vulnerable areas was not understood by the respondents. The affected questions were redesigned as a result of pretesting of the questionnaire.

As mentioned above, reliability of the research instrument was conducted on Adetokun settlement area. 92 recovered questionnaire out of 96 were analysed using SPSS statistical application. In the Appendix III of this research work is the statistical table of the variables with the results as contained below. The variables in objective 3 and 4 were adopted for this purpose.

Objective 3:

Reliability Statistics

Cronbach's Alpha	N of Items
.986	10

Objective 4:

Reliability Statistics

Cronbach's Alpha	N of Items
.913	5

3.7 Method of Data Collection

The importance of data and data collection in research work cannot be overemphasized nor underestimated. Data is the life-wire of research work. Data source is the pool of facts – statistical and non-statistical available

to a researcher to carry out a research work¹⁷. Data used for this research is gotten from both primary and secondary sources.

3.7.1 Primary Data Source

The primary data, mainly quantitative, was directly collected by the researcher through use of instruments – surveys, questionnaire (structured), personal interview guide (semi-structured), and observatory schedule.

3.7.2 Secondary Data Source

This include reports, documentaries, maps and digital data obtainable from online databases such as; google dataset search, census bureau, official government data portals, health data, the world fact book, altmetric, National Environmental Standards & Regulations Enforcement Agency, Federal Environmental Protection Agency. Oyo State Ministry of Environment & Natural Resources, information, kaggle data sets, earth data by NASA, pew internet (sociological data), and so on¹⁸.

3.7.3 Data Collection Approach

The researcher, along with three Research Assistants broke into two groups, to physically administer the hand copies of questionnaire in the selected peri-urban areas in both local government areas. A total number of 346 questionnaires were administered on these peri-urban dwellers in the four communities within Ibadan North-West and Ido Local Government Areas, Oyo State. The sampled communities are: Eleyele 70, Adetokun 148, Alafara 86 and Ologuneru 42. An average of 30 units of questionnaires were administered by the two groups on a daily basis, which accounted for 12 days of rigorous exercise that was spread within 3 weeks.

The figures selected for each of the locations were arrived at putting into considerations; the research objective variables, the segmentation and identification of peri-urban features and the spread of developments in each of the clusters. The records from the household registers of each Community Development Associations (CDAs)

were gotten and the figure compared with the information obtained from the Oyo State Ministry of Lands, Housing and Urban Development, and the agency that is the curator of the number of houses, in each local government areas in the Ibadan metropolis.

In an event that the records are not corresponding, the CDA’s register was relied upon due to our ability to physically confirm structures on ground. Notwithstanding, the records from the Ministry though, affected by time factor, but it has helped immensely, for correlation purpose. As shown in the Table 3.5, the communities in each local government councils and settlement clusters/features, including numbers of CDAs, Housing Units, numbers sampled, the missing samples, actual returned and percentage of returned are stated.

Table 3.5 Questionnaire Retrieved from the Field

Settlements	No of Housing Units	Population of Households Sampled	Professionals Sampled	Total Sample Size	Retrieved Questionnaires	Rate of Retrieved
Eleyele	377	64	6	70	64	
Adetokun	772	136	12	148	141	
Alafara	452	78	8	86	81	
Ologuneru	225	38	4	42	39	
Total	1,826	316	30	346	325	94%

Source: Author’s Fieldwork 2023

3.8 Method of Data Analysis

Descriptive analysis quantitative and qualitative have been employed, while the spatial analysis was done using Geographical Positioning System. Data analysis involved coding, editing, statistical adjustment analysis, data analysis and presentation

This section deals with measurable variables as obtained from the questionnaires applied to the respondents in the case study. Since the respondents are mostly principal heads of household sampled, the demographic

composition of this target population becomes essential. Therefore, demographic factors such as sex, age, income, ethnicity, marital status, occupation, literacy status and household size are significant in any study that involves housing units. It becomes vital in understanding the most of the issues related to housing especially in objective one of this study.

The variables applicable to objective two of the study are

A. Socio-economic Characteristics of the Households:

i. Gender of the Respondent (Sex): This is a variable used to determining the ratio of male to female headship of households. It was used to check the effect of gender on quality of housing and character of households.

ii. Age: The actual age of the respondents was used to determine the prevailing age bracket of the peri-urban dwellers.

iii. Occupation: This variable was used to determine the actual employment status of the respondents. It establishes relationship between respondents' means of income and housing typology, quality and segregation of housing. It was left as an open-ended question in the research instrument.

iv. Household Size: This variable showed the total number of persons per household. It provided a means of analyzing the quality of housing.

v. Marital Status: This variable was used to establish the marital arrangements and its impact on the housing type and household size. The variables range from single, married, widow/widower, living together not married and separated.

vi. Home Ownership Status: This determines whether the respondent is a tenant or landlord. It was used to determine the respondent's attitude to community development.

vii. Average Monthly Income: This variable assists in determining the quality of housing, type of housing, household size, neighbourhood quality and response to urban policy. Four income levels were taken into

account, (below N50,000), very low income group, (N50,000 to N75,000), low income group, (N75,000 to N150,000) middle income group and (above N150,000) as the high income group.

B. Drivers of Development in Peri-Urban

viii. Length of Residency: This represents the total number of years a household had lived in the peri-urban. This was determined by the move-in date. This variable helped in determining the household experience on land use change in the community. The classification falls into four categories; 0 to 5years, 6 to10 years, 11 to 15years and 16 to 20years.

ix. Locational Preference: This variable measured why the residents choose peri-urban location. It was rated by using factors such as; budget rent/land cost, inheritance, closeness to kinship, nearness to work, easy accessibility and ambiance of quality of environment.

x. Preference of Peri-Urban to City: The variable measures the preference by the residents in peri-urban to the inner city. The variables were measured using a Likert Scale pointers such as; strongly agree, agree, disagree, strongly disagree and never agree.

xi. Resident's Satisfaction in the Community: This variable assist to determining the level of satisfaction of the residents and Likert Scale pointers were also used. They are; very satisfied, satisfied, neither satisfied nor dissatisfied, very dissatisfied.

xii. Transportation: This variable was used to determine the mode of transportation of the peri-urban dwellers from their residences into the inner city or place of work. The options of walking, motorbike, commuter taxis, buses or tricycle were made available for the respondents.

xiii. Housing Development Growth as a Result of Infrastructural Presence: It measures level of development in the locations as a result of the presence of infrastructural facilities. Likert scale of Very Strongly, Strongly, Slightly, Rarely, and Neutral were used to get the perception of the respondents to the growth in development in the study.

xiv. Housing Types: The variable determines the type of housing units within the study areas. It has correlation with housing initiatives and socioeconomic characteristics of the residents. It provides options such as storey building, block of flats, bungalows, studio apartment and tenement.

C. Land Use Change and Degradation Effects on Livelihood

xv. Rate of Housing Development and Change in Land Use: This variable determines the perception of the respondents to rapid housing development in the neighbourhood. The Likert scale of Very Strongly, Strongly, Slightly, Rarely, and Neutral were used to determine this perception.

xvi. Agricultural Land Use Dominance in the Beginning: The respondents perception of dominance of agricultural use in the location at their initial visit were determined by this variable using Likert Scale measurement.

xvii. Prevailing Land Use: This variable was used to determine the major land uses in the location through the options of residential, commercial, institutional, recreational and none uses made available to the respondents.

xviii. Effects of Land Use on Means of Livelihood: This variable determines the effects of changes in land use from agricultural to other activities to the respondents especially the original settlers. The means of measurement adopted was Likert scale options Very Strongly, Strongly, Slightly, Rarely, and Neutral.

xix. Increase in Socio-Economic Activities: This variable measured the extent of the residents' perception of improvement in socio-economic activities due to increase in population in the area. The variable was subjected to Likert scale measurement.

xx. Growth in Developments and its Effects on Rent and Land Cost. This variable determines the effects of growth in population and attendant results on continuous high demand for land for development or units of accommodation for rentals. The Likert scale measurement was adopted to determine the residents' perception.

D. Socio-Cultural Challenges in the Communities

xxi. The Population in the Study: The combinations of the residents and their ethnicity background were determined using this variable. The mixed tribe, indigene and non-indigene are the three parameters considered.

xxii. Participation in Communal Activities: This variable determines the respondents' involvement in the community activities including community development association, payment of dues and levies and participation in general communal rehabilitation.

xxiii. Festive and Cultural Practices: The variable determines level of tolerance in social differences of the residents' practices of their traditional beliefs during festive period. The occurrence of clashes and disruption of traditional activities was measured with this variable using the Likert scale measurements.

xxiv. Presence of Recreational Facilities in the Neighbourhood: The variable captured the need and essence of having recreational centers in the study area and the availability of such facilities as, hotel, open space, resorts, and public bars are the measurements.

xxv. Crime Activities in the Study area: The variable determines the rate of occurrences of crime activities in the study

E. Land Degradation and Health Challenges In the Community

xxvi. Government Agencies in The Study Area: This variable was used to measure the presence of government officials from the physical planning, health sector and environment. It was meant to ascertain enforcement and control of residents especially in the vulnerable areas such as oil pipelines, power lines and sand lifting areas.

xxvii. Encroachment on Government Land/Acquisition: This variable determines the extent to which road set-backs, government land acquired for institutional uses and especially the proposed Ibadan Inner and Outer Ring Roads that traverses the study areas.

xxviii. Measures on Development on Vulnerable Area: The important of this variable cannot be over-emphasized because of ignorance and insensitivity of the residents to the dangers associated with building on and having vocation centers along the vulnerable areas. The perception of the resident was measured using Likert Scale of measurement.

xxix. Waste Production and Increase in Population: Refuse disposal and production in the study area is a key variable that could lead into serious land degradation in form of flooding, blockage of water channels and drainages. The variable was also measured to the level of awareness of the effects of indiscriminate refuse disposal by the residents.

xxx. Regularised Development Pattern: This variable relates to the causes and detection of developments into informalities in the study area. The variable was measured with use of Likert scale of measurement to know the perception of the residents to the areas developing into informalities.

xxxi. Mitigating effects of Tree Cutting: The effects of indiscriminate tree cutting and inability or sheer neglect of replanting trees cut during construction was measured using Likert scale to determine the perception of the residents.

xxxii. Sand Lifting Activities: The variable determines the level of awareness of the danger associated with sand lifting and its impact on the degradation of the environment of the respondents. Their perception about sand lifting activities was determine using Likert Scale of measurement.

xxxiii. Effect of Reduction in Rivers/Streams Strength: The notable rivers and streams that had for years served the residents have been diminishing from year to year as the growth in population and development rises in the study areas. The remote sensing and satellite imagery from the google earth, and respondent's perception about incidences are the instruments used to measure the variable.

xxxiv. Climate Change Effects: This variable determines the effects of climate change in the study area on rainfall, heat waves, water body and flooding. The remote sensing, satellite imagery of pattern of development and land use changes for 20 years back was used to measure the occurrences.

xxxv. Sources of Water: The respondents were questioned on the source of water provision to determine the quality of water consumption and effect of rock blasting during well digging and borehole drilling. The Likert Scale was used to measure their level of awareness.

xxxvi. Impact of Indiscriminate Waste Disposal: This variable determines the perception of the respondents to the indiscriminate disposal of waste and the need to adopt a modern and proper channel of disposal. The Likert Scale assisted in measuring their perceptions.

xxxvii. Waste Disposal Methods: Various means and methods of waste disposal options were presented to determine each respondent’s method of disposal. The options allows the respondent to pick an appropriate answer and the results collated for analysis.

Table 3.6 Verification of Returned Questionnaire for Completions

SN	Settlements	No of Housing Units	No of Questionnaires returned	No of Questionnaires missing
1.	Eleyele	70	64	6
2.	Adetokun	148	141	7
3.	Alafara	86	81	5
4.	Ologuneru PIU	42	39	3
	Total	346	325	21

Source: Author’s field work 2023

In carrying out data processing and analysis for this study, the SPSS (statistical package for social sciences) application for windows was employed. Data from interviews and observations were subjected to non-statistical tool, content analysis. Socio-economic attributes of the respondents were subjected to cross-tabulation to assist in the overview of the characteristics of migrants to the peri-urban study areas. These socio-economic attributes considered are, age, income, gender, household size and marital status.

3.9 Ethical Approval/Operationalizing the Research Methodology

The research objectives are separately addressed using different data collection, sources, method of analysis and interpretation. The method and analysis of data collected on each of the objectives are presented here

Objective 1: To Assess the Socio-Economic Characteristics of the Respondents in the Study Area

Type of Data - Data collected for this objective are quantitative in nature. It includes the gender, age, occupation, number of households, housing typology, ethnicity, monthly income, level of literacy and nature of tenure. They are used to describe the attributes of the sampled households.

Sources of Data – the data was generated from the responses of the households sampled. Using the questionnaire instrument.

Method of Analysis and Data Interpretation – the households characteristics data were analyzed using descriptive statistics. It involved calculation of frequencies, percentages and the presentation of the results, using tables, charts and cross tabulation.

Objective 2: To identify the Drivers of Land Use Change and Degradation in the Study Area

Type of Data – basically, the nature of data collected for this objective is qualitative in nature. It involved the respondents' choice of location, land use type, housing type, institutional development, and level of satisfaction, preference of peri-urban location to inner city and drivers of housing developments in the study area.

Sources of Data – data sourced from questionnaire instruments, observatory schedule and analysis of spatial data.

Method of Analysis and Data Interpretation – descriptive method was applied in analyzing data for this objective. It involved data grouping, frequencies and percentage computation while results are presented in charts, tables and cross tabulation. Spatial images were obtained from google Geographical Positioning System.

Objective 3: To Investigate the Impacts of Land Use Change and Degradation on the Livelihood of the Inhabitants of the Study Area.

Type of Data – qualitative data are also collected from the respondents in the study area on variables relating to prevailing land use change, conversion of agricultural land use to residential, socio-economics characteristics changes and effects on means of livelihood, and health, including land and rent cost as a result of population growth.

Sources of Data - The data for this objective were extracted from the responses in the questionnaire instrument, the analysis of observatory schedule and spatial data.

Method of Analysis and Data Interpretation – all questionnaire responses data were subjected to descriptive statistical analysis, data grouping, computation of frequencies and percentages are all converted into charts, cross tabulations and tables. Satellite image acquisition resulting into sets of images of different years were obtained from the Google Earth archive for between 2013 and 2023 respectively. This task was accomplished with Geographical Information System (GIS) applications like QGIS and Elshaval Smart Web online software. The images were mosaicked with QGIS. Vectorization of the images/maps are done from pictures into a plane shape format. The system is referred to as digitizing. The land use maps and satellite images of Eleyele, Adetokun, Alafara and Ologuneru were converted into raster.

Objective 4: To Measure the Socio-Cultural Impacts of Peri-Urbanization in the Study Area.

Type of Data – data is here is quantitative. Information bothering on constitution of population by tribes, community activities' participation, traditional beliefs and festivals, recreation facilities and crime occurrences are types of data obtained for this objective.

Sources of Data – the data source are from the questionnaire, analytical interviews and observatory charts.

Method of Analysis and Data Interpretation - Descriptive analysis was employed in analyzing the residents' characteristics data. This involved the calculation of frequencies and percentages and the presentation of the result using tables, charts and cross tabulation

Objective 5: To Investigate the Level of Impacts of Land Degradation on the Health of the Interface Dwellers

Type of Data – both qualitative and quantitative data were involved. The data were collected for content analysis such as; from governmental agencies, information on land encroachment, and development on vulnerable areas. Quantitative data include land degradation factors such as, flooding, tree cutting, sand lifting, waste disposal, and reduction in river courses, water supply and increase in refuse disposal.

Sources of Data – data from both primary and secondary sources were employed. Questionnaire/survey and content analysis of personal interview, documents from achieves and spatial images.

Method of Analysis and Data Interpretation – descriptive statistical analysis used in analyzing all questionnaire responses. Data grouping, computation of frequencies and percentages, charts, cross tabulations and tables. Satellite images acquisition obtained from the Google Earth were also analysed.

Endnotes

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Results and Discussions

The aim of the research work is to assess the impacts of land degradation on the socioeconomic characteristics of peri-urban interface settlers in the study area. The research is focused on urban growth, its attendant explosion of population into the peri-urban interface, coupled with its uncontrollable land use changes, degrading impacts on the environment, urban health quality and means of livelihood of the dwellers in the study area^{1, 2, 3, 4,5}.

This section contains the collection process, analysis and interpretation of data used to examining the impact of environmental degradation on the selected peri-urban interface in Ibadan, Oyo State. The research design and process employed is a case study type. The research methodology has problem identification, followed by the aim and objectives, the analytical literature review of theories and concepts relating to the environmental degradation and its impact on the peri-urban interface in the study areas. The criteria for selection of the case study which falls within the peri-urban areas of two distinct local government areas for ease of comparable of policies and variables.

Documents selection and analysis of such data from both primary and secondary sources were done. The personal interview guide and observatory schedule of the case study areas including spatial aerial images downloaded from the Google Earth Applications covering a period of between one and twenty years ago was done to identify the occurrence and effects of environmental degradation and land use change in the study areas.

The application of questionnaire were physically administered on the respondents by the author and three research assistants breaking into a group of two teams, each with maximum distribution and administration of 30 questionnaires per day. The exercise was not unconnected with pitfalls such as burden of questions, grammar issues coercing and request for incentives. Specifically, all requests to leave the questionnaire and come back to collect, grudges amongst neighbours and suspicion about researchers being government agents

seeking information to impose taxes, and female respondents' reluctance to attend to researchers are part of difficulties encountered during the exercise. See Appendix 1 for the Guide Questionnaire.

The participants interviewed numbering about 15 from various background comprises of traditional rulers/original land owners, the professionals in built environment in the study area and the government officials from various parastatals, both Federal and State. The Federal Environmental Protection Agency (FEPA), the National Environmental Standards and Regulations Enforcement Agency (NESREA), Nigeria National Emergency Management Agency, (NEMA), Oyo State Ministry of Environment and Natural Resources, Ministry of Lands, Housing and Urban Development and Oyo State Emergency Management Protection Agency (OYSEPA) in other to get valuable data added to the research data pool.

4.1 Demographic Data Analysis

The variables that were measured include; the respondents' gender, marital status, occupation, age, and home ownership status. Others were household size and monthly income of the residents.

4.1.1 Respondents' Gender

The gender variable of the respondents was subjected to chi-square test of independence with a nonparametric test of significance resulting into male having a majority of 62.4% against female's 37.6% as contained in Figure 4.1 below. The data source for this variable was obtained through the questionnaires administered on the residents of the peri-urban locations – Eleyele, Adetokun, Alafara and Ologuneru, all within the Ido and Ibadan North West Local Government Areas, in Ibadan.

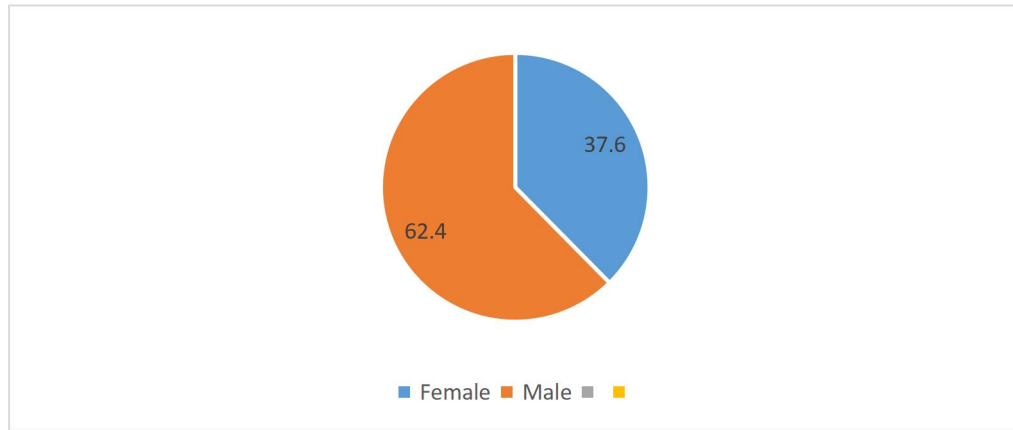


Figure 4.1 Respondents' Gender

Source: Fieldwork 2023

4.1.2 Marital Status of the Residents

Presented in Figure 4.2 is the marital status of the respondents. That the majority of the respondents were married is an indication of a community with responsible dwellers.

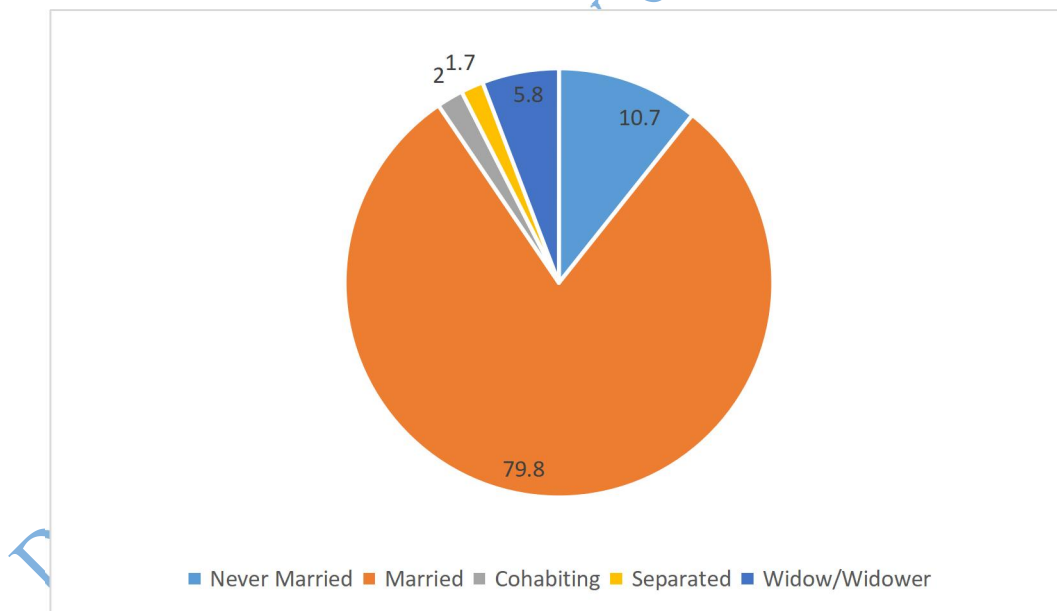


Figure 4.2 Respondents Marital status.

Source: Fieldwork 2023

4.1.3 Age Distribution

The result as indicated in Figure 4.3 showed respondents in 41 – 50 age category were higher in percentage while the old ages of 60 and above were just 8.7%.

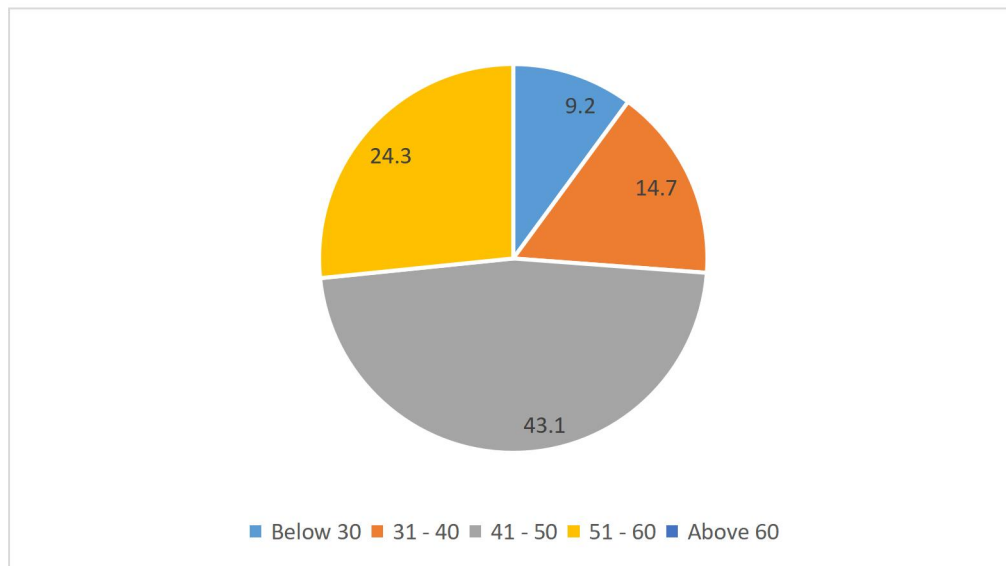


Figure 4.3: Age Distribution of the Respondents

Source: Fieldwork 2023

4.1.4 Occupational Status

It determines the social and health status of a community. The variable is subjected to descriptive analysis and result showed that business vocation has highest percentage of 41. The civil service at 33.5%, retiree accounted for 9.5% and student is the lowest at 6.9%.

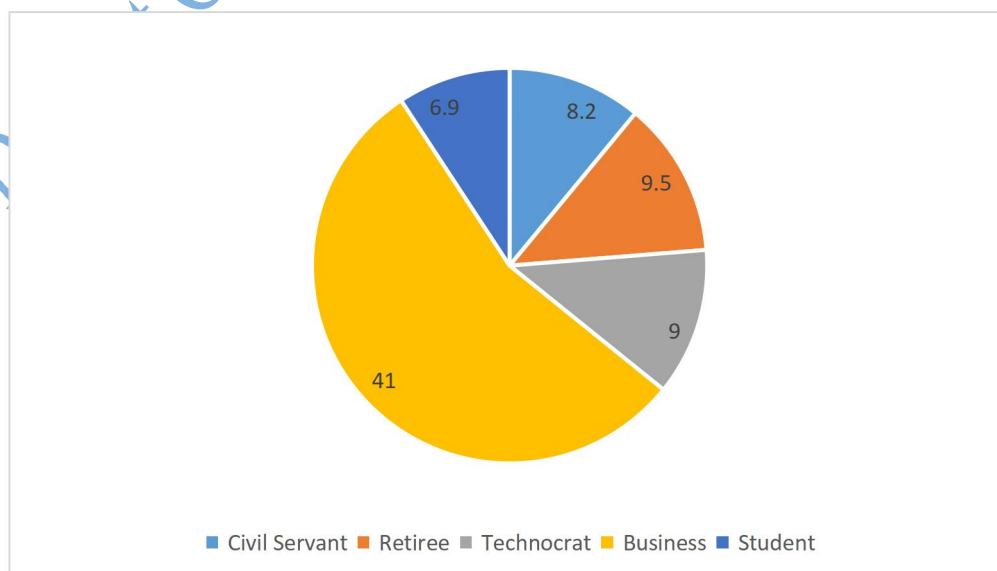


Figure 4.4 Occupational Status of the Respondents

Source: Fieldwork 2023

4.1.5 House Ownership Status

The home ownership status was measured by two parameters of owner (inheritance/gift) and tenant. The result, as presented in Figure 4.5 indicated that 68.5% of the respondents were home owners while 31.5% were tenants.

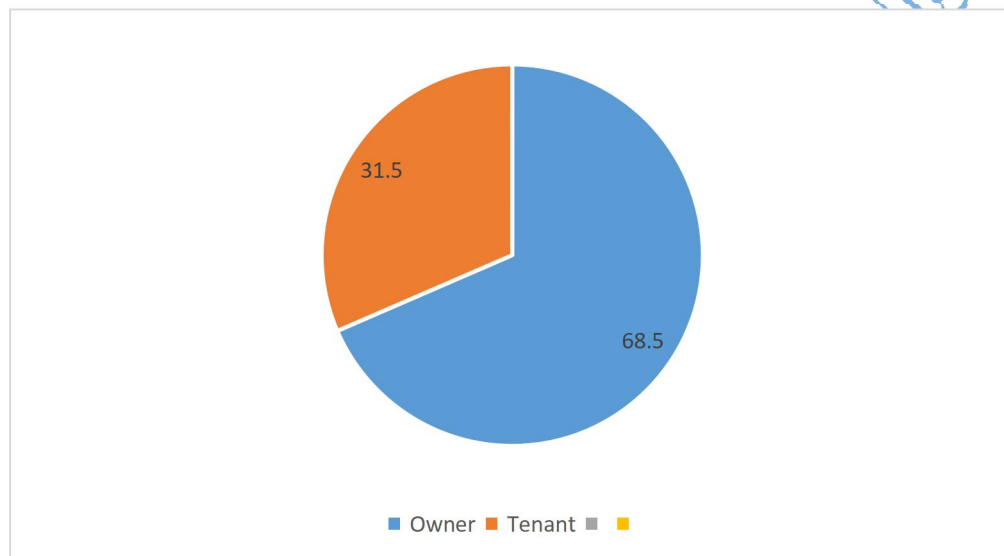


Figure 4.5 House Ownership Status

Source: Fieldwork 2023

4.1.6 Household Size of the Respondents

The household size with highest percentage in the study area was 4 to 6 category with 66.8% followed by 1 to 3, 22.35 and lowest is family size 7 and above with 11%.

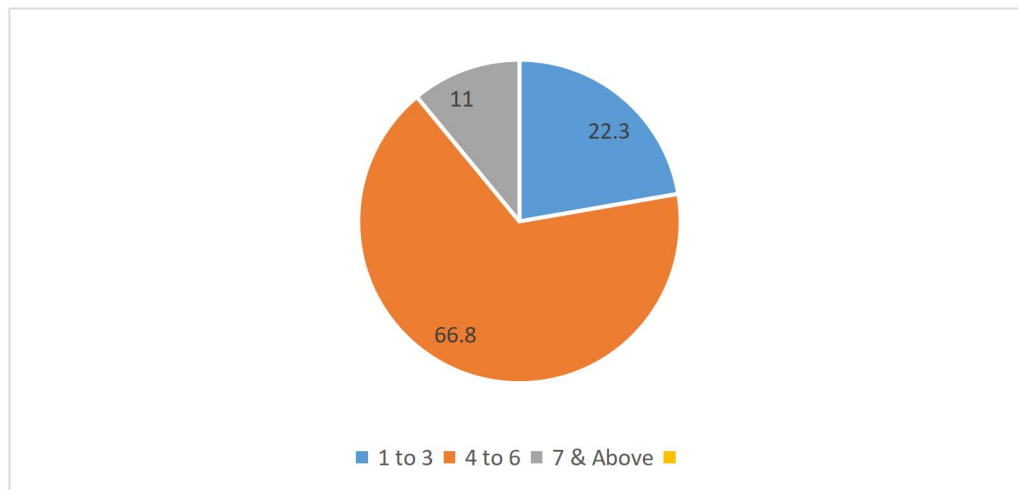


Figure 4.6 The Household Status of the Respondents.

Source: Fieldwork 2023

4.1.7 Respondents Monthly Income

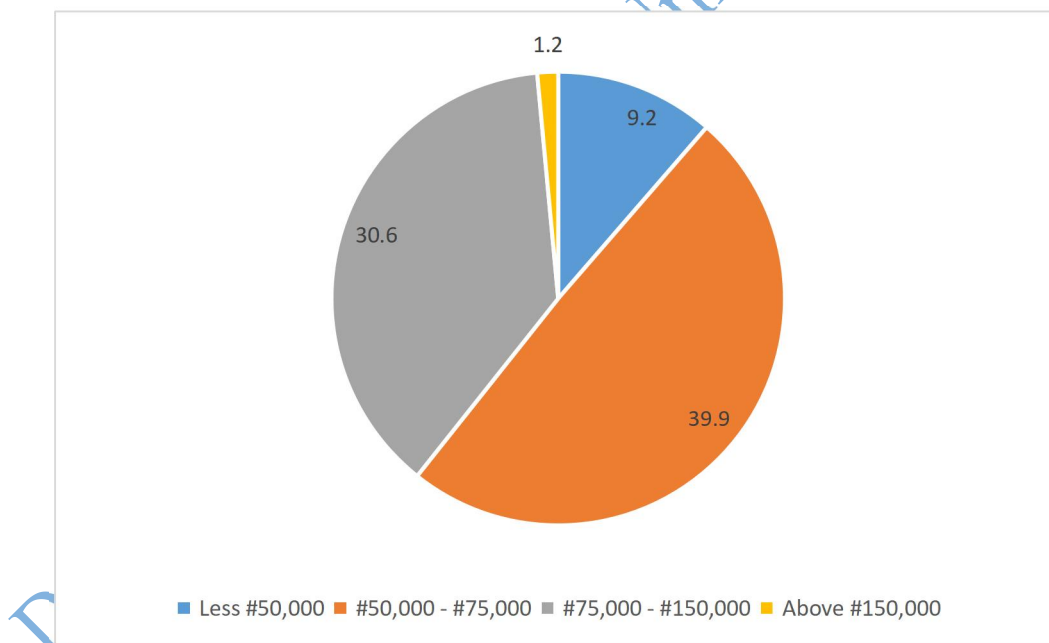


Figure 4.7 Respondents' Monthly Income

Source: Fieldwork 2023

4.2 Presentation of Data

4.2.1 Research Question One: What are the Socio-Economic Characteristics of the Respondents in the Study Area?

The socio-economic information of respondents in each of the four locations in the study are hereby presented and analysed based on each of the variables namely; gender, marital status, age, occupation, income, numbers in the household, and housing type.

Gender

The socio-economic characteristics of the sampled respondents in the sampled peri-urban communities are discussed in this section. Results from Table 4.1 revealed that majority (62.4%) of the respondents were male while 37.6% were female. A comparison of the gender distribution across the different residential communities revealed a similar result as the overall study area.

However, there was no statistically significant difference in the gender distribution of respondents across the different peripheral communities ($\chi^2 = 2.955, p = 0.399$).

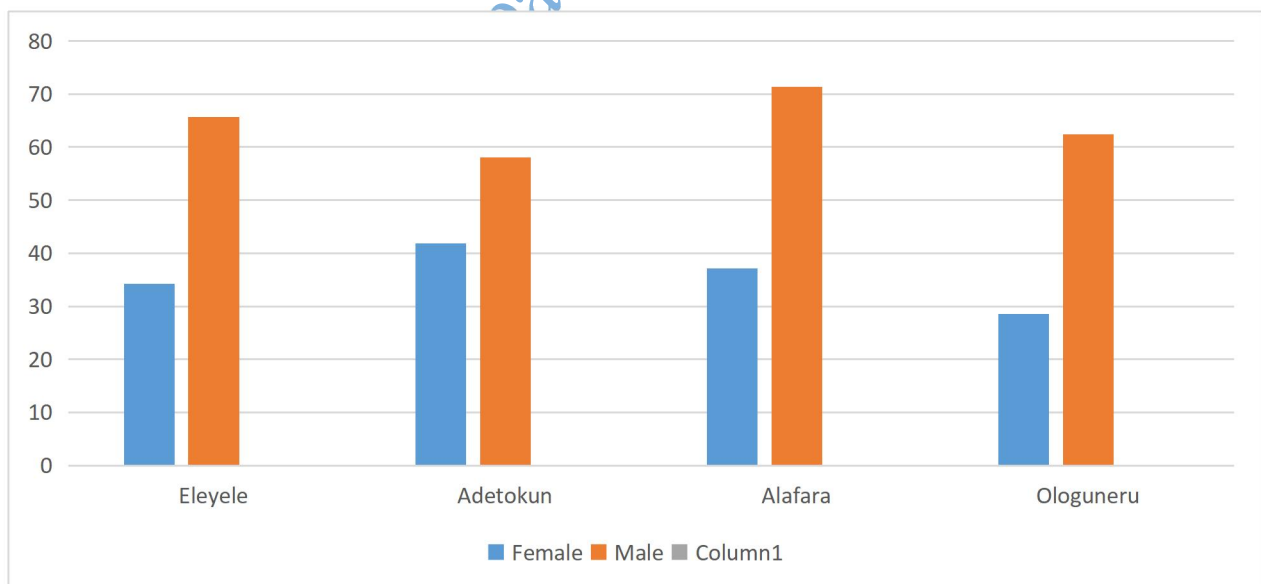


Figure 4.8 Gender Distribution

Source: Fieldwork 2023

Marital Status of Respondents

The marital status of respondents in the study area revealed that 79.8% were married. On the other hand, 10.7% of the respondents had never been married while 5.8% spouses were deceased. Respondent who cohabitated accounted for 2.0% while separated respondents accounts for 1.7%. Across the sampled communities, a similar result was observed, as majority of the respondents were married. The differences in residents' marital status in the sampled peri-urban communities was statistically not significant at 0.05 p-value.

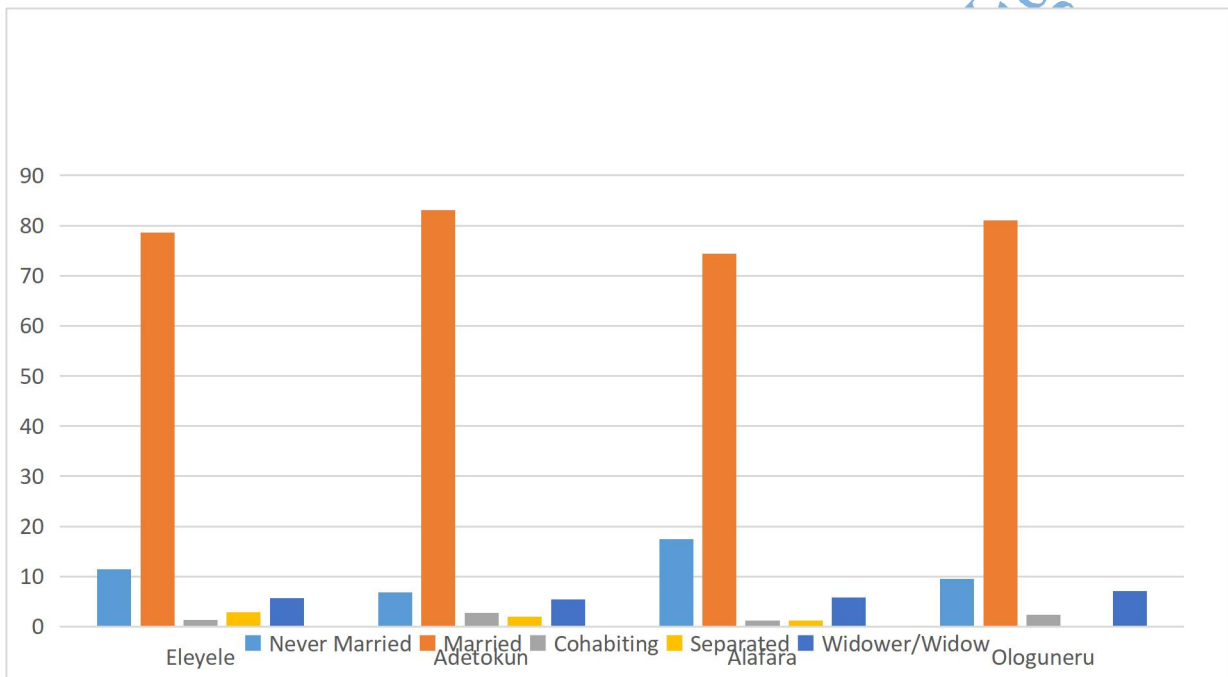


Figure 4.9 Marital Status

Source: Fieldwork 2023

Mean age of Respondents

In terms of age distribution, the mean age of respondents in the study area was 46 years. In addition, the minimum and maximum age were 18 and 82 years respectively. Findings from the study further revealed that 43.1% of the respondents were between the ages of 41 and 50 years. Respondents in the group 51-60 years accounted for (24.3%), while those between 31-40 years was 14.7%. Respondents below 31 years of age

accounted for 9,2% while respondents above 60 years accounted for 8.7%. It was however observed that statistically significant difference exists in the age distribution of respondents across the four peri-urban communities ($\chi^2= 18.330, p = 0.106$).

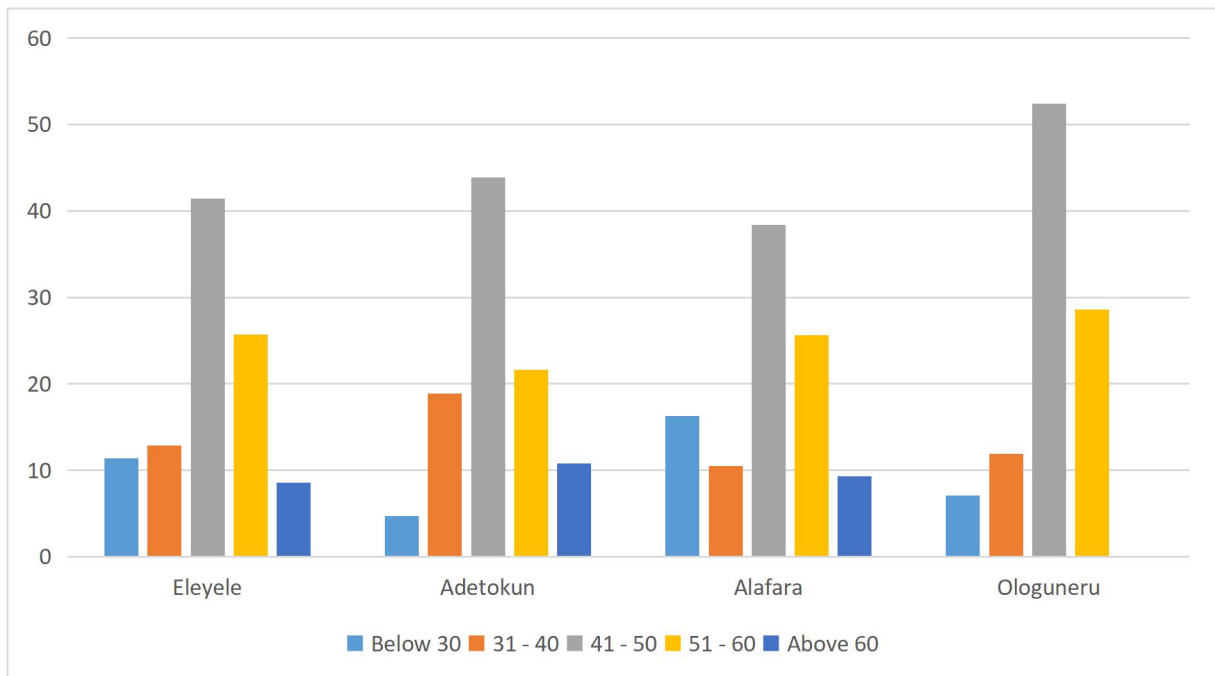


Figure 4.10 Age Distribution

Source: Fieldwork 2023

Respondents' Occupation Status

In relation to respondents' occupational status, it was established that majority of the respondents were employed. Findings as depicted in Table 4.1 showed that 41.0% of the respondents engaged in business vocation, 33.5% were civil servants and 9.0% were technocrat. However, 9.0% of the respondents were retirees while 6.9% were students. In Adetokun community, a high proportion (39.2%) of the respondents were civil servants compared to other sampled communities.

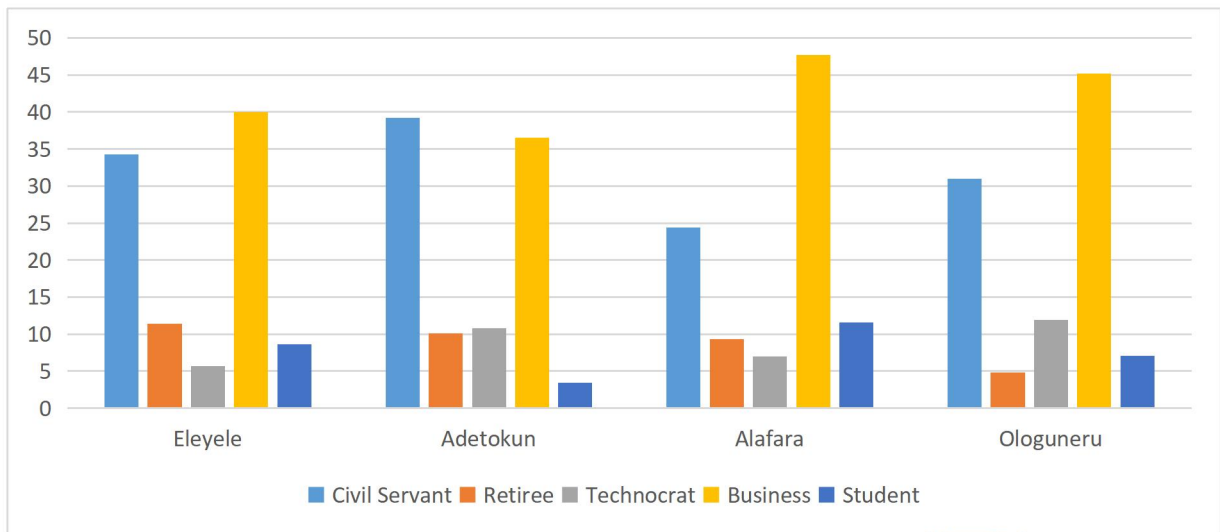


Figure 4.11 Respondents' Occupational Status

Source: Fieldwork 2023



Figure 4.12 Trading as Major Business Occupation

Source: Fieldwork 2023

In Figures 4.12 and 13 the occupational characteristic of the respondents were presented. The core original settlers who were primarily farmers have changed vocations and business especially in building materials, modern trades like telecommunications accessories sales and repairs, mini cooking gas sales outlets, consumable sales in lock-up shops, POS money exchange centers and so on, are typical of peri-urban dwellers occupation.



Figure 4.13 Typical Trade in Building Materials in the Study Area

Source: Fieldwork 2023

House Ownership Status

The house ownership status of the respondents showed that more than half (68.5%) of the respondents owned their residential apartments. 31.5% of the respondents indicated to be tenants. Further findings revealed that there was no significant difference in respondents' house ownership status across the four peri-urban communities ($\chi^2= 1.461, p = 0.691$).

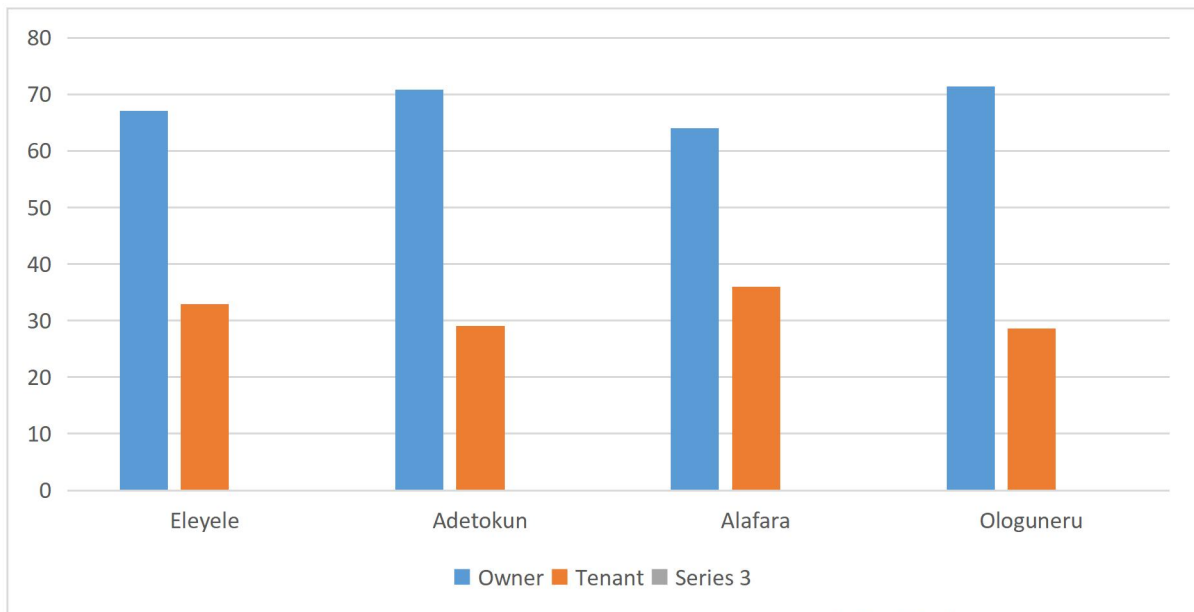


Figure 4.14 House Ownership Status

Source: Fieldwork 2023

Respondents' Household Size

Furthermore, the result of respondents' household size in the study area revealed an average household size of approximately 5 persons. In similar manner, the minimum and maximum household size was 2 and 16 persons respectively. However, it was observed that a large proportion (66.8%) of the respondents had a household size of 4-6 persons. This was followed by respondents with household size 1-3 persons (22.3%) and above 6 person (11.0%) respectively.

Further findings across the sampled communities revealed more of the respondents in Ologuneru community had a household size between 4-6 person compared to Eleyele (64.3%), Adetokun (62.8%) and Alafara (67.4%) communities. These differences were statistically significant at p-value of 0.05 ($\chi^2= 13.333, p = 0.041$).

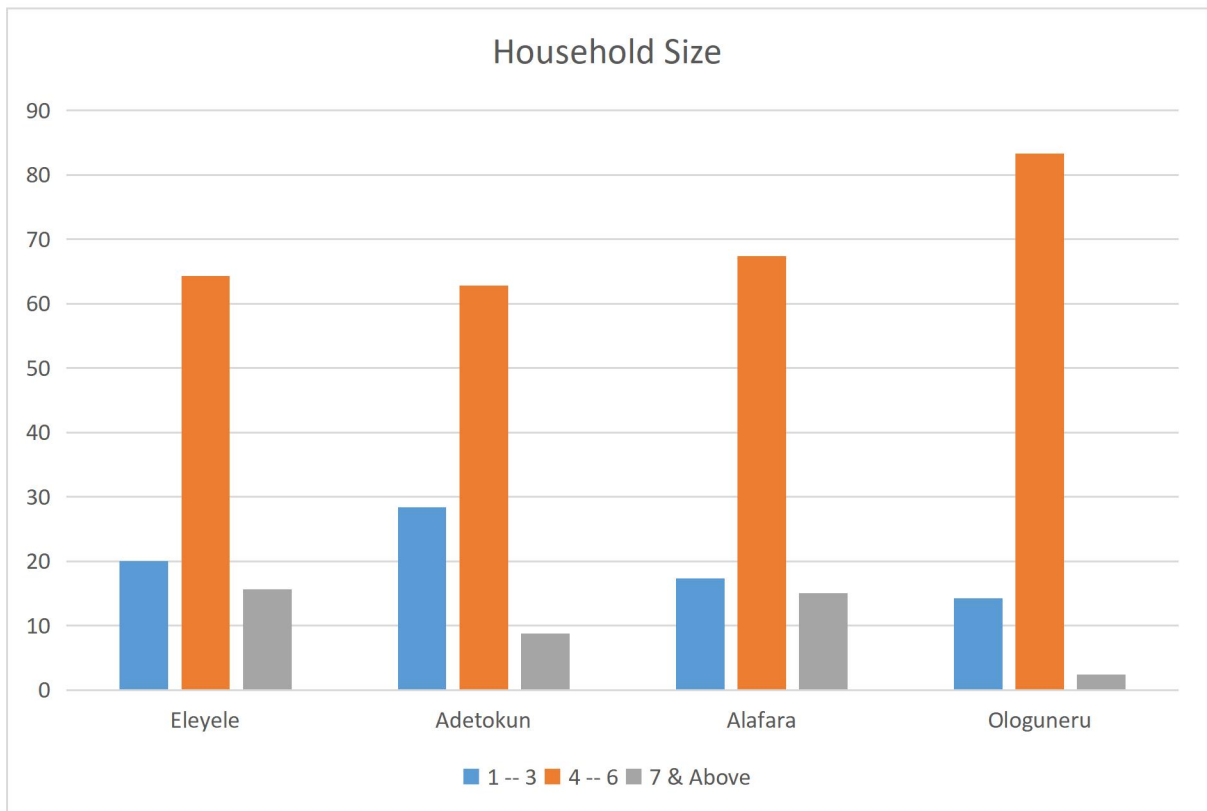


Figure 4.15 Respondents Household Size

Source: Fieldwork 2023

Respondents' Monthly Income

Findings into respondents' monthly income showed a bulk of the respondents (39.5%) earned between ₦50,000 and ₦75,000. This was followed by 30.6% of the respondents who earned between ₦75,000 and ₦150,000. In addition, 20.2% of the respondents received a monthly income above ₦150,000 while only 9.2% of the respondents claimed to earn less than ₦50,000 on monthly basis. Similar results were observed across the peri-urban communities. However, no statistically significant difference in residents' monthly income across the four communities were observed ($\chi^2 = 4.817, p = 0.850$).

Table 4.1: Socio-Economic Background of Peri-Urban Dwellers

	Residential Communities				Total <i>n</i> = 346 <i>Freq.</i> (%)	Chi-square p-value
	Eleyele <i>n</i> = 70 <i>Freq.</i> (%)	Adetokun <i>n</i> = 148 <i>Freq.</i> (%)	Alafara <i>n</i> = 86 <i>Freq.</i> (%)	Ologuneru <i>n</i> = 42 <i>Freq.</i> (%)		
Gender						
Female	24 (34.3)	62 (41.9)	32 (37.2)	12 (28.6)	130 (37.6)	0.399
Male	46 (65.7)	86 (58.1)	54 (62.8)	30 (71.4)	216 (62.4)	
Marital status						
Never married	8 (11.4)	10 (6.8)	15 (17.4)	4 (9.5)	37 (10.7)	0.713
Married	55 (78.6)	123 (83.1)	64 (74.4)	34 (81.0)	276 (79.8)	
Cohabiting	1 (1.4)	4 (2.7)	1 (1.2)	1 (2.4)	7 (2.0)	
Separated	2 (2.9)	3 (2.0)	1 (1.2)	-	6 (1.7)	
Widower/widow	4 (5.7)	8 (5.4)	5 (5.8)	3 (7.1)	20 (5.8)	
Age (years)						
≤ 30	8 (11.4)	7 (4.7)	14 (16.3)	3 (7.1)	32 (9.2)	0.106
31 – 40	9 (12.9)	28 (18.9)	9 (10.5)	5 (11.9)	51 (14.7)	
41 – 50	29 (41.4)	65 (43.9)	33 (38.4)	22 (52.4)	149 (43.1)	
51 – 60	18 (25.7)	32 (21.6)	22 (25.6)	12 (28.6)	84 (24.3)	
Above 60	6 (8.6)	16 (10.8)	8 (9.3)	-	30 (8.7)	
Occupation						
Civil Servant	24 (34.3)	58 (39.2)	21 (24.4)	13 (31.0)	116 (33.5)	0.258
Retiree	8 (11.4)	15 (10.1)	8 (9.3)	2 (4.8)	33 (9.5)	
Technocrat	4 (5.7)	16 (10.8)	6 (7.0)	5 (11.9)	31 (9.0)	
Business	28 (40.0)	54 (36.5)	41 (47.7)	19 (45.2)	142 (41.0)	
Student	6 (8.6)	5 (3.4)	10 (11.6)	3 (7.1)	24 (6.9)	
House ownership						
Owner	47 (67.1)	105 (70.9)	55 (64.0)	30 (71.4)	237 (68.5)	0.691
Tenant	14 (32.9)	43 (29.1)	31 (36.0)	12 (28.6)	109 (31.5)	
Household size						
1 – 3	14 (20.0)	42 (28.4)	15 (17.4)	6 (14.3)	77 (22.3)	0.041**
4 – 6	45 (64.3)	93 (62.8)	58 (67.4)	35 (83.3)	231 (66.8)	
7 & Above	11 (15.7)	13 (8.8)	13 (15.1)	1 (2.4)	38 (11.0)	
Monthly Income						
< ₦50,000	7 (10.0)	12 (8.1)	7 (8.1)	6 (14.3)	32 (9.2)	0.850
₦50,000 – ₦75,000	27 (38.6)	55 (37.2)	37 (43.0)	19 (45.2)	138 (39.9)	
₦75,001 – ₦150,000	24 (34.3)	47 (31.8)	24 (27.9)	11 (26.2)	106 (30.6)	
> ₦150,000	12 (17.1)	34 (23.0)	18 (20.9)	6 (14.3)	70 (20.2)	

Source: Fieldwork 2023

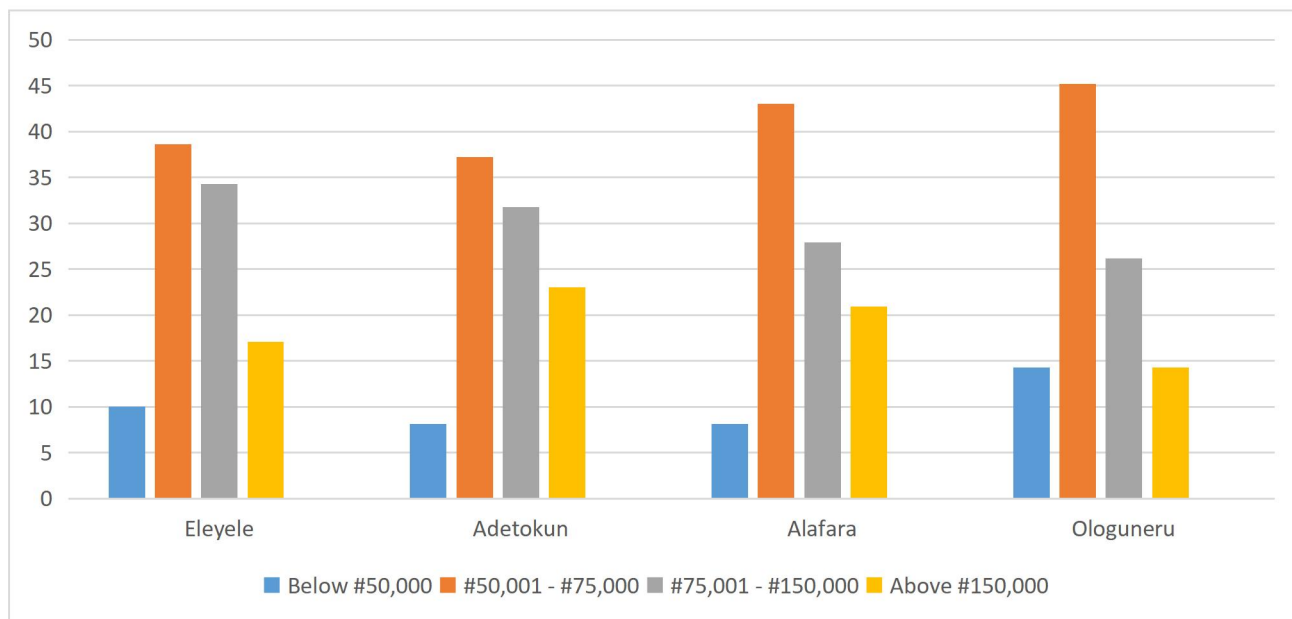


Figure 4.16 Respondents Monthly Income

Source: Fieldwork 2023

4.2.2 Research Question Two: What are the Drivers of Land Use Change and Degradation in Peri-Urban Interface of Ibadan Metropolis?

4.2.2.1 Respondents Perception to Drivers of Land Use Change and Degradation

The perception of the respondents of the four peri-urban interface in this study engaged differs on the factors considered to inform their decision to resident in the locations. The variables include their choice of location, length of stay, residential housing type, and daily mode of transportation. The summary of respondents' responses are presented in Table 4.2. Further explanation were given in Figures 4.17, 4.18, 4.19, 4.20, 4.21 and 4.22.

i. Residents Locational Choice

The choice of residential location of respondents in the study area is summarized in Table 4.2. It was observed that majority of the residential location choice of the respondents was as a result of budget for rent/land cost. It was found that up to 50.0% of the residents made the choice of location based on this factor. On the other hand,

22.4% and 20.6% of the respondents affirmed that easy accessibility and the quality of environment influenced their choice of residential location. The least important driver of residential location as opined by the respondents in the study area were choice related to inheritance and nearness to kinship; thus, accounting for 7.0% and 0.3% respectively.

Across the peri-urban communities, a similar trend was observed in Eleyele, Adetokun and Alafara communities (Table 4.2). In Ologuneru community, although, majority (58.5%) of the residents' residential choice was as a result of the cost of land/rent, the aspect of quality of the environment was as well important to the dwellers when compared to the residential choice of residents in the other sampled communities. As such, it was observed that there was a statistically significant difference in respondents' residential choice across the sampled communities ($\chi^2= 26.656, p = 0.009$).

Table 4.2: Choice of Residential Location

Location choice	Residential communities				Total
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Budget rent/land cost	33 (47.1)	76 (51.7)	38 (44.2)	24 (58.5)	171(49.7)
Inheritance	7 (10.0)	5 (3.4)	11 (12.8)	1 (2.4)	24 (7.0)
Easy accessibility	18 (25.7)	35 (23.8)	22 (25.6)	2 (4.9)	77 (22.4)
Quality of environment	12 (17.1)	31 (21.1)	14 (16.3)	14 (34.1)	71 (20.6)
Nearness to kinship	-	-	1 (1.2)	-	1 (0.3)
*Total	70 (100.0)	147 (100.0)	86 (100.0)	41 (100.0)	344 (100.0)

**Note: Reduced sample size due to multiple response*

Source: Fieldwork 2023

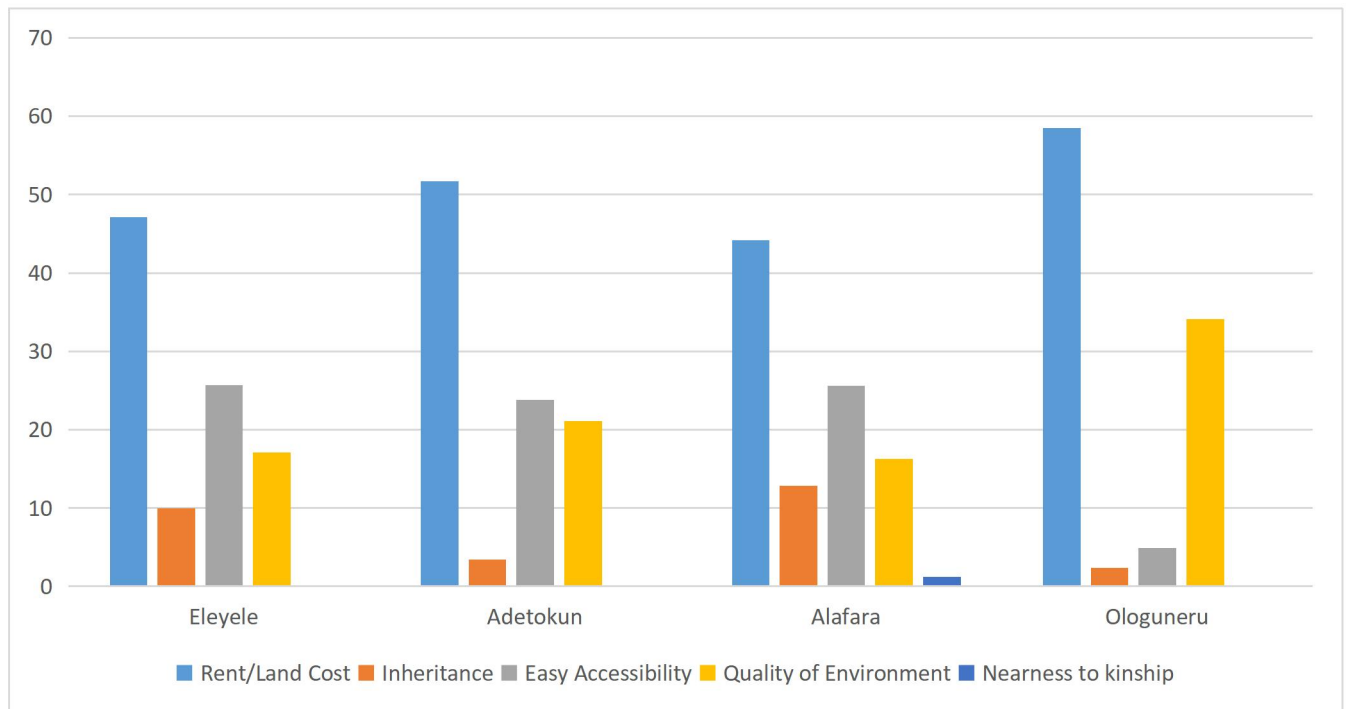


Figure 4.17 Choice of Residential Location

Source: Fieldwork 2023

ii. Length of Stay in the Community

The findings on length of stay in the neighbourhood indicated that (37.6%) of the respondents had lived in the study area between 16 and 20, while only 11.3% had lived in the study area for a period of 5years. In the sampled communities, it was observed that respondents stayed longer in their neighbourhood. This was evident as a high proportion of the respondents in Eleyele (45.7%), Adetokun (32.4%), and Alafara (44.2%) had lived in the community for more than 15 years (Table 4.3). On the other hand, findings in Ologuneru community showed that majority of the respondents claim to have lived in the community for a period of 6-10 years. However, the differences in the residents' length of stay in the sampled peri-urban communities was not statistically significant at p-value 0.05 ($\chi^2= 15.867, p = 0.070$).

Table 4.3: Length of Stay

Length of Stay (years)	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
0 – 5	5 (7.1)	22 (14.9)	9 (10.5)	3 (7.1)	39 (11.3)
6 – 10	13 (18.6)	36 (24.3)	14 (16.3)	17 (40.5)	80 (23.1)
11 – 15	20 (28.6)	42 (28.4)	25 (29.1)	10 (23.8)	97 (28.0)
16 – 20	32 (45.7)	48 (32.4)	38 (44.2)	12 (28.6)	130 (37.6)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

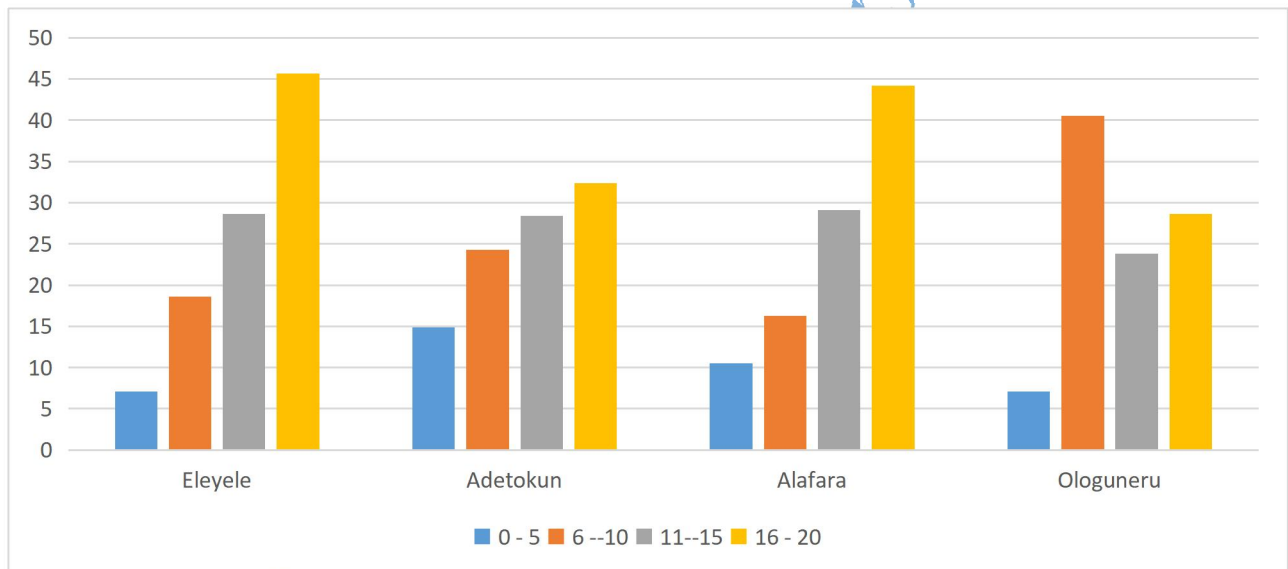


Figure 4.18. Respondents' Length of Stay in the location

Source: Fieldwork 2023

iii. Residential Housing Types

The housing types in the sampled communities revealed a high dominance of the bungalow residential apartments. Based on the research findings in Table 4.4, bungalow building accounted for 55.2% of the identified residential housing types in the study. This was followed by block of flats apartment and storey

buildings which accounted for 24.9% and 16.8% of residential housing types in the study area. Other types of residential housing such as tenement (2.9%) and studio apartment (0.3%) were among the least proportion of the housing types in the study area.

Table 4.4: Residential Housing Type

Residential Type	Residential communities				
	Eleyele <i>Freq. (%)</i>	Adetokun <i>Freq. (%)</i>	Alafara <i>Freq. (%)</i>	Ologuneru <i>Freq. (%)</i>	Total <i>Freq. (%)</i>
Bungalow	38 (54.3)	75 (50.7)	53 (61.6)	25 (59.5)	191 (55.2)
Studio apartment	-	-	1 (1.2)	-	1 (0.3)
Tenement	4 (5.7)	4 (2.7)	-	2 (4.8)	10 (2.9)
Block of flats	19 (27.1)	36 (24.3)	24 (27.9)	7 (16.7)	86 (24.9)
Storey building	9 (12.9)	33 (22.3)	8 (9.3)	8 (19.0)	58 (16.8)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

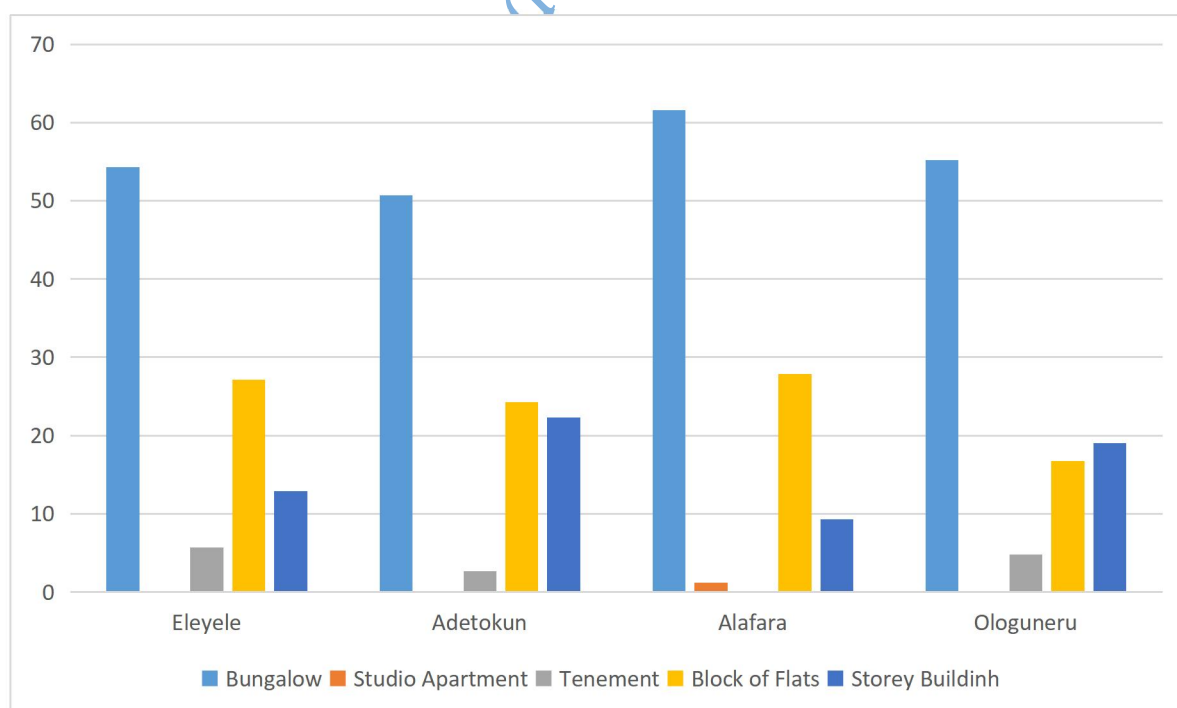


Figure 4.19. Residential Housing Types in the Study Area

Source: Fieldwork 2023



Figure 4.20. Bungalow Housing Type in Ologolo Alafara

Source: Fieldwork 2023



Figure 4.21 Modern Residential Housing Type in Adetokun Area

Source: Fieldwork 2023

iv. Households' Daily Mode of Transportation

The results of households' daily mode of transportation showed that the daily mode of transportation by majority of the respondents was via private cars/motorcycles. As revealed in Table 4.5, about 39.0% of the respondents used private cars/motorcycles, 30.0% commutes using minibus/taxi, while about 25.0% commutes on daily basis by walking.

A similar trend was observed in the sampled communities as most of the respondents commute daily using different types of automobiles. However, in Alafara community, a large majority (92.7%) of the respondents was observed to commute daily using different modes of transport aside walking. This proportion was higher compared to respondents in Eleyele (87.9%), Adetokun (66.2%) and Ologuneru (65.0%) communities.

Table 4.5: Peri-Urban Dwellers' Daily Mode of Transportation

Mode of Transport	Residential communities				Total
	Eleyele <i>Freq. (%)</i>	Adetokun <i>Freq. (%)</i>	Alafara <i>Freq. (%)</i>	Ologuneru <i>Freq. (%)</i>	
Walking	10 (12.0)	75 (33.9)	7 (7.3)	27 (35.1)	119 (24.9)
Bicycle	6 (7.2)	7 (3.2)	2 (2.1)	-	15 (3.1)
Private car/motorcycle	42 (50.6)	81 (36.7)	36 (37.5)	25 (32.5)	184 (38.6)
Minibus/taxi	22 (26.5)	53 (24.0)	48 (50.0)	20 (26.0)	143 (30.0)
Bus	3 (3.6)	5 (2.3)	3 (3.1)	5 (6.5)	16 (3.4)
Total	83* (100.0)	221* (100.0)	96* (100.0)	77* (100.0)	477* (100.0)

**Note: Total exceed sample size due to multiple response to the question*

Source: Fieldwork 2023

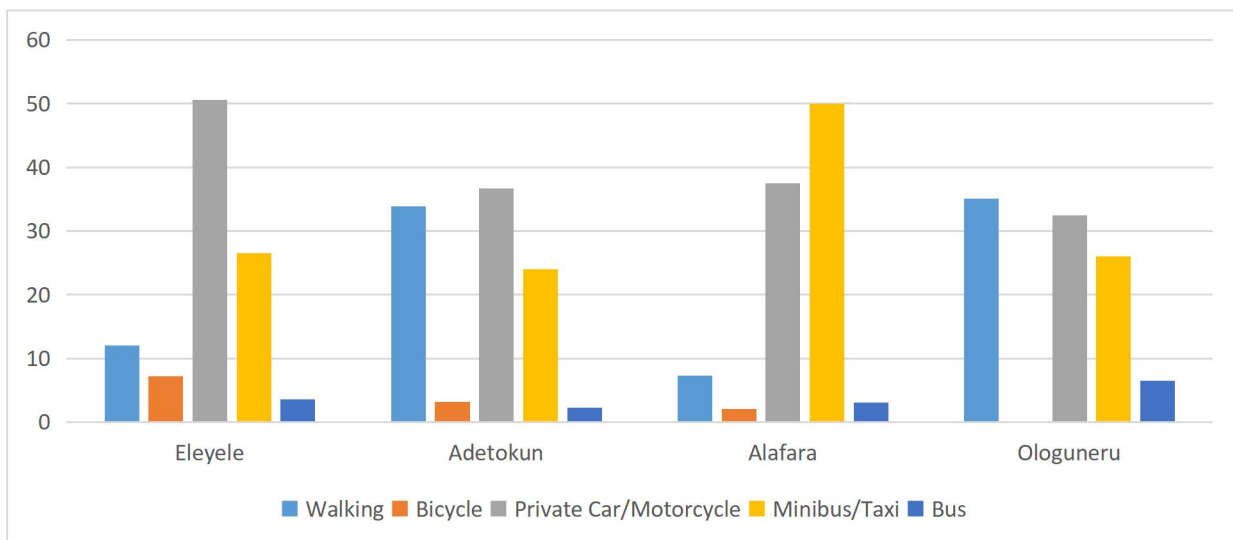


Figure 4.22 Mode of Transportation
Source: Fieldwork 2023

4.2.2.2 Analysis of Participants Interview, Observatory Schedule on Means of Transportation.

In all the four peri-urban communities subjected to this research, road transportation is the major means by which the residents commute in and out of their homes on daily basis. The road network has about two major routes out of which other routes veers off to distributaries of different destinations. These routes are; Eleyele-Ido and NIHORT Iletuntun – Elenusonso routes. These major routes runs in parallel to each other, but eventually terminates at Ido Town. While Eleyele-Ido runs outwardly to Eruwa and Omi Adio Towns, NIHORT Iletuntun-Elenusonso eventually emptied into Eleyele-Ido Road at directly opposite the Ido Local Government Secretariat.

Apart from trekking, the road transport means convey residents daily, through the use of private cars, commuter buses, taxis, tricycle and motorcycles as indicated in Figures 4. 14 to 17 below.



Figure 4.23. Commuter Bus as means of transportation in the area

Source: Fieldwork 2023



Figure 4.24 Commuter Taxis in the study areas

Source: Fieldwork 2023



Figure 4.25 Tricycle Commuters in the study area

Source: Fieldwork 2023



Figure 4.26. Motorcycle means of transportation in Ologuneru

Source: Fieldwork 2023

Water Transportation in some part of the study, was discovered through Observatory Schedule visit and its operational details from Personal Interview of some Participants including the community leaders and government officials overseeing Eleyele Lake Water transportation system. The commuters across the Eleyele Lake Water uses speed boat and canoe to daily conveys from communities like; Idunnu, ObaIdo to Eleyele from where they boards buses, taxis, tricycles and motorcycles to the inner city. The Eleyele Lake Water area is a boundary between Akinyele, Ido and Ibadan North West Local Government Areas.

From the account of Participants' interviewed, the water transportation system run operations daily, from 6am to 9pm. The management of the water transportation is under the arrangement between the Community Residents Association and the Oyo State Ministry of Rural Development and Mineral Resources. The rules and regulations stated that; boat should be placed at both ends, overloading prohibited, 15 passengers with 4 children as maximum, use of life jackets is a must, throwing of refuse or sacrifice into the water body is forbidden, resolution of conflicts between the operators and passengers to be solved by the community. See Figure 4.18 and 4.19 below shows the commuters on water and the riverine communities of Idunnu and ObaIdo respectively.



Figure 4.27. Water Transportation

Source: Fieldwork 2023



Figure 4.28 Riverine Communities of Idunnu and Oba-Ido along The Banks of Eleyele Lake Water

Source: Fieldwork 2023

i. Respondents' Preference and Satisfaction of the Peri-Urban Environment

Findings on respondents' preference of their peri-urban community to developed inner city where they resides before, was examined and the finding is summarized in Table 4.6. It was established that 52.0% of the respondents preferred the current developing neighbourhood in comparison with developed inner city. On the other hand, 48.0% of the respondents were dissatisfied with the level of development of the current neighbourhood in relation to the developed inner city.

Table 4.6: Preference of Peri-Urban Environment to Developed Inner City

	Residential communities				Total
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	
Strongly Agree	9 (12.9)	29 (19.6)	22 (25.6)	7 (16.7)	67 (19.4)
Agree	22 (31.4)	49 (33.1)	27 (31.4)	14 (33.3)	112 (32.4)
Neutral	-	1 (0.7)	-	-	1 (0.3)
Disagree	32 (45.7)	64 (43.2)	35 (40.7)	21 (50.0)	152 (43.9)
Strongly Disagree	7 (10.0)	5 (3.4)	2 (2.3)	-	14 (4.0)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

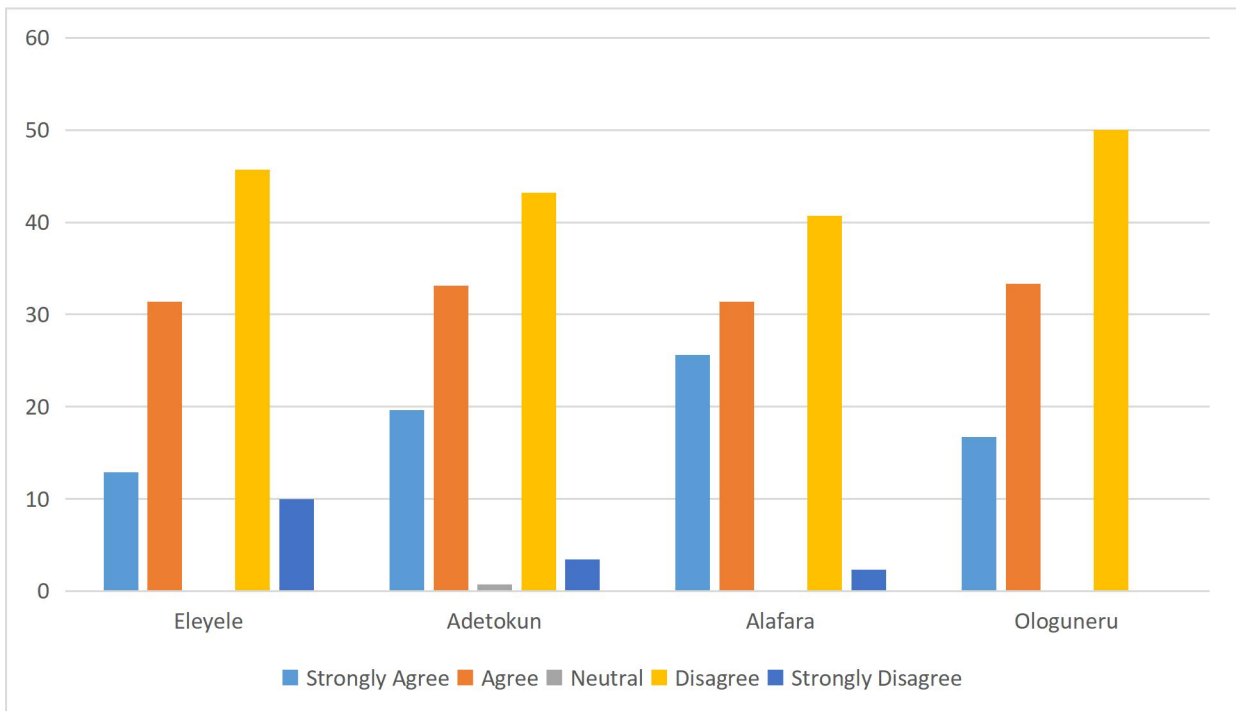


Figure 4.29 Residents' Preference of Peri-Urban to Inner City

Source: Fieldwork 2023

This finding was also similar to respondents' perceived satisfaction level with living in the community. As summarized in Table 4.7, 87.6% of the respondents in the peri-urban area pulled were neither satisfied. In Ologuneru community 95.2% were satisfied living in the community while in Adetokun, 89.9% were satisfied. The proportion of respondents in group were 89.6% and 75.7% in Alafara and Eleyele respectively.

Table 4.7: Residents' Satisfaction with Living in Different Peri-Urban Communities

Residential Type	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Very Satisfied	8 (11.4)	30 (20.3)	20 (23.3)	10 (23.8)	68 (19.7)
Satisfied	45 (64.3)	103 (69.6)	57 (66.3)	30 (71.4)	235 (67.9)
Neutral	3 (4.3)	-	-	-	3 (0.9)
Dissatisfied	12 (17.1)	14 (9.5)	9 (10.5)	2 (4.8)	37 (10.7)
Very dissatisfied	2 (2.9)	1 (0.7)	-	-	3 (0.9)

Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)
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Source: Fieldwork 2023

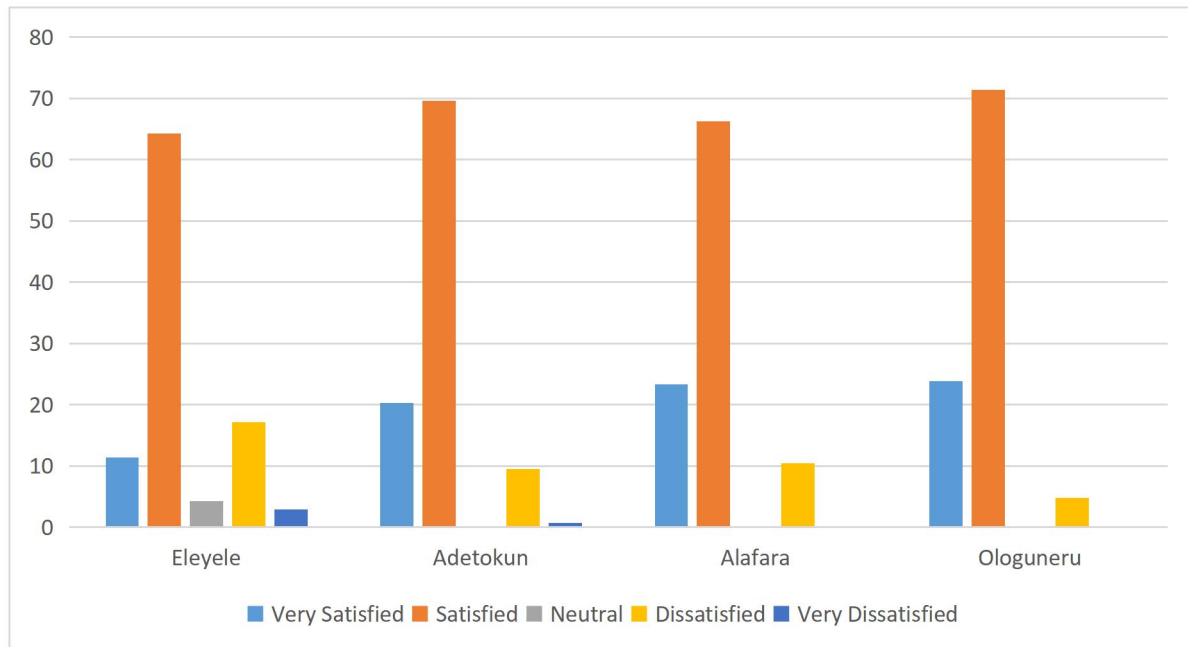


Figure 4.30. Respondents' Satisfaction with Living in the Community

Source: Fieldwork 2023

ii. Respondents' Perception of New Infrastructure Contributing to the Neighbourhood Growth

Respondents in the study area agreed that with the construction of new infrastructure such as rail lines and road network, growth and development had been experienced at the neighbourhood level. Findings presented in Table 4.8 showed that more than half (52.2%) of the respondents in the study affirmed to the development of the neighbourhood as a result of the construction of new infrastructure. However, respondents with indifferent (neither agree nor disagree) perception were observed to be higher in Adetokun community compared to 31.4%, 29.1% and 9.5% in Eleyele, Alafara and Ologuneru communities respectively.

Table 4.8: Residents' Perception of New Infrastructure Contributing to Neighbourhood Development

	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Strongly Agree	14 (20.0)	40 (27.0)	35 (40.7)	22 (52.4)	111 (32.2)
Agree	9 (12.9)	31 (20.9)	15 (17.4)	14 (33.3)	69 (20.0)
Neutral	22 (31.4)	49 (33.1)	25 (29.1)	4 (9.5)	99 (28.7)
Disagree	12 (17.1)	20 (13.5)	9 (10.5)	2 (4.8)	43 (12.5)
Strongly Disagree	13 (18.6)	8 (5.4)	2 (2.3)	-	23 (6.7)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

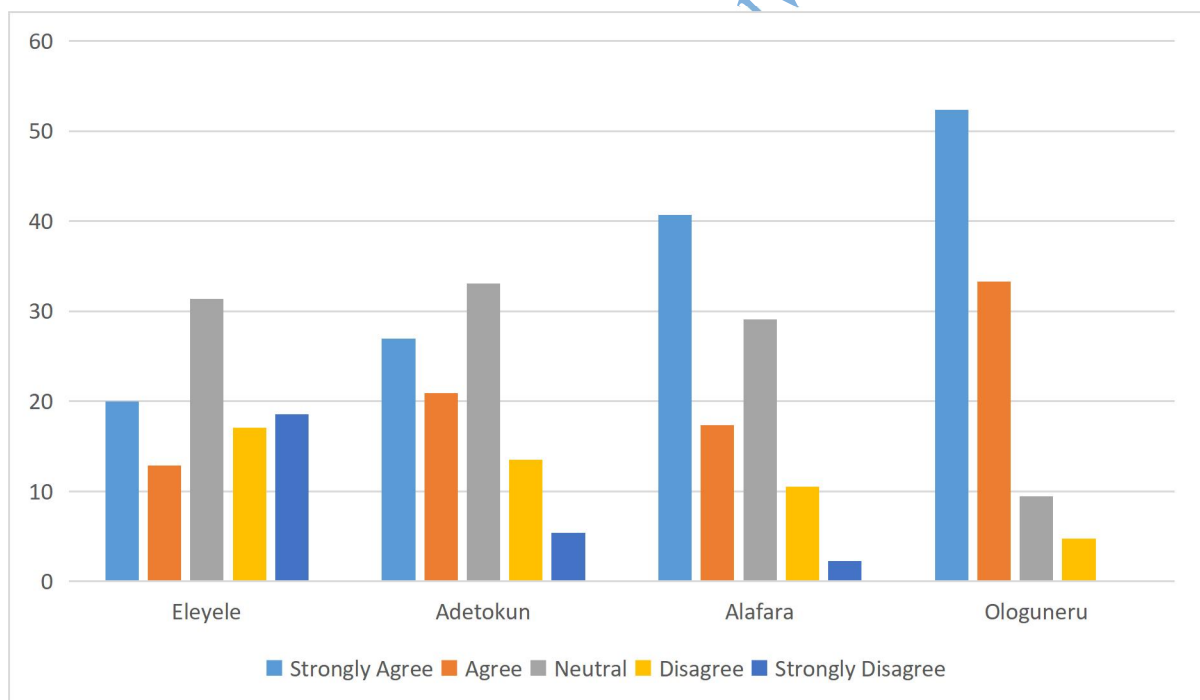


Figure 4.31. Perception about New Infrastructure Contribution to Development

Source: Fieldwork 2023

4.2.2.3 Analysis of Participants Interview and Observatory Schedule on Rapid Growth of the Study

Area

Professional Participants interviewed are 36 in number drawn from the building industry that have had the course to practice in the selected peri-urban interface in Ido and Ibadan north West Local government Areas. These professionals include Architects, Lawyers, Town Planners, Quantity and Estate Surveyors, Building/Civil Engineers and Real Estate consultants. Findings from the interview shows that more than half (62%) of the participants have been practicing in the communities for the past 6years and above. This suggest that the participants have adequate knowledge and experience of the local economics and notable land use changes, capable of providing adequate information on the land degradation implications in the communities. The participants were interviewed following the interview guide in Appendix II.

The participants identified with the rapid growth rate of housing developments in the area, and described it as phenomenal. The drivers of housing development variables used as means of measurement notwithstanding, the new infrastructural amenities, such as newly constructed Eleyele – Ido Road and the rail lines are of recent major attractions to the study areas.

The NIHORT Research Center, the proposed Outer Ibadan Circular Road and the opening up/allocation of both NIHORT and Elenusonso GRAs are major boost for housing developments in the study area. Of recent is the developments extending to the hilly mountainous areas. The ObaIdo, Mechanic Village and Gbamongbo are Hilly but gradually, residential developments are steadily springing up in those areas. This phenomenon was established in chapter two of this research work where it was stated that mountain provides direct sustenance to 1.1 billion of people around the world .The advantages of living on hilly mountainous sides cannot be underestimated. Figure 4.32 show some developments on the mountains at Eleyele peri-urban area.



Figure 4.32 Mountainous Housing development in the Study Area

Source: Fieldwork 2023



Figure 4.33. Growth in Housing Development in the Ologuneru Area

Source: Fieldwork 2023



Figure 4.34. Railway Infrastructure and Rapid Housing Development in Idi Igbaro-Ologuneru Area

Source: Fieldwork 2023



Figure 4.35. Oil Pipeline Infrastructure and Housing Development in Alafara Area
Source: Fieldwork 2023



Figure 4.36. Nigeria Horticultural Research Institute as One of the Drivers' of Housing Development into the Peri-Urban Interface
Source: Fieldwork 2023

4.2.3 Research Question Three: What are the Effects of Land Use and Degradation on the Livelihood of the Residents of the Study Area?

4.2.3.1 Residents' Perception of Land Use Changes and Degradation

Variables like type of land use type, predominant and prevailing land use, awareness and perceived land use change effects of the means of livelihood of the residents used to determine their perception. Table 4.9, 4.10 and 4.11 showed the findings.

i. Type of Land Use

Findings in Table 4.9 showed the type of land use in the study area. It was established that the dominant land use was residential land use. This accounted for about 97.0% of the respondents' claim. On the other hand, less than 4.0% of the respondents developed their land for commercial and industrial purpose. Based on this finding, it was deduced that, a large proportion of land in the peri-urban communities were developed for residential purposes.

Table 4.9: Predominant Land Use

Use	Residential communities				Total
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Residential	68 (97.1)	143 (96.6)	83 (96.5)	41 (97.6)	335 (96.8)
Commercial	1 (1.4)	5 (3.4)	1 (1.2)	1 (2.4)	8 (2.3)
Industrial	1 (1.4)	-	2 (2.3)	-	3 (0.9)
Institutional	-	-	-	-	-
Others	-	-	-	-	-
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

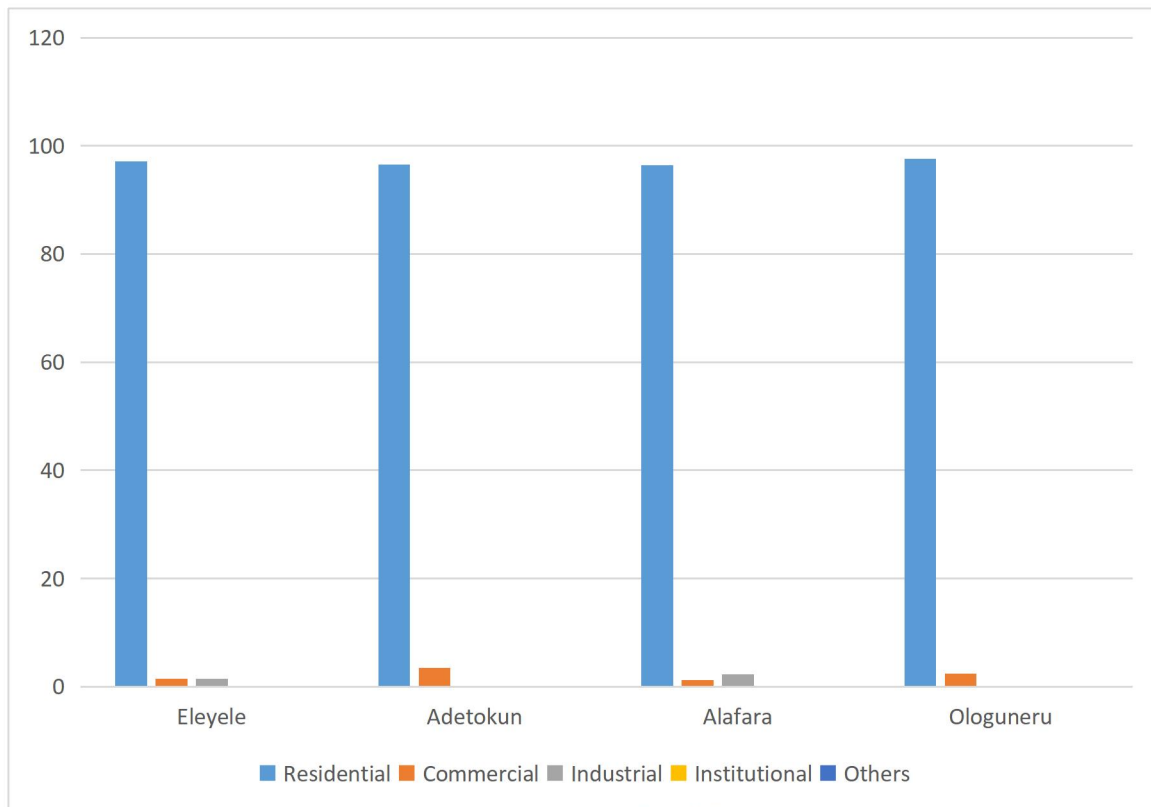


Figure 4.37. Predominant Land Use

Source: Fieldwork 2023

ii. Prevailing Changes in Land Use

A similar finding was observed in terms of the prevailing land use change in the study. As identified by majority (95.1%) of the respondents, the existing land use in the peri-urban communities were changed into residential use. In Eleyele, Adetokun, Alafara and Ologuneru communities, majority of the respondents opined that prevailing change in land use were for residential purposes (Table 4:10). On the other hand, a minute proportion of the respondents in the study indicated that land use in the study area were changed for commercial (2.9%), institutional (1.2%), and recreational use (0.6%).

Table 4. 10: Perceived Changes in Land Use

Use	Residential communities				Total
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Residential	68 (97.1)	140 (94.6)	82 (95.3)	39 (92.9)	329 (95.1)
Commercial	1 (1.4)	4 (2.7)	2 (2.3)	3 (7.1)	10 (2.9)
Institutional	-	3 (2.0)	1 (1.2)	-	4 (1.2)
Recreational	-	1 (0.7)	-	-	1 (0.3)
None	1 (1.4)	-	1 (1.2)	-	2 (0.6)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

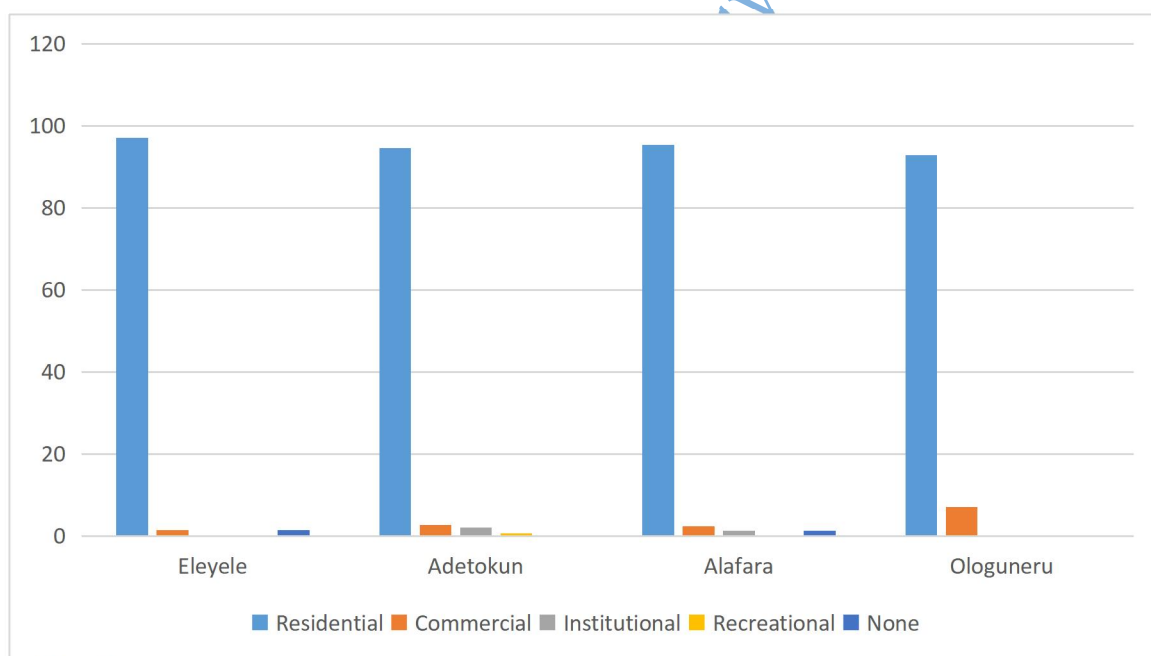


Figure 4.38 Perceived Changes in Land Use

Source: Fieldwork 2023

iii. Awareness of Land Use Changes in the Neighbourhood

The extent to which residents were aware of land use changes and development in the different neighbourhood was examined. Findings from the study area revealed that 64.2% of the resident in the study area were aware

of the rapid development and land use changes emanating from these changes in their neighbourhood (Table 4.11). It is important to note that the perceived land use changes and development were largely observed by respondents in Ologuneru (83.4%), Alafara (74.4%) and Adetokun (67.6%) communities. However, in Eleyele community, a large proportion (64.3%) of the respondents were skeptical of rapid development and land use changes experienced in their neighbourhood.

Table 4.11: Awareness of Rapid Development and Land Use Changes in the Neighbourhood

	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	8 (11.4)	9 (6.1)	1 (1.2)	2 (4.8)	20 (5.8)
Slightly	37 (52.9)	39 (26.4)	20 (23.3)	5 (11.9)	101 (29.2)
Neutral	2 (2.9)	-	1 (1.2)	-	3 (0.9)
Strongly	17 (24.3)	53 (35.8)	29 (33.7)	12 (28.6)	111 (32.1)
Very strongly	6 (8.6)	47 (31.8)	35 (40.7)	23 (54.8)	111 (32.1)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

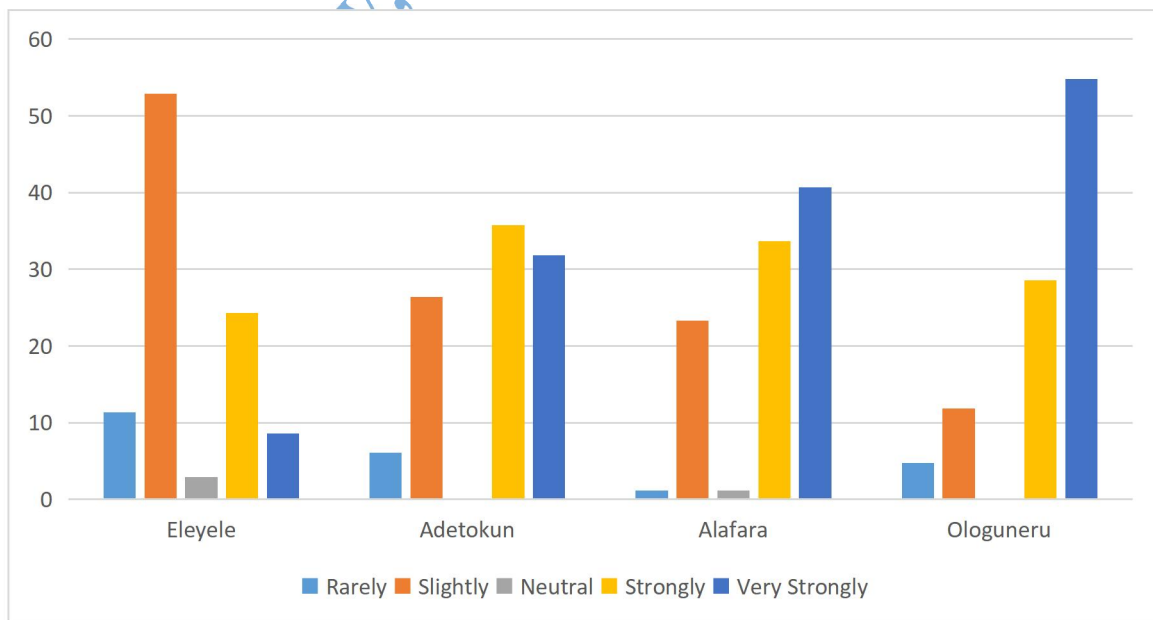


Figure 4.39 Awareness of Rapid Development/land Use Change in the Study

iv. Perceived Land Use Change and Residents' Means of Livelihood

The level of agreement to which land use changes had affected residents' means of livelihood in the study area showed a non-affirmative view among the respondents in the entire study area. Findings showed that about 52.0% of the respondents in the study rarely or slightly felt the effect of land use changes on their means of livelihood. Furthermore, a closer look at findings in the different sampled communities revealed similar trends. For instance, in the sampled peri-urban communities, it was evident that the proportion of the respondents who felt little or no effect of land use changes on means of livelihood was higher compared to respondents who claimed otherwise or were indifferent (Table 4.12). However, based on a chi-square test conducted, the differences in respondents' perception to the effect of land use change on the means of livelihood was significantly different across the sampled communities at $p\text{-value} \leq 0.05$ ($\chi^2 = 24.694, p = 0.016$).

Table 4.12: Land Use Changes Affecting Means of Livelihood in the Community

	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	21 (30.0)	42 (28.4)	18 (20.9)	6 (14.3)	87 (25.1)
Slightly	21 (30.0)	29 (19.6)	24 (27.9)	18 (42.9)	92 (26.6)
Neutral	8 (11.4)	24 (16.2)	6 (7.0)	1 (2.4)	39 (11.3)
Strongly	18 (25.7)	40 (27.0)	30 (34.9)	11 (26.2)	99 (28.6)
Very strongly	2 (2.9)	13 (8.8)	8 (9.3)	6 (14.3)	29 (8.4)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

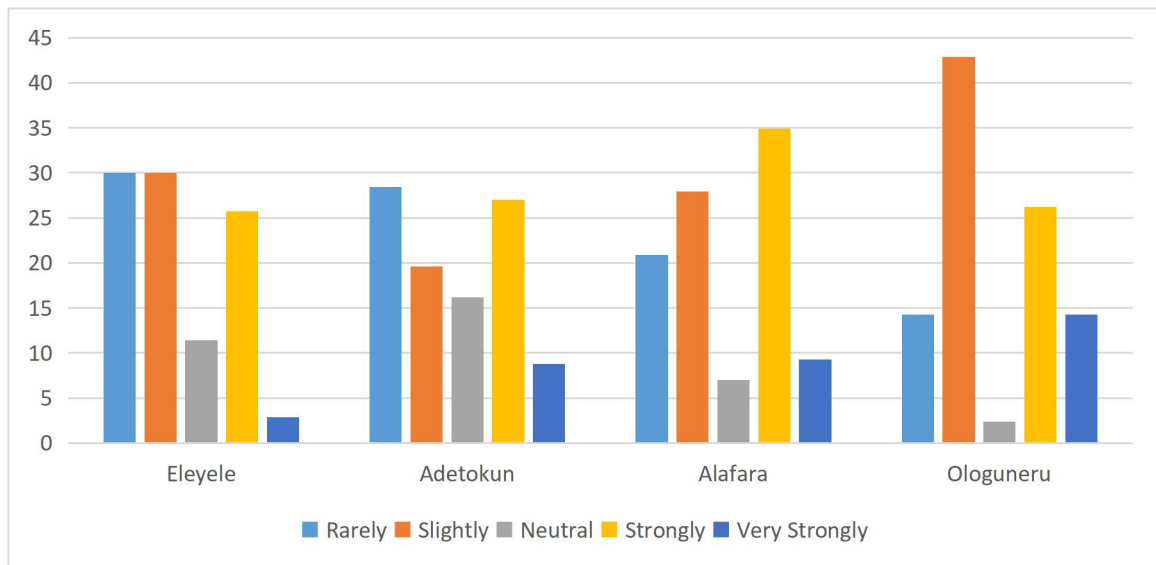


Figure 4.40 Land Use Change Effects on Means of Livelihood
Source: Fieldwork 2023

In regard to residents' perceived effect of land use changes on agricultural activities in the neighbourhood, a large majority of residents in Eleyele (55.7%), Adetokun (45.3%) and Ologuneru (52.4%) communities provided a non-affirmative response to the fact that land use changes had an effect on agricultural activities. However, majority of the respondents (54.6%) at Alafara community agreed to the fact that land use changes affected agricultural activities in the neighbourhood (Table 4.13). A Chi-square test further confirmed a significant difference in the perceived responses of the respondent across the sampled communities ($\chi^2=21.247, p = 0.047$).

Table 4.13: Perceived Effect of Land Use Changes on Agricultural Activities in the Neighbourhood

	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	12 (17.1)	28 (18.9)	12 (11.9)	5 (11.9)	57 (16.5)
Slightly	27 (38.6)	39 (26.4)	17 (19.8)	17 (40.5)	100 (28.9)
Neutral	11 (15.7)	24 (16.2)	10 (11.6)	3 (7.1)	48 (13.9)

Strongly	9 (12.9)	38 (25.7)	31 (36.0)	13 (31.0)	91 (26.3)
Very strongly	11 (15.7)	19 (12.8)	16 (18.6)	4 (9.5)	50 (14.5)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

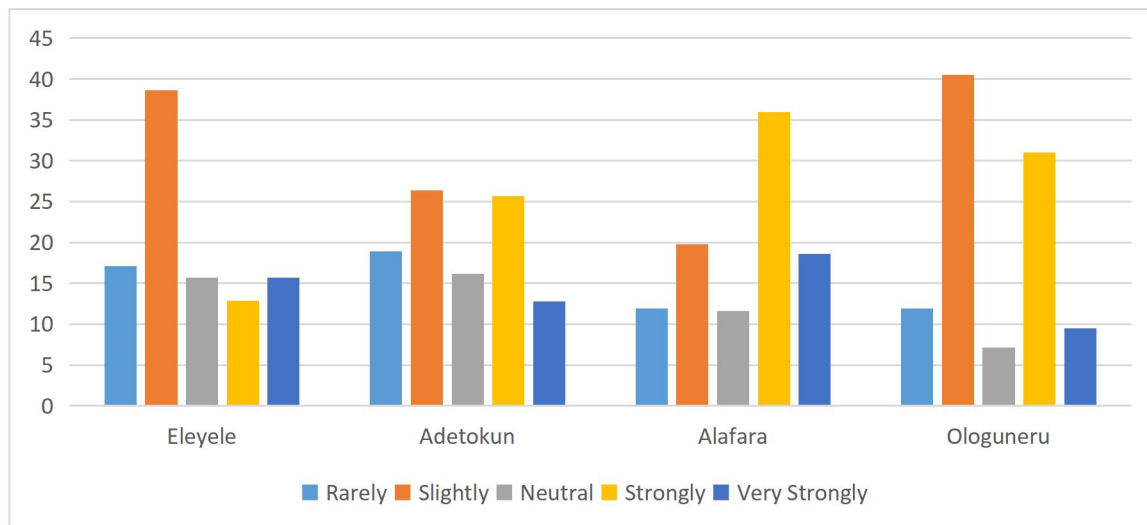


Figure 4.41 Land Use Change Effects on Agricultural Activities

Source: Fieldwork 2023

Table 4.14 revealed that majority (68.0%) of the respondents in the study area agreed to observe the improvement in socio-economic activities as a result of population increase. On the other hand, about 26.0% of the respondents claimed to rarely and slightly experience improvement in the socio-economic activities at the neighbourhood while 2.3% of the respondent had an indifferent perception. These perceived differences by respondents in the sampled peri-urban communities were statistically significant at p-value ($\chi^2= 27.434, p = 0.007$).

Table 4.14: Residents' Improvement in Socio-Economic Activities due to Population Growth

	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	4 (5.7)	10 (6.8)	1 (1.2)	2 (4.8)	17 (4.9)

Slightly	15 (21.4)	49 (33.1)	12 (14.0)	10 (23.8)	86 (24.9)
Neutral	3 (4.3)	4 (2.7)	1 (1.2)	-	8 (2.3)
Strongly	25 (35.7)	63 (42.6)	45 (52.3)	17 (40.5)	150 (43.4)
Very strongly	23 (32.9)	22 (14.9)	27 (31.4)	13 (31.0)	85 (24.6)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

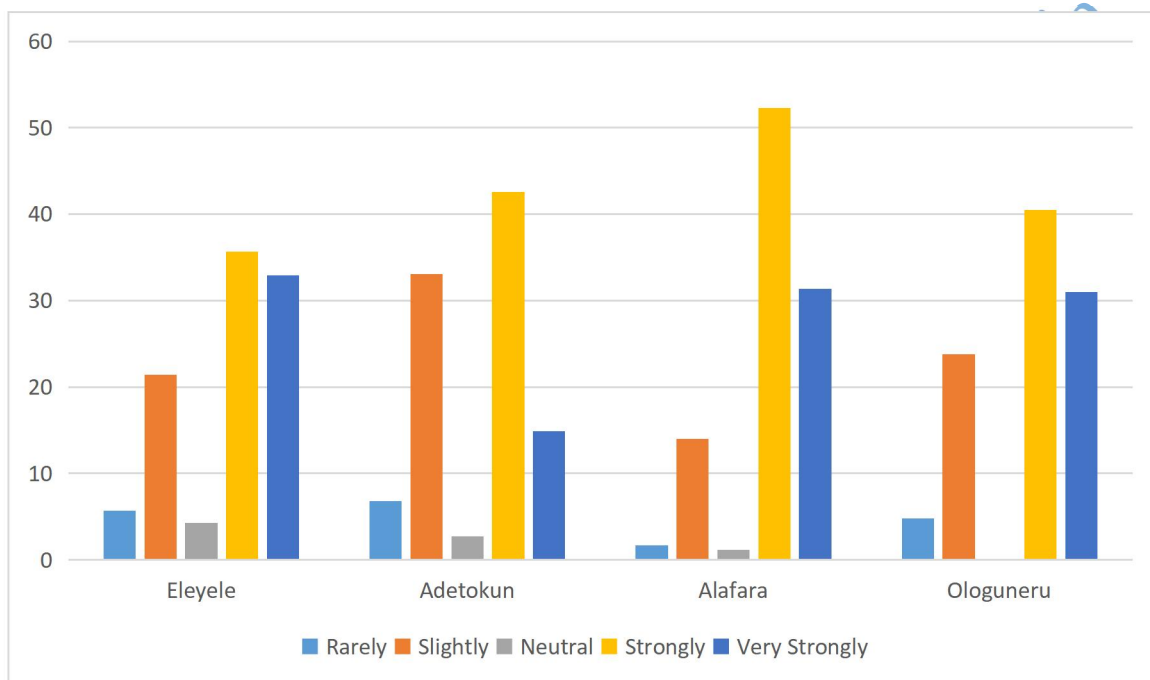


Figure 4.42 Rise in Socio-Economic Activities due to Population Growth

Source: Fieldwork 2023

The findings in Table 4.15 revealed about two-third (63.9%) of the respondents agreed to the fact that a perceived upward growth in development had an effect on rent and land cost in the study area. Furthermore, a comparison of residents' perception in the four peri-urban communities revealed that a higher proportion of the observed changes in rent and land cost was mostly opined by residents in Alafara community (83.7%) compared to other sampled communities of Ologuneru (69.0%), Eleyele (57.1%) and Adetokun (54.0%) respectively. Based on this finding, it was established in line with a Chi-square test conducted that, there was a

significant difference in residents' perception on the effect of rent and land cost as a result of rapid upward growth in development in the four peri-urban communities.

Table 4.15: Upward Growth in Development affecting Rent and Land Cost

	Residential communities				Total
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	9 (12.9)	25 (16.9)	3 (3.5)	6 (14.3)	43 (12.4)
Slightly	18 (25.7)	37 (25.0)	10 (11.6)	6 (14.3)	71 (20.5)
Neutral	3 (4.3)	6 (4.1)	1 (1.2)	1 (2.4)	11 (3.2)
Strongly	25 (35.7)	46 (31.1)	42 (48.8)	14 (33.3)	127 (36.7)
Very strongly	15 (21.4)	34 (23.0)	30 (34.9)	15 (35.7)	94 (27.2)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

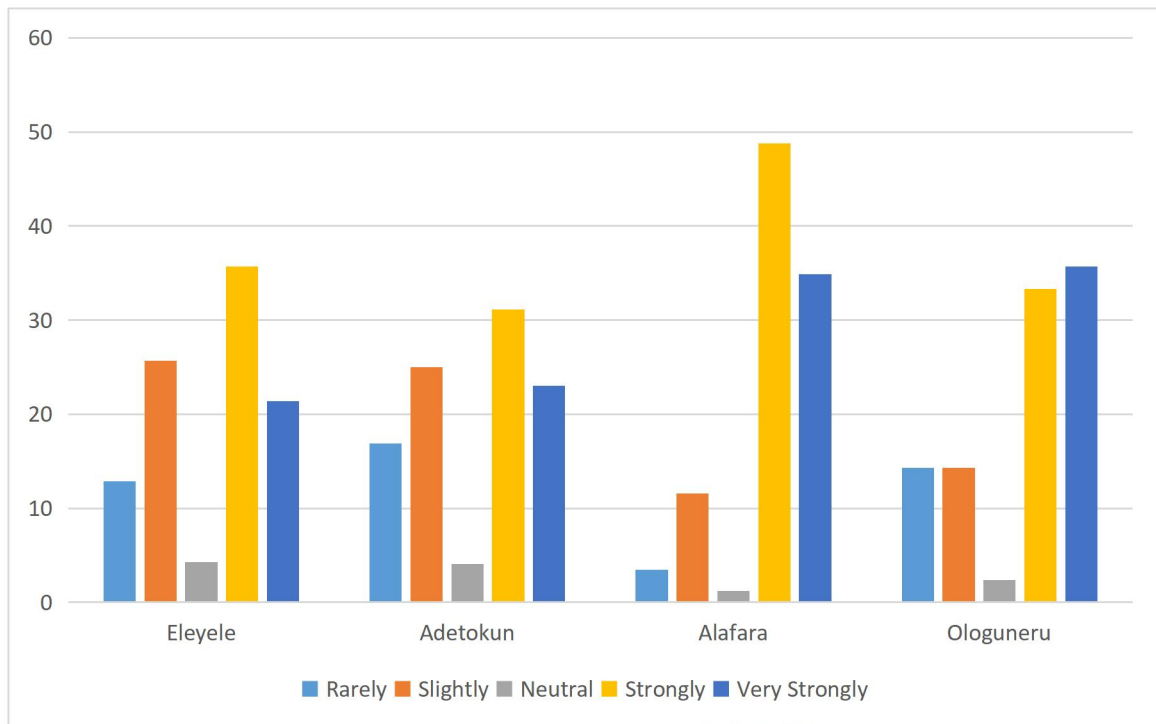


Figure 4.43 Growth in Development & It's Effects on Rent and Land Cost

Source: Fieldwork 2023

v. Effect of Land Use and Degradation on Residents' Means of Livelihood

Spearman correlation test was conducted to determine the relationship between land use degradation and residents' means of livelihood in the study area. As such, the relationship between the questions: Does change in land use and degradation affect your means of livelihood in the community? This was examined with three key questions such as: Does change in land use and degradation affect agricultural activities in the neighbourhood? Is there any noticeable increase/improvement on socio-economic activities in the neighbourhood as a result of increase in population? And, does upward growth in developments in the neighbourhood affect rent and land cost?

Findings from Table 4.16 revealed a negative and weak relationship between land use changes and socio-economic activities in the study area ($r_s = - 0.051$, $n = 346$, $p > 0.05$). However, this relationship was not

statistically significant at $p\text{-value} \leq 0.05$. A similar insignificant and weak relationship between land use change and rent/land cost was the study area. ($r_s = -0.038$, $n = 346$, $p > 0.05$). However, a positive but weak relationship was observed between land use change and agricultural activities in the study area ($r_s = 0.253$, $n = 346$, $p < 0.05$). Based on this finding, it was established that a high land use changes results in a higher effect on agricultural activities in the study area.

Table 4.16: Relationship between Land Use Change and Resident Means of Livelihood Effects

Does change in land use and degradation affect your means of livelihood in the community		
	Spearman Correlation	p-value
Agricultural activities in the neighbourhood	0.253	0.000**
Socio-economic activities in the neighbourhood	-0.051	0.342
Rent and land cost in the neighbourhood	-0.038	0.486

**Significant @ $p\text{-value} \leq 0.05$

Source: Fieldwork 2023

4.2.3.2 Analysis of Observatory Schedule and Personal Interview on Land Use Change and Degradation

Majority of the traditional rulers/land owners in the study area agreed to the rapid changes in land use with dominance of residential to other uses. The early settlers now turned to land owners' major occupation was farming and as a result, land use change affects the agricultural use. The farming occupation therefore has to give way to other jobs of which petty trading and businesses now account for large percentage in agreement with the results of the questionnaires analysis results.

The Figures 4.36 and 4.37 depicts the predominant land use of residential developments especially with participation of both public (GRAs) and private (Gated Estates) residential developers. This particular

prototype residential developments was named Transformation Estates which was anchored by a Private Gated Estate Developer under a PPP (Private Public Partnership) arrangement. By this, the State Government through its Ministry of Lands, Housing and Urban Development, enter into a contractual agreement with the private development company to release a chunk of land as equity contribution and the private developer builds, and sell to the public. According to the information obtained from the participant government official, the term of agreement is a renewable lease of 60years to the developers and a global certificate of Occupancy issued out to the developer who subsequently assigns to individual buyers.



Figure 4.44. Residential Housing Development as Predominant Land Use Change in The Study Area
Source: Fieldwork 2023



Figure 4.45. Similar Land Use Change Effect on Residential Housing Development in Alafara

Source: Fieldwork 2023

Also the rail lines that traverses part of Ido Local government areas of Idi Igbaro also affected the green areas given the modernity of the rail constructed to a dual-gauge standard, massive setback and quantum of residential developments the infrastructure has attracted along its course. The participant interviewed at the Nigeria Railway Corporation in conjunction with the Chinese Rail Construction Company that handled the construction of the new Lagos-Ibadan rail line infrastructure revealed that many other facilities were provided along the massive fast rail project dubbed as the fastest in Africa.

These other ancillary facilities built along with this rail lines contains an optic fibre cables of 5meters width provided along both sides of the rail line. By this, it is strictly forbidden for any soil to be taken, excavation or mechanical construction embarked upon within the areas. It is provided that the informants will be compensated while violators will be punished by law. It is also clearly stated that the optic fibre cables interruption could cause a breakdown of railway operations. The general public are advised to respect and abide by this instruction.

The Participant interviewed went further to inform that the project, after design, the land acquisition was appropriately compensated by the Acquiring Authority through the professional Confirming Authority, to the Compensation Beneficiaries - the Land Owners for both inexhaustible developments, economic trees and all manner of grasses taking as herbs so that everyone is compensated.



Figure 4.46 New Railway Infrastructure

Source: Fieldwork 2023

As stated above Figure 4.38 shows typical original land owners residents typified of tenement building of mud and cement screed walls. They bare original settlers and these peri-urban areas, according to a traditional chief in the study explained that those houses will continue to exists even within the GRAs and they would defies both economic and power of eminent domain by the government to acquire such lands. The reason was that it is cultural and traditional of all Ibadan indigenes to have a family compound in the inner city as well as a farmstead of a considerable distance to the city. It is farm that would requires an all year round farming which would take an annual festival or emergency for the farmer to visit the inner city during the stay in the farm. This assertion is in line with the concepts of Villagization and Farm-To-Year conceptualized in Chapter two of this work.



Figure 4.47 The Core Traditional Housing Type Still being Maintained by Original Land Owners in Alafara

Source: Fieldwork 2023

4.2.4 Research Question Four: What are the Impacts of Socio-Cultural Characteristics of the Residents and their Influence on Peri-Urbanization Development?

4.2.4.1 Residents Socio-Cultural Characteristics and Impact on Peri-Urban Development

Findings on the socio-cultural characteristics of respondents revealed that majority (73.1%) of the respondents in the study area were of mixed tribes. However, 20.2% were indigenes while non-indigenes accounted for 6.6% only. In the sampled communities, it was observed that more indigenes reside in Eleyele community compared to 18.2% and 16.7% in Adetokun, Alafara and Ologuneru communities respectively. In addition, the existence of social and cultural integration among the dwellers was observed in line with high proportion of mixed tribes in the sampled communities (Table 4.17).

Table 4.17: Residents’ Socio-Cultural Characteristics and Effects on Peri-Urban Development

Ethnicity Status	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Indigene	19 (27.1)	27 (18.2)	17 (16.7)	7 (16.7)	70 (20.2)
Non-Indigene	6 (8.6)	12 (8.1)	5 (5.8)	-	23 (6.6)
Mixed-Tribes	45 (64.3)	109 (73.6)	64 (74.4)	35 (83.3)	253 (73.1)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

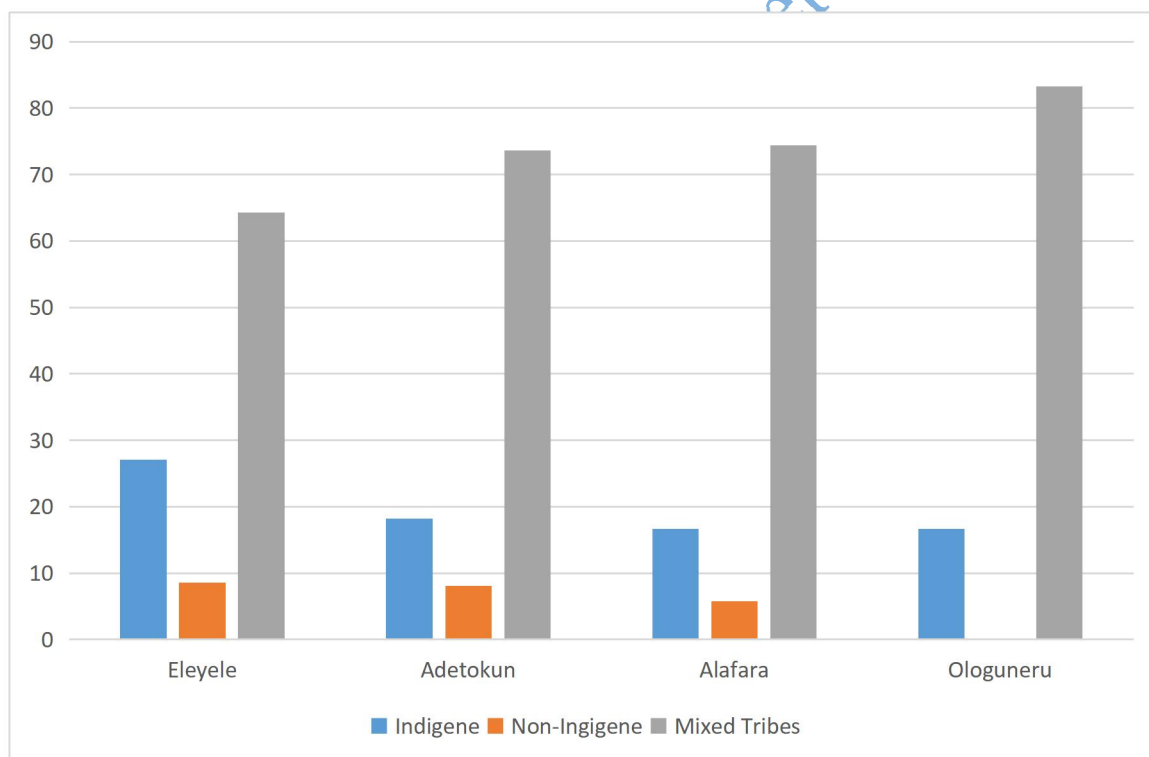


Figure 4.48 Ethnicity Status

Source: Fieldwork 2023

Furthermore, findings in Figure 4.1 summarizes residents’ community development participation in the study area. It was established that 48.5% of the respondents participated in monthly community development association meetings. In addition, about 30.0% of the respondents paid CDA levy/dues while 21.7% of the

respondents were involved in community rehabilitation activities. Based on this finding, it was however, established that, in the sampled peri-urban communities, respondents participated in the different social-cultural development activities

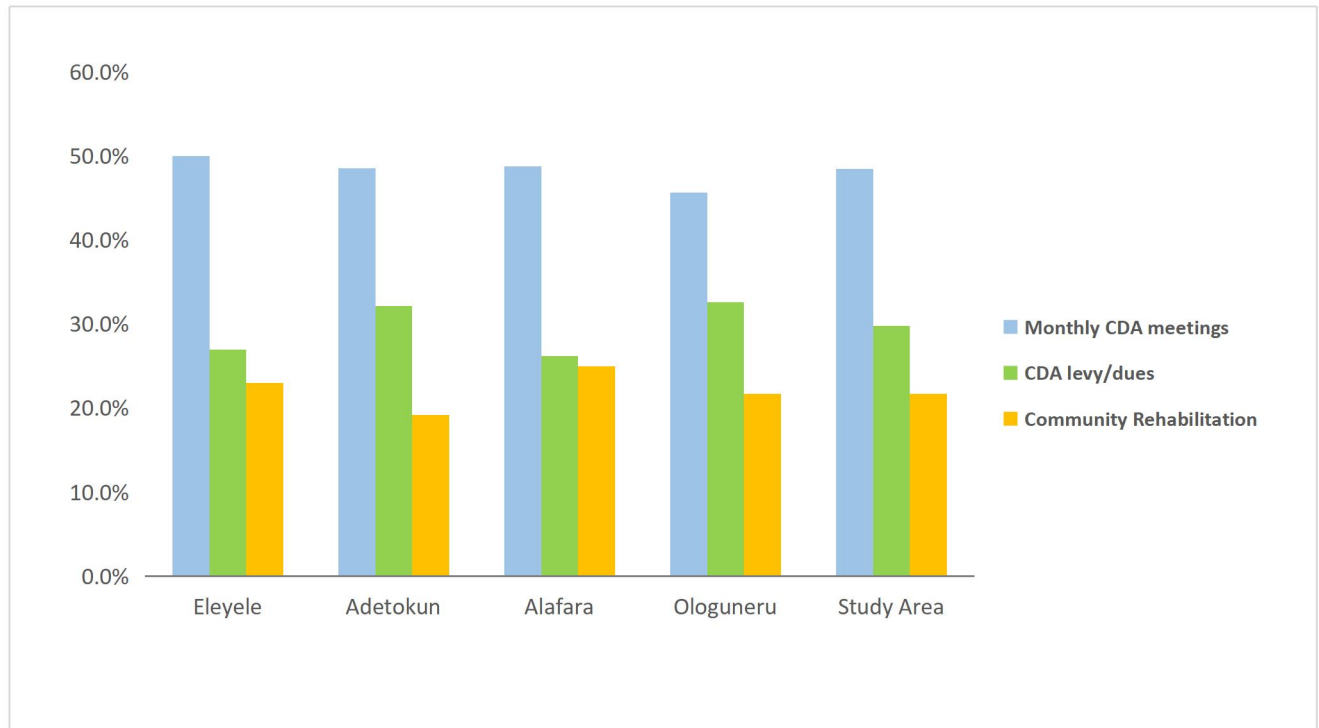


Figure 4.49: Involvement in Community Activities

Source: Fieldwork 2023



Figure 4.50. Community Health Center at Ologuneru



Figure 4.51. Baale Eleyele Ojo Busa Palace depicting the socio-cultural factor in the study area

Source: Fieldwork 2023

The impact of security of the peri-urban communities was assessed and finding was summarized in Table 4.19. Although, 30.1% of the respondents in the study affirmed to have rarely experienced the disruption of the environment during festive period; however, a considerable proportion of the respondents suggested otherwise.

Table 4.19: Peri-Urban Residents' Experience of Disruption and Associated Criminal Activities

<i>Disruption during Festive Period</i>	Residential communities				Total
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	16 (22.9)	46 (31.1)	31 (36.0)	11 (26.2)	104 (30.1)
Slightly	18 (25.7)	23 (15.5)	14 (16.3)	14 (16.3)	77 (22.3)
Neutral	31 (44.3)	53 (35.8)	25 (29.1)	2 (4.8)	111(32.1)
Strongly	3 (4.3)	22 (14.9)	16 (18.6)	6 (14.3)	47 (13.6)
Very strongly	2 (2.9)	4 (2.7)	-	1 (2.4)	7 (2.0)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Criminal Activities

Never	26 (37.1)	66 (44.6)	35 (40.7)	24 (57.1)	151 (43.6)
Almost Never	9 (12.9)	28 (18.9)	13 (15.1)	10 (23.8)	60 (17.3)
Occasionally	33 (47.1)	53 (35.8)	37 (43.0)	8 (19.0)	131 (37.9)
Almost every time	2 (2.9)	1 (0.7)		-	3 (0.9)
Every time	-	-	1 (1.2)	-	1 (0.3)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Source: Fieldwork 2023

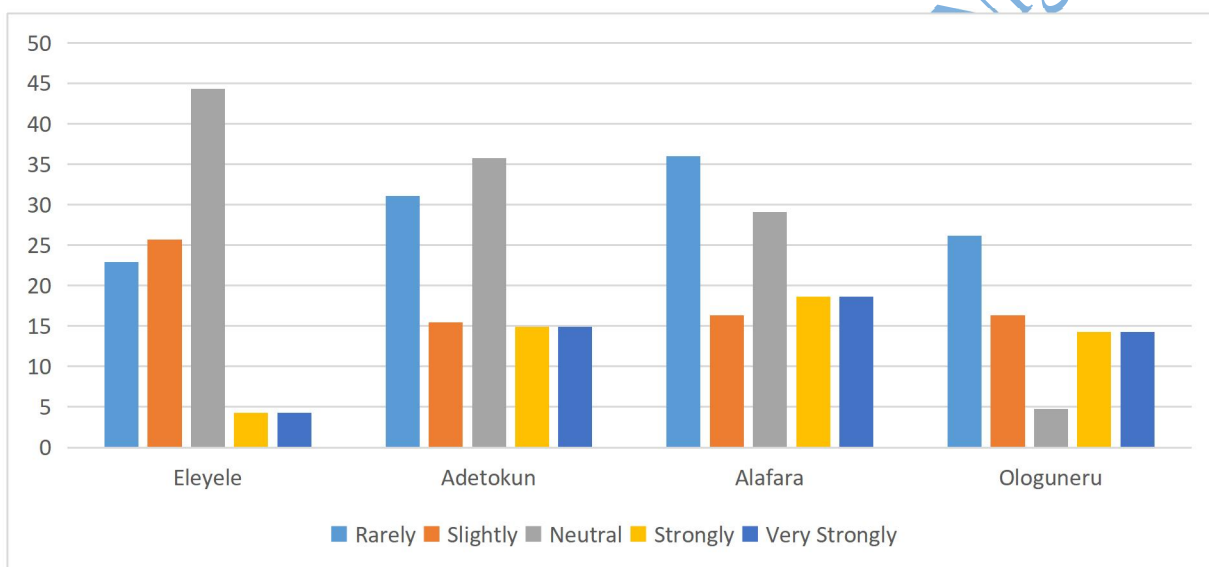


Figure 4.52 Traditional Festive Disruption

Source: Fieldwork 2023

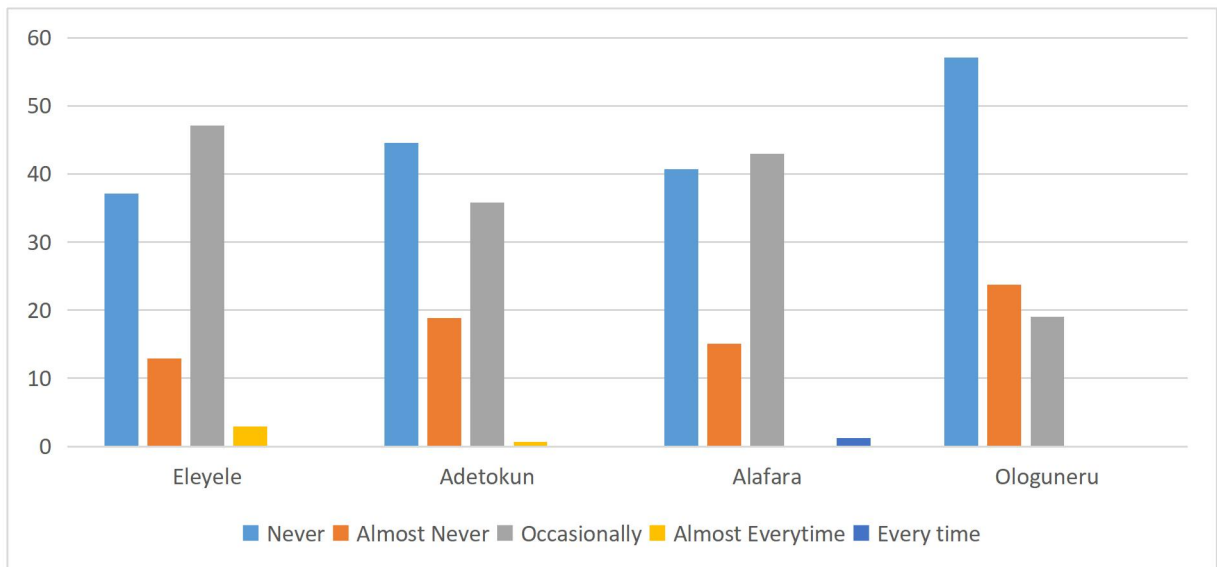


Figure 4.53. Respondents' Perception of Crimes

Source: Fieldwork 2023

Furthermore, in terms of residents' perception of criminal activities within the peri-urban communities, findings revealed that about 44.0% of the respondents across the sampled peri-urban communities indicated a non-occurrence of criminal activities (Table 4.19). On the other hand, majority (56.4%) of the respondents indicated to the experience of criminal activities at several instances in the community. With this finding, it was deduced that inadequate security remains a common challenge across the sampled communities.

4.2.5 Research Question Five: What are the Effects of Land Degradation on the Health of Peri-Urban Dwellers?

The impacts of land degradation and land use changes on the urban quality of life of the residents were measure with variables in term of findings on the type of land degradation based on its components namely; natural and artificial. The natural cause include increase in volume of water body due to effects of climate changes, increase in heat waves due to deforestation, and flooding. Artificial land degradation components are as a result of indiscriminate refuse dump with its attendant blockage of water course bringing about erosion/flooding, sand lifting and unplanned housing development leading to informalities in the study area.

4.2.5.1 Effects of Land Deterioration on the Health of Peri-Urban Dwellers



Figure 4.54 Land Degradation Due to Natural (Marshy Land) and Artificial (Soil Lifting).

Source: Earth Google GIS 2023

i. Types of Land Degradation Experienced in the Peri-Urban Communities

Table 4.20 summarizes the different environmental degradation perceived by residents in the peri-urban communities. In terms of flooding, majority (49.1%) of the respondents were indifferent while 18.2% were rarely affected by flood occurrence in recent years. Furthermore, about 33.0% of the respondents in the study area agreed to being affected by flood; but, on different scale. With this finding, it was established that, flooding remains a reoccurring environmental and health challenge in the peri-urban communities in recent years. It is important to note that some of the factors contributing to flooding in the study area is associated with the rapid/uncontrolled development activities and the encroachment of setbacks of water-bodies in the community.

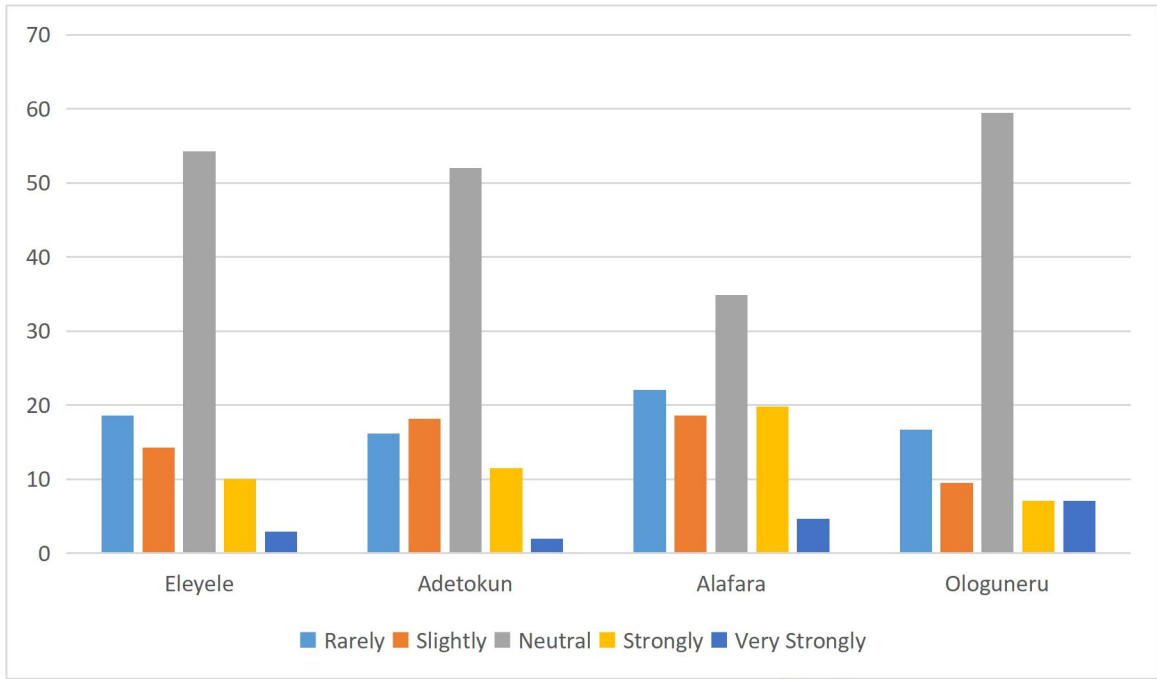


Figure 4.55 Flooding Occurrence in the study areas

Source: Fieldwork 2023



Figure 4.56. Flooding as annual occurrence in Alafara as a result of uncontrolled development

Source: Fieldwork 2023

Owing to this reality, majority (76.3%) of the respondents in the study area observed a reduction in the size/strength of water bodies, as well as changes in the drainage pattern of the sampled communities. Only a minute proportion accounting for 10.1% rarely observed any changes in the drainage pattern and decrease in the level of water body in the study area.

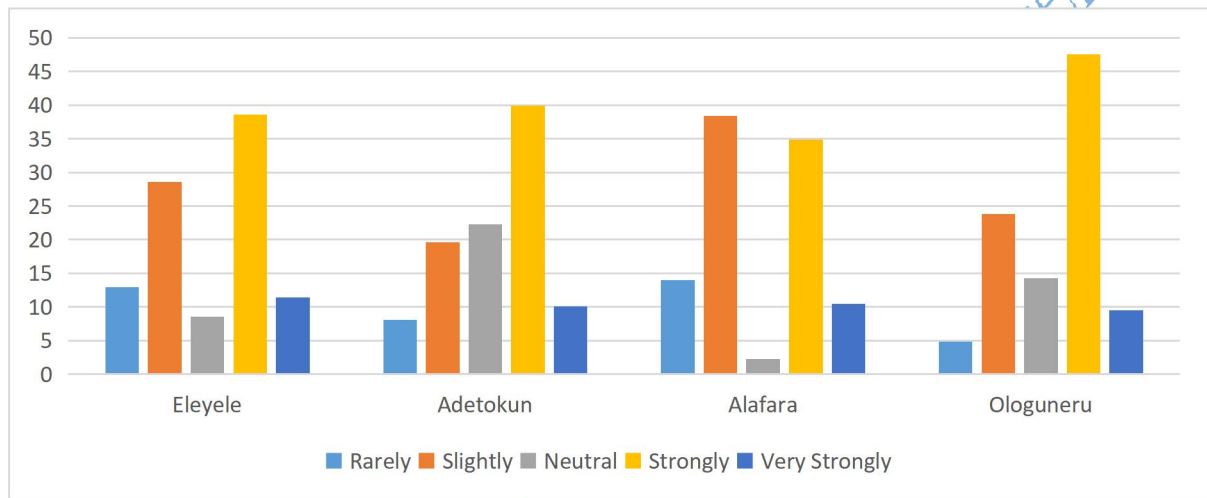


Figure 4.57 Reduction in Water Body Level

Source: Fieldwork 2023

Do Not Copy, Lead



Figure 4.58 River Ela Water Dries Off Due to Increased Housing Development

Source: Fieldwork 2023

In similar manner, majority of the respondents were neither satisfied nor dissatisfied (neutral) with the process of soil/sand lifting in the study area. As observed from Table 4.20, 32.7% of the sampled respondents had an indifferent perception regarding the process of soil lifting activity in the study area. On the other hand, 21.4% of the respondents were observed to be satisfied while 27.5% were slightly satisfied. Respondents who were rarely satisfied accounted for 18.5% only. The proportion of respondents who were rarely satisfied was further observed to be higher in Eleyele community (27.1) compared to the other sampled communities of Alafara (24.4%), Adetokun (14.2%) and Ologuneru (7.1%).

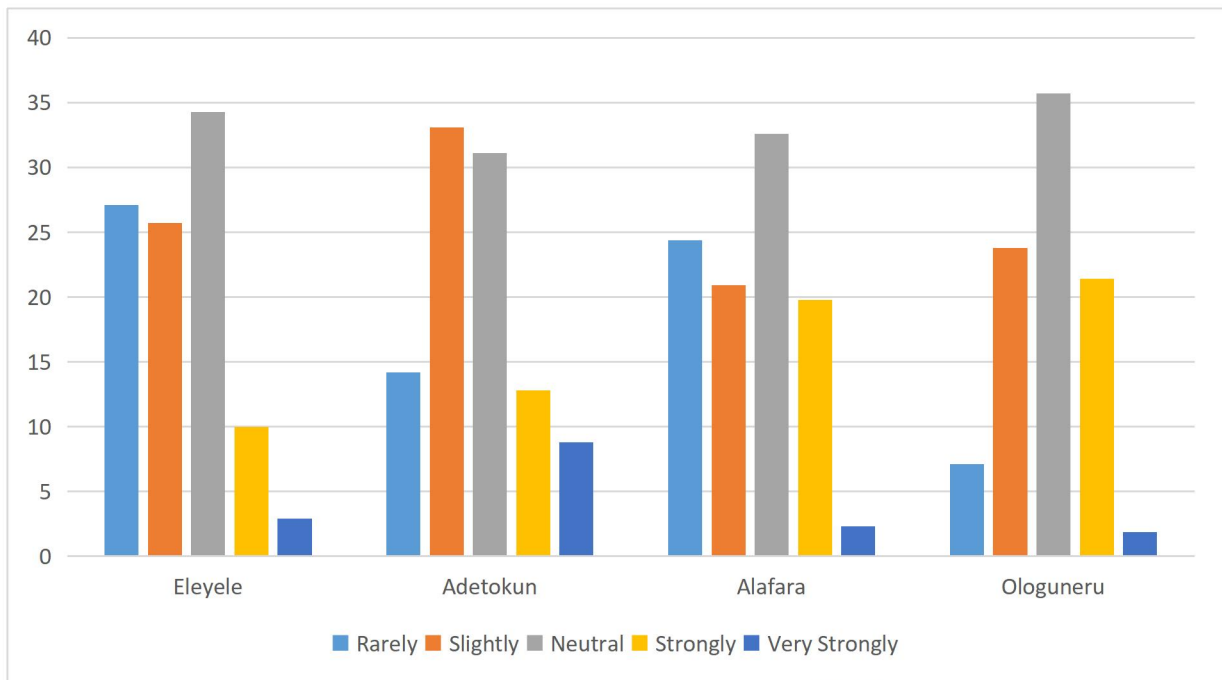


Figure 4.59 Sand Lifting Activities in the Study Area

Source: Fieldwork 2023



Figure 4.60. Sand lifting Activities in Eleyele Area

Source: Fieldwork 2023



Figure 4.61 Sand Lifting Activities in Ologuneru Area

Source: Fieldwork 2023

Another type of land degradation experienced by respondents in the study was associated with the increase in volume of waste generated and the indiscriminate disposal of waste. As observed, 86.1% of the respondents perceived that there was an increase in the volume of waste generated in the study area. However, in terms of waste disposal, less than a quarter (24.0%) of the respondents observed a proper method of disposing waste.

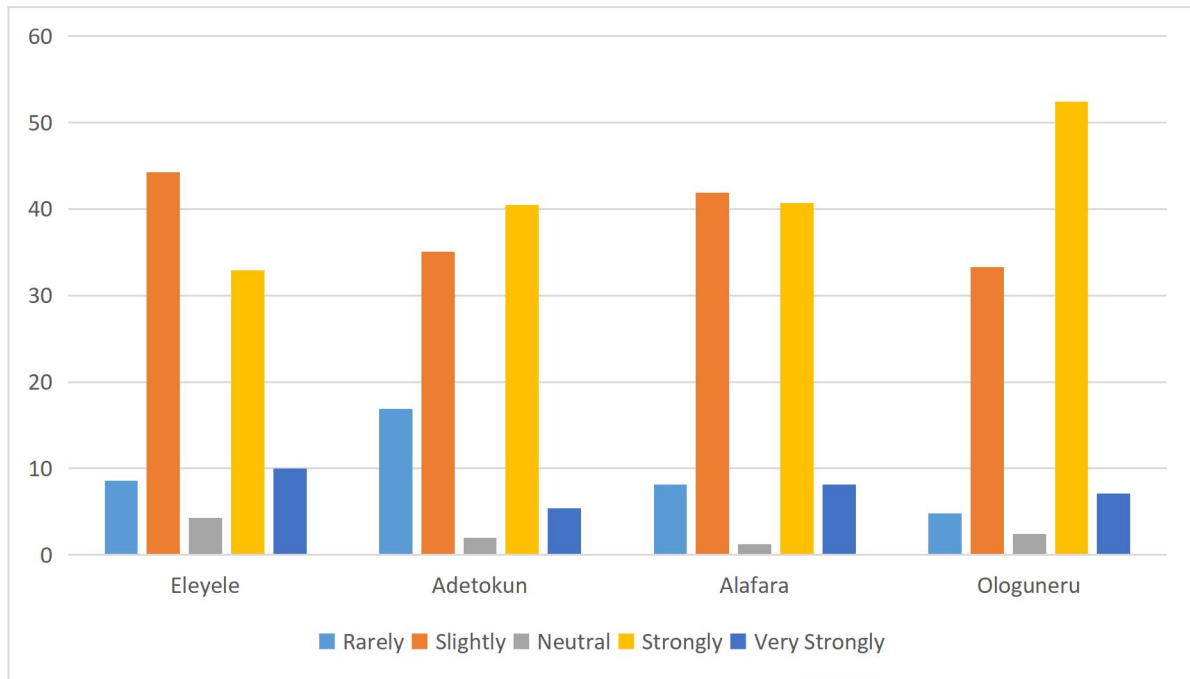


Figure 4.62 Increase in Waste Volume in the Study area
Source: Fieldwork 2023

Closely associated with increase in waste generation by the respondents is the indiscriminate refuse disposal in the study area which is one of the major causes of flooding and as well as reduction in volume of water in the natural streams and rivers in the study area. The below pie chart in figure 4.53 indicates the level of indiscriminate waste disposal from one location to the other. The respondents in agreement to a slightly are well over 50% followed by those in agreement with rarely indiscriminate disposal of waste at over 30% while the least was those that feels very strongly about the issue.



Figure 4.63 Increase in Water level and annual flooding effects on Road Infrastructure

Source: Fieldwork 2023

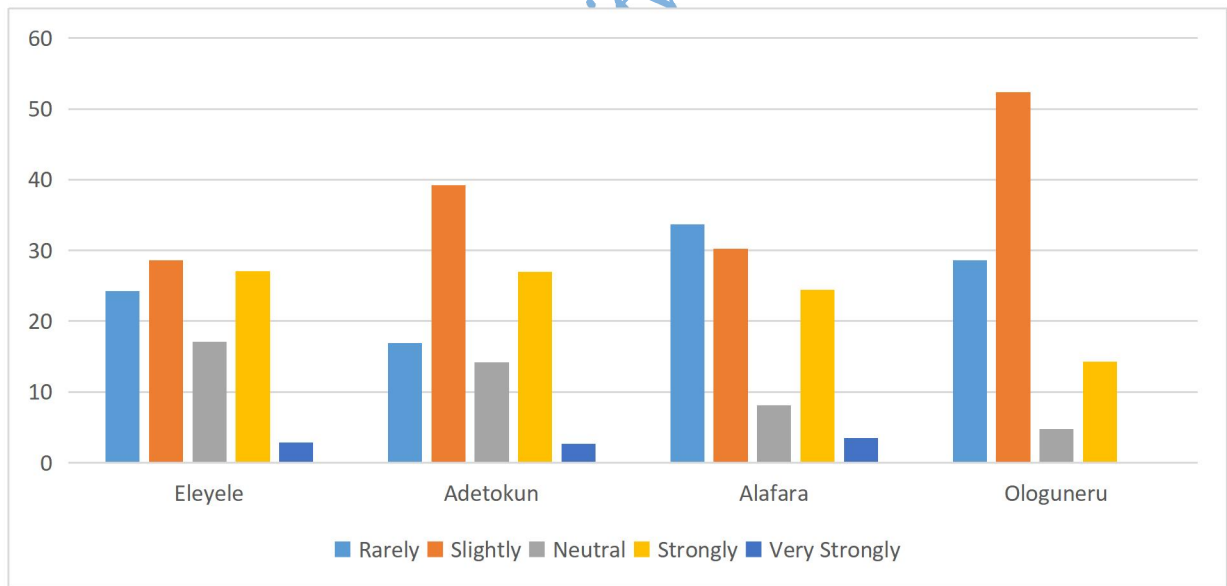


Figure 4.64 Indiscriminate waste Disposal in the Study Area

Source: Fieldwork 2023



Figure 4.65 Indiscriminate Refuse Dump on Eleyele Lake Water Buffer Zone

Source: Fieldwork 2023



Figure 4.66.Indiscriminate Refuse Dump along Main Ido Road, Ologuneru

Table 4.20: Residents' Perceived Land Degradation in the Study Area

Increased Waste Production	Residential communities				
	Eleyele	Adetokun	Alafara	Ologuneru	Total
	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>	<i>Freq. (%)</i>
Rarely	6 (8.6)	25 (16.9)	7 (8.1)	2 (4.8)	40 (11.6)
Slightly	31 (44.3)	52 (35.1)	36 (41.9)	14 (33.3)	133 (38.4)
Neutral	3 (4.3)	3 (2.0)	1 (1.2)	1 (2.4)	8 (2.3)
Strongly	23 (32.9)	60 (40.5)	35 (40.7)	22 (52.4)	140 (40.5)
Very strongly	7 (10.0)	8 (5.4)	7 (8.1)	3 (7.1)	25 (7.2)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)
Affected by Flooding in Recent years					
Rarely	13 (18.6)	24 (16.2)	19 (22.1)	7 (16.7)	63 (18.2)
Slightly	10 (14.3)	27 (18.2)	16 (18.6)	4 (9.5)	57 (16.5)
Neutral	38 (54.3)	77 (52.0)	30 (34.9)	25 (59.5)	170 (49.1)
Strongly	7 (10.0)	17 (11.5)	17 (19.8)	3 (7.1)	44 (12.7)
Very strongly	2 (2.9)	3 (2.0)	4 (4.7)	3 (7.1)	12 (3.5)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)
Indiscriminate Refuse Disposal					
Rarely	17 (24.3)	25 (16.9)	29 (33.7)	12 (28.6)	83 (24.0)
Slightly	20 (28.6)	58 (39.2)	26 (30.2)	22 (52.4)	126 (36.4)
Neutral	12 (17.1)	21 (14.2)	7 (8.1)	2 (4.8)	42 (12.1)
Strongly	19 (27.1)	40 (27.0)	21 (24.4)	6 (14.3)	86 (24.9)
Very strongly	2 (2.9)	4 (2.7)	3 (3.5)	-	9 (2.6)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Satisfaction with soil/sand lifting activities

Rarely	19 (27.1)	21 (14.2)	21 (24.4)	3 (7.1)	64 (18.5)
Slightly	18 (25.7)	49 (33.1)	18 (20.9)	10 (23.8)	95 (27.5)
Neutral	24 (34.3)	46 (31.1)	28 (32.6)	15 (35.7)	113 (32.7)
Strongly	7 (10.0)	19 (12.8)	17 (19.8)	9 (21.4)	52 (15.0)
Very strongly	2 (2.9)	13 (8.8)	2 (2.3)	5 (11.9)	22 (6.4)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Reduction in water body strength and changes in drainage pattern

Rarely	9 (12.9)	12 (8.1)	12 (14.0)	2 (4.8)	35 (10.1)
Slightly	20 (28.6)	29 (19.6)	33 (38.4)	10 (23.8)	92 (26.6)
Neutral	6 (8.6)	33 (22.3)	2 (2.3)	6 (14.3)	47 (13.6)
Strongly	27 (38.6)	59 (39.9)	30 (34.9)	20 (47.6)	136 (39.3)
Very strongly	8 (11.4)	15 (10.1)	9 (10.5)	4 (9.5)	36 (10.4)
Total	70 (100.0)	148 (100.0)	86 (100.0)	42 (100.0)	346 (100.0)

Do Not Copy, Lead City University, Nigeria

Source: Fieldwork 2023

4.2.5.2 Effect of Climate Change Indicators in the Peri-Urban Communities

Residents' perceived effect of climate change based on three indicators (i.e. heat wave, rainfall and flooding) was assessed using a 5-point Likert Scale of '*Rarely*', '*Slightly*', '*Neutral*', '*Strongly*', and '*Very Strongly*'. In achieving this, assigned values of 1, 2, 3, 4 and 5 were given to each of the ratings respectively. Findings showed that majority of the respondents were not able to ascertain the level at which climate change indicators had affected the environment and health condition in the community.



Figure 4.67. Land Degradation Effect Part of Road and on Building Foundation Due to Flooding
Source: Fieldwork 2023



Figure 4.68 Climate Change Effect and Spatial Degradation in the Alafara
Source: Fieldwork 2023

As summarized in Table 4.21, the aggregate mean score of respondents in the study was 3.05. This suggests that the residents were indifferent to the effect of climate changes in the study area. A similar aggregate mean

was observed in Eleyele, Adetokun and Alafara communities. The mean values for these communities were above 3.0 (Table 4.21). Furthermore, the aggregate mean score to the identified climate change indicators in Ologuneru was observed to be closer to being ‘Neutral’. A similar aggregate mean was observed for Eleyele, Adetokun and Alafara communities. These aggregate mean values were above 3.0.

Specifically, the perceived effect of climate change on rainfall in each communities showed that, on the average, respondents perceived that rainfall has been strongly affected. The mean scores in each of these sampled communities was above the scale of 3 assigned to ‘Neutral’ and closer to the weight value of 4. For the effect of climate change with regards to heat wave, respondents in each of the sampled communities were largely indifferent (neutral). The mean score as computed from respondents’ perception in Eleyele, Adetokun, Alafara and Ologuneru was 2.89, 2.77, 2.83 and 2.55 respectively. These was closer to the assigned ratings value of 3. A similar scenario was observed for the effect of climate change on flooding as respondents mean score was closer to 3 assigned for ‘Neutral’.

Table 4.21: Perceived Effect of Climate Change Indicators

Indicators	Residential communities				Overall Study Area
	Eleyele	Adetokun	Alafara	Ologuneru	
	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>	<i>Mean</i>
Heat wave	2.89	2.77	2.83	2.55	2.78
Rainfall	3.56	3.64	3.50	3.48	3.57
Flooding	2.99	2.80	2.67	2.81	2.81
Agg. Mean	3.14	3.07	3.00	2.94	3.05

**Note: Rating score ranges from 1=Rarely, 2=Slightly, 3=Neutral, 4=Strongly, 5=Very Strongly*

Source: Fieldwork 2023

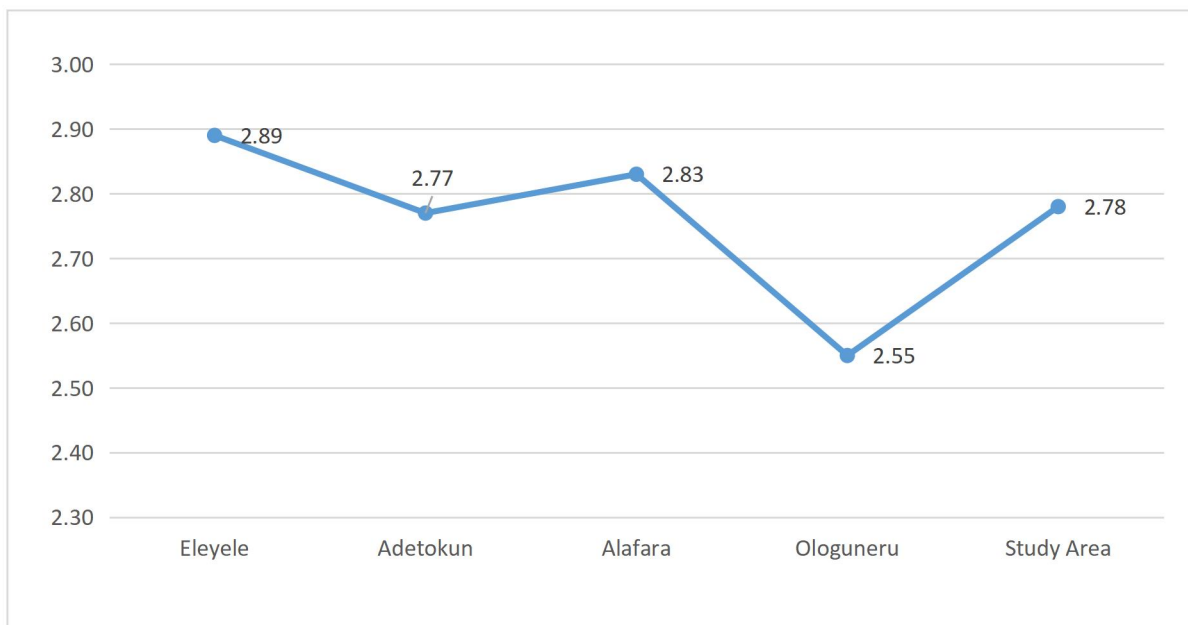


Figure 4.69. Average Perceived Effect of Climate Change on Heat Wave

Source: Fieldwork 2023

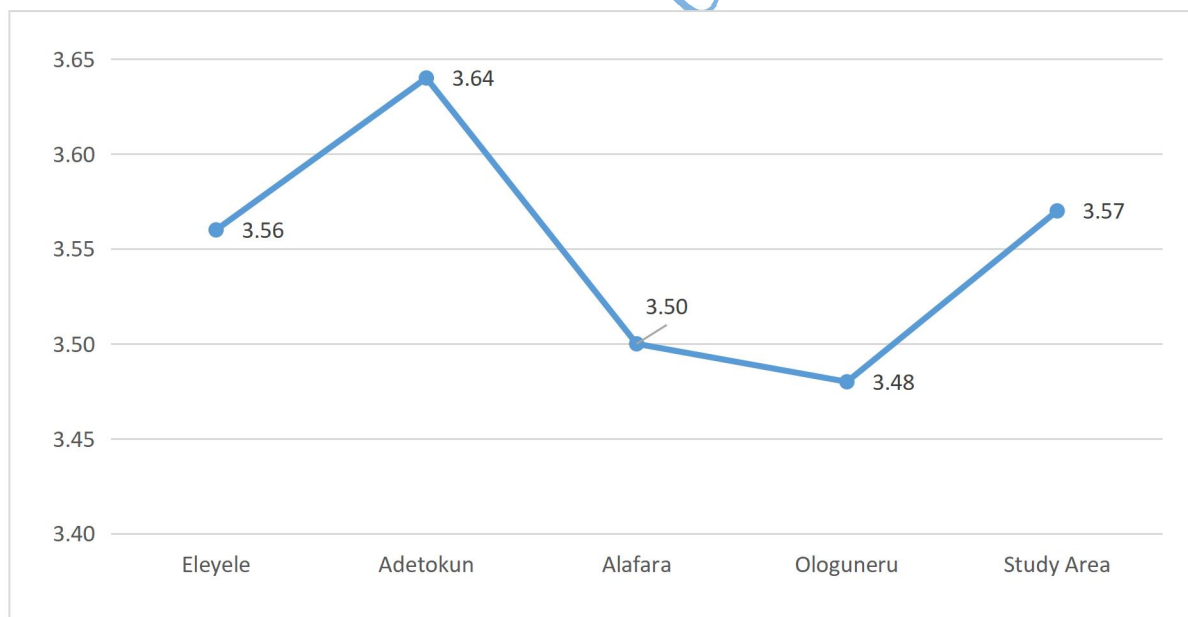


Figure 4.70 Average Perceived Effect of Climate Change on Rainfall

Source: Fieldwork 2023

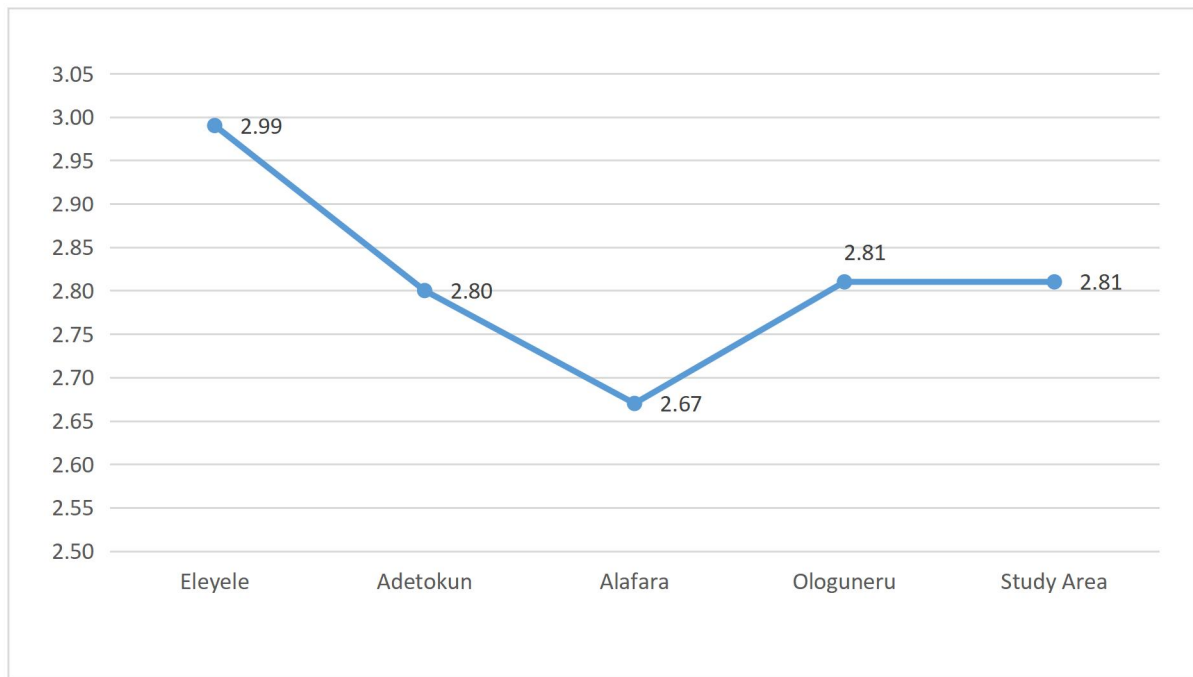


Figure 4.71: Average Perceived Effect of Climate Change on Flooding

Source: Fieldwork 2023

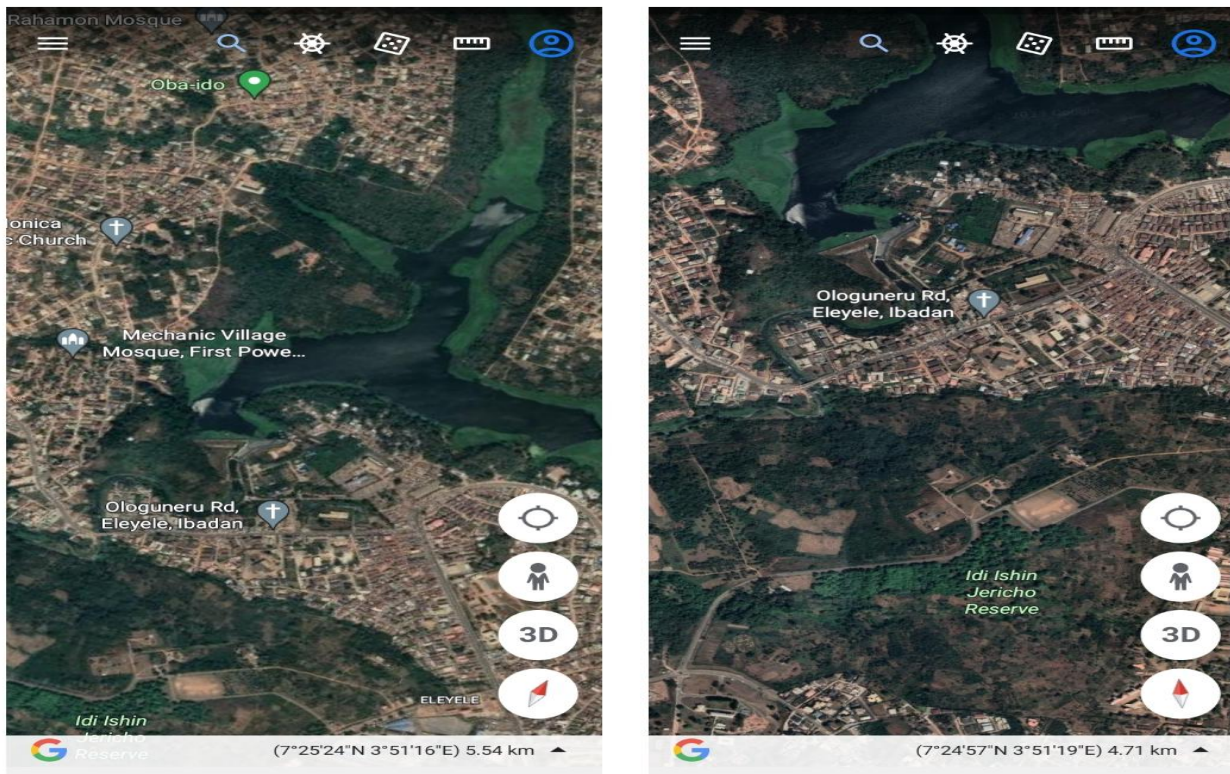


Figure 4.72. Earth Google Aerial Capturing of Water Body and Land Degradation in Eleyele and Alafara Areas

Source: Fieldwork 2023

4.2.5.3 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 communities, 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 4.5 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 about 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.

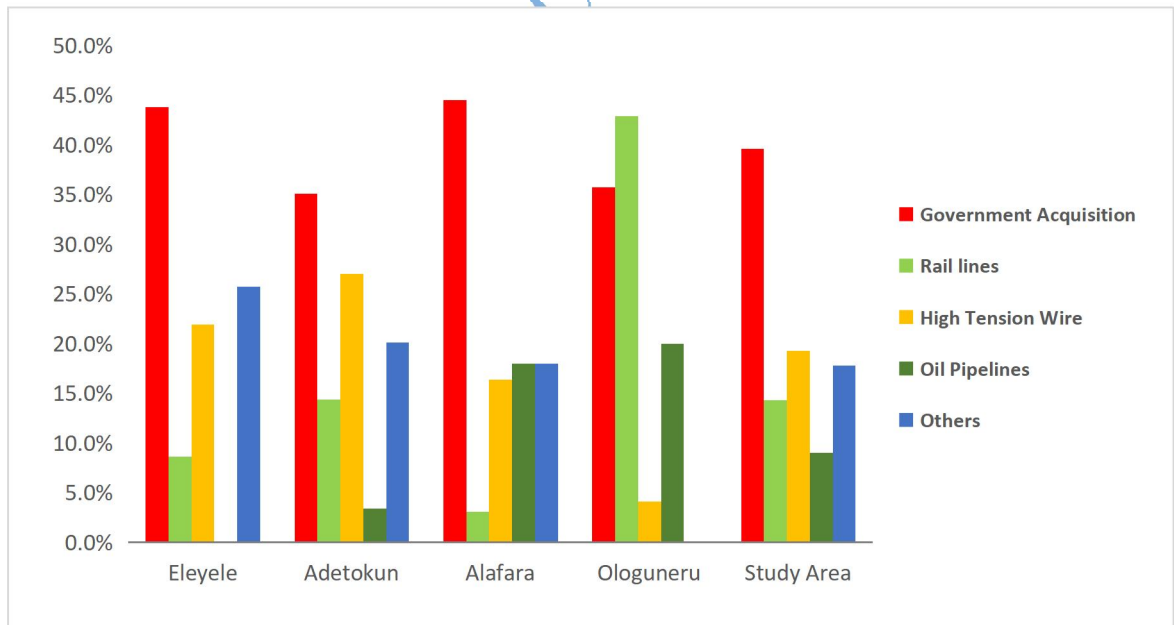


Figure 4.73: Encroachment on Vulnerable Areas

Source: Fieldwork 2023



Figure 4.74. Effect of Encroachment on Oil Pipeline in the Ologuneru Area

Source: Fieldwork 2023

4.2.5.4 Residents' Awareness on the Health Hazard of Vulnerable Areas Development

In Figure 4.75, about 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.

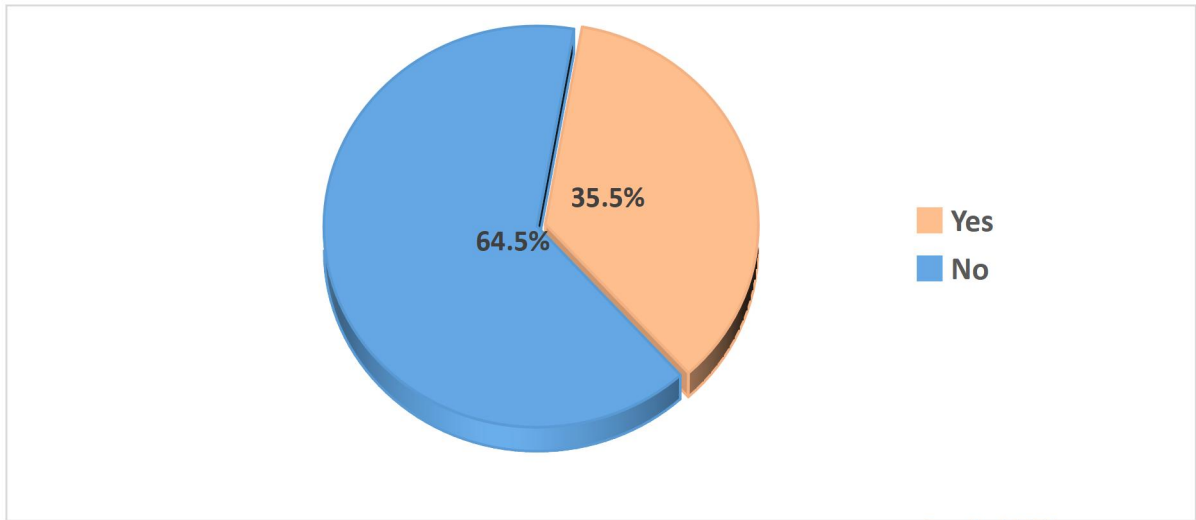


Figure 4.75: Awareness of the Health Hazard of Developing on Vulnerable Areas

Source: Fieldwork 2023



Figure 4.76. Buildings and Business Activities Under 33kva High Tension Wire

Source: Fieldwork 2023



Figure 4.77. Buildings and Non-Compliance with Setbacks on Oil Pipeline in Ologuneru Area

Source: Fieldwork 2023



Figure 4.78. Oil Pipeline Infrastructure and Housing Development in Alafara Area

Source: Fieldwork 2023

4.2.5.5 Analysis of Growth Trend and Land Use Classification in the Study Area

This analysis highlights the importance of satellite imagery and land use classification in understanding the impacts of land degradation on the health of the dwellers in the study area of Eleyele, Adetokun, Alafara and Ologuneru, in Ibadan.

As the last objective of the study, assessment of land use changes over time, identification of land degradation hotspots, and analyzing the relationship between land degradation and peri-urban interface dynamics is essential. In achieving this, details of satellite imagery acquisition for a 20-year period, preprocessing, land use classification methods, and accuracy assessment techniques have been employed to collect and analyze data.

1. Satellite Image Acquisition

The area of interest (study area) was gridded into 165 tiles for the purpose of image acquisition. The size of each tile ranges from 700 to 1000 meters. Each tile serves as guide for image acquisition. The images dates span from 2005, 2010, 2015 to 2020. So the historical images are acquired (downloaded) from Google Earth. After the acquisition of the whole images, they are later mosaicked to form single entity for each year as it is required by the study. Below in Table 4.22 is the raster information of the images.

Table 4.22. Raster Information

Property	Value
Raster Information	
Columns and Rows	1070,562
Number of Bands	4
Cell Size (X, Y)	1,3078292, 1.3078292
Uncompleted Size	2.29MB
Format	TIFF
Source Type	Generic
Pixel Type	unsigned integer

Pixel Depth	8 Bit
No Data Value	
Colormap	Absent
Pyramids	Absent
Compression	LZW
Mensuration Capabilities	Basic
Status	Permanent

Source: Fieldwork 2023

The technology is referred to as remote sensing. It detects and monitors physical features of an area by measuring its reflected and emitted radiation at a distance from a satellite with the aid of special cameras which assists the researcher to ‘sense’ things in the earth surface⁶.

Three major software employed in carrying out this exercise include; Google Earth Pro - used to acquire (downloaded) the images, QGIS – was used to geo-referenced, processed and mosaicked the images and lastly, ArcGIS- used to digitized and carry out spatial analysis of the land area.

2. Vectorisation

This is the process of converting rasters into vectors useful for land use mapping and terrain modeling. The images are digitised based on their available features with aide of shape-files. The shape-files basically used are polygon, as the study is more of area based inquiry. The digitisation was carried by grouping the features on the images to either be developed or undeveloped. ■

Preprocessing satellite imagery involves image preparation and processing operations embarked upon before analysis to correct image distortions from imaging systems, sensors, and observing conditions⁷. In the process, the electromagnetic energy reflects off the surface of the earth and up to the satellite sensor, which collects and

records information about the energy⁸. The acquired satellite imagery, are as contained in Figures 4.79 to 4.82 below.

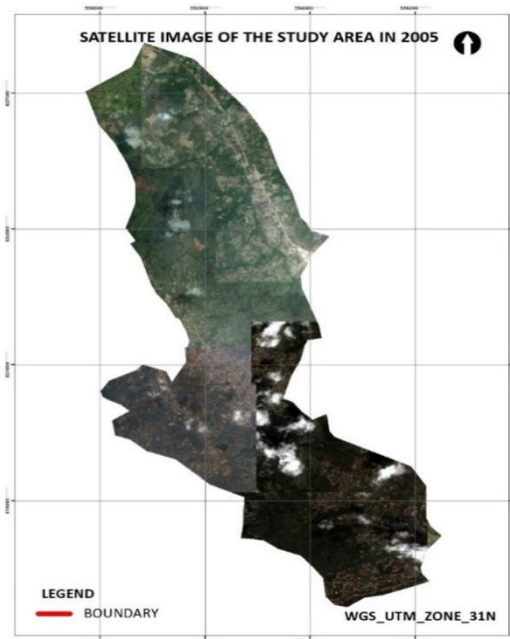


Figure 4.79 Satellite Image, Year 2005
Source: Fieldwork 2023



Figure 4.80 Satellite Image 2010
Source: Fieldwork 2023

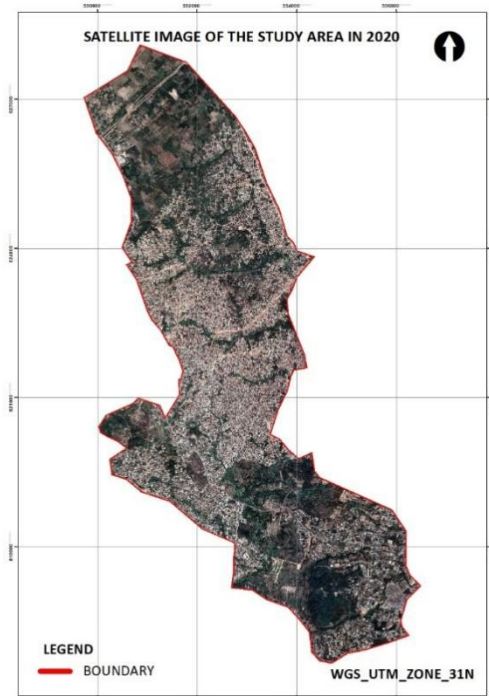
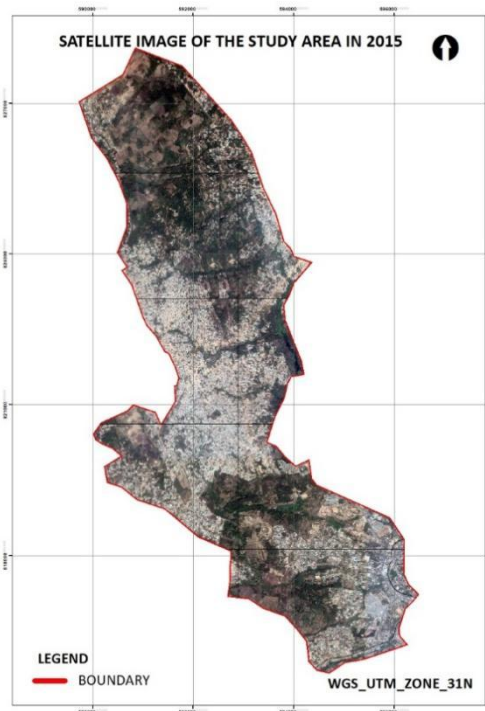


Figure 4.81 Satellite Image, Year 2015
Source: Fieldwork 2023

Figure 4.82 Satellite Image 2020
Source: Fieldwork 2023

3. Land Use Classification and Land Use Changes

Generally, land can be classified on the basis of ownership (private and Public) or developmental (developed and un-developed). Specifically, classification was made from the acquired (downloaded) images based on the extracted features on it. Two criteria were used for this classification exercise; developed and undeveloped. Developed area refers to any part of the study area where developmental activities had taken place as result of human activities and or alterations which may either, have positive or negative impact on the land formation components. Undeveloped area is referred to as any part of the study area where the natural land-cover has never been altered by either, human or natural occurrences, thereby not having negative impact on the land formation components.

However, the classification in this study relates to land use changes in the peri-urban areas of Eleyele, Adetokun, Alafara and Ologuneru over a 20-year period. Basically, the results from this exercise are; maps, graphs, and statistical analysis illustrating the trends and magnitudes of land use changes for the period starting from 2005, 2010, 2015 and 2020. This limitation was as a result of what is obtainable from the GIS earth google search and download otherwise, it would have been up till 2023. Figures 4.83 to 4.86 below shows the land use classification for the 20-year period under review.

4. Identification of Land Degradation Hotspots

Land degradation is the persistent reduction in land production capacity, leading to soil erosion, loss of biodiversity, and deforestation. These components occurs in the study catchment area but identification of land degradation hotspots is attached to developed areas through land use and land cover changes as contained in the land use classification maps below Figures 4.83 to 4.86. Specific areas with significant degradation based

on land use classifications and associated changes contained in the satellite imagery are identified with observatory schedule inspections to the communities in the study area. See Figures 4.87 to 4.89.

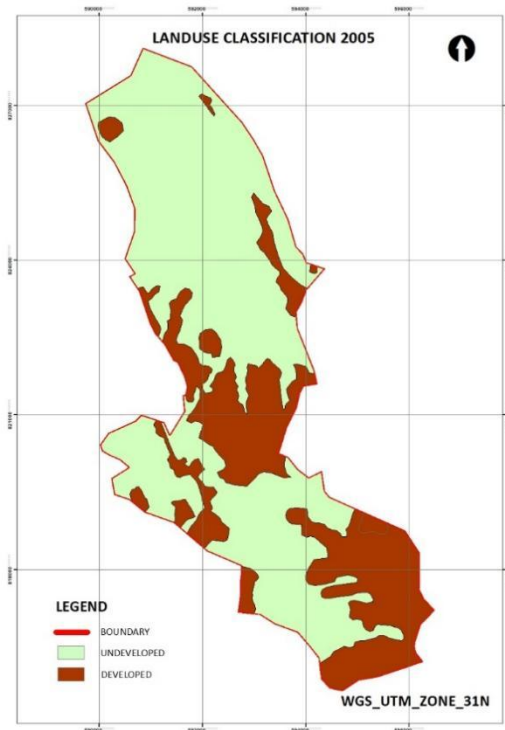


Figure 4.83 Land Use Classification, Year 2005
Source: Fieldwork 2023

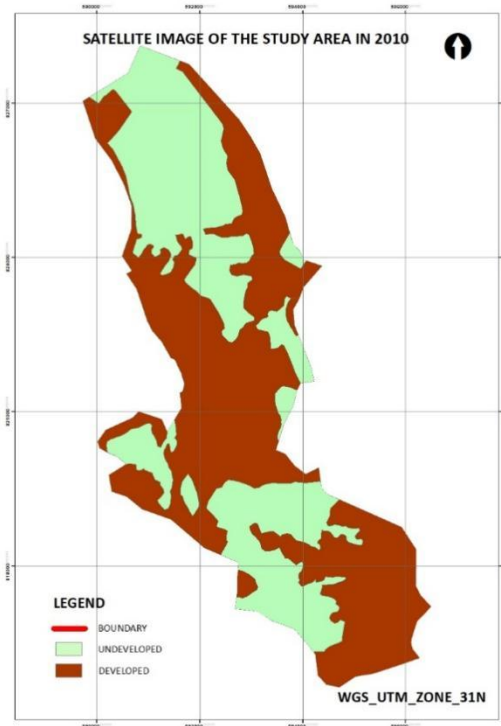


Figure 4.84 Land Use Classification 2010
Source: Fieldwork 2023

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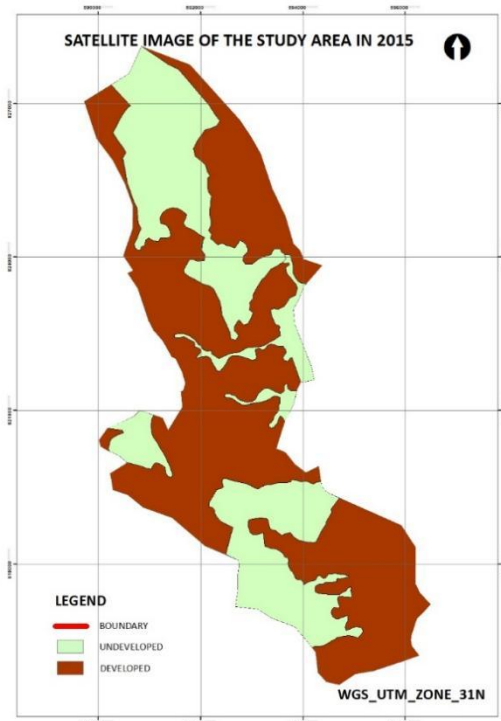


Figure 4.85 Land Use Classification, Year 2015
Source: Fieldwork 2023

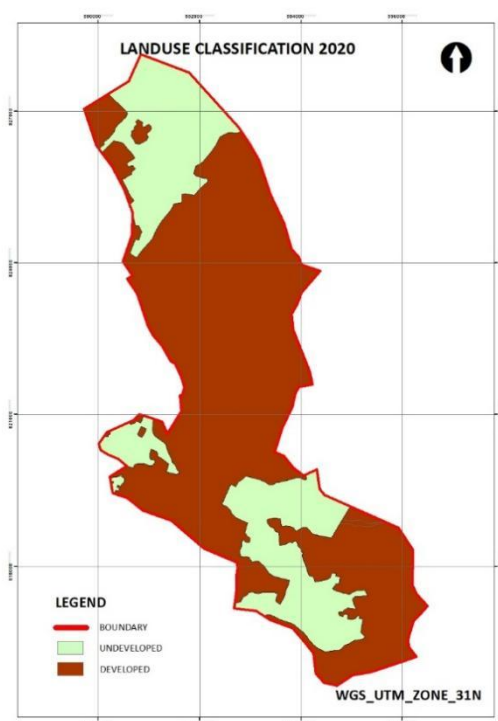


Figure 4.86 Land Use Classification 2020
Source: Fieldwork 2023

It has to be noted that, from the extracted maps from the google earth for the period of 2005 to 2020, the study has been able to explore the connections between land degradation and peri-urban dynamics, such as population growth, urban expansion, and agricultural practices. It also assist to identify the potential drivers and impacts of land degradation on the peri-urban interface areas. Also the implications of land degradation on peri-urban areas, including ecological, social, and economic consequences, the potential risks and challenges associated with land degradation and its relevance for sustainable development.

It has been established that the contributing factors of land degradation in the peri-urban areas, include; unsustainable land management practices, land-use conflicts, and ineffective policies and regulations. Therefore, as a policy recommendation and intervention strategy aimed at mitigating and preventing further land degradation in peri-urban areas, emphasizes should be placed on the importance of sustainable land management practices and stakeholder engagement. In conclusion, as part of the limitations in the study,

constraints related to data availability and quality, scale and scope, potential selection bias, and challenges were encountered during data collection.



Figure 4.87 A Degraded Land at Ajadi Area due to Excessive Sand Lifting Activities

Source: Fieldwork 2023



Figure 4.88: Land Degradation in Alafara as a Result of Informal Developments

Source: Fieldwork 2023



Figure 4.89: Land Degradation through Deforestation Activity in Ologolo Area

Source: Fieldwork 2023

5. Spatial Analysis

Land areas of the digitized portion are generated automated. The land areas are simplified based on the established criteria. Thereafter, tables, pie chart and bar charts are generated for proper interpretation. The analysis was done showing growth trend in each year. These are hereby analysed below.

Table 4.23 and Figure 4.90 contains the land use classification information for the year 2005. It shows that the developed part of the entire study area was 1,155.23 hectares which amounted to 32% of the 3,632.04 Hectares. The undeveloped part was as at the same year 2005 stands at 2,476.9 hectares translating to 68% of the landmass.

Table 4.23 Land Use Classification 2005

Land Use Category	Area (Hectare)	Percentage
Developed Area	1155.23	32%
Undeveloped Area	2476.90	68%
Total	3632.13	100%

Source: Fieldwork 2023

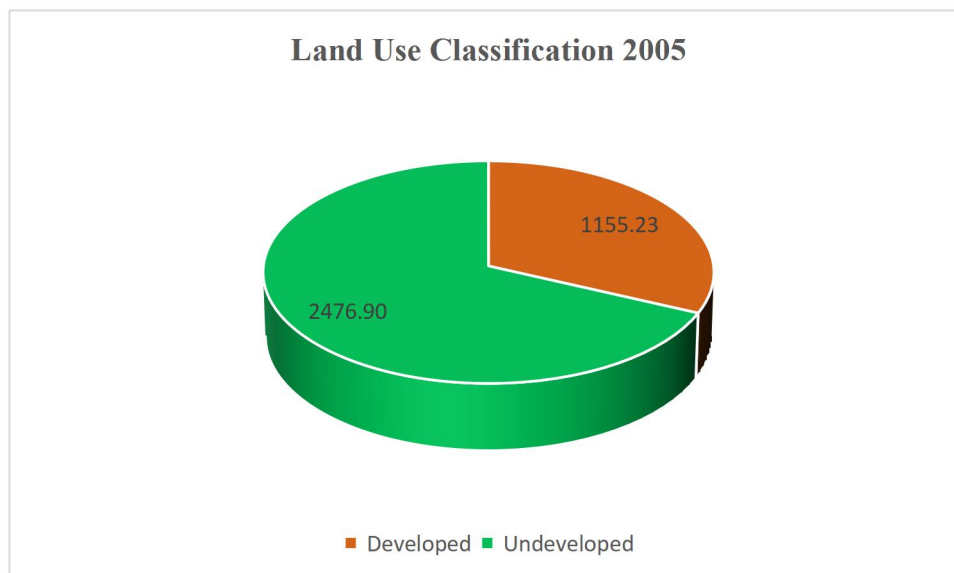


Figure 4.90 Land Use Classification Chart

Source: Fieldwork 2023

In the year 2010, the developed land classification rose from 32% to 57% translating to 2,085.31 hectares while undeveloped portion was reduced from 68% in 2005 to 43% in 2010 standing at 1,546.88 hectares of the entire study area. This is contained in Table 4.24 and Figure 4. 91 below.

Table 4.24: Land Use Classification 2010

Land use Category	Area (hectare)	Percentage
Developed Area	2085.31	57%
Undeveloped Area	1546.88	43%
Total	3632.19	100%

Source: Fieldwork 2023

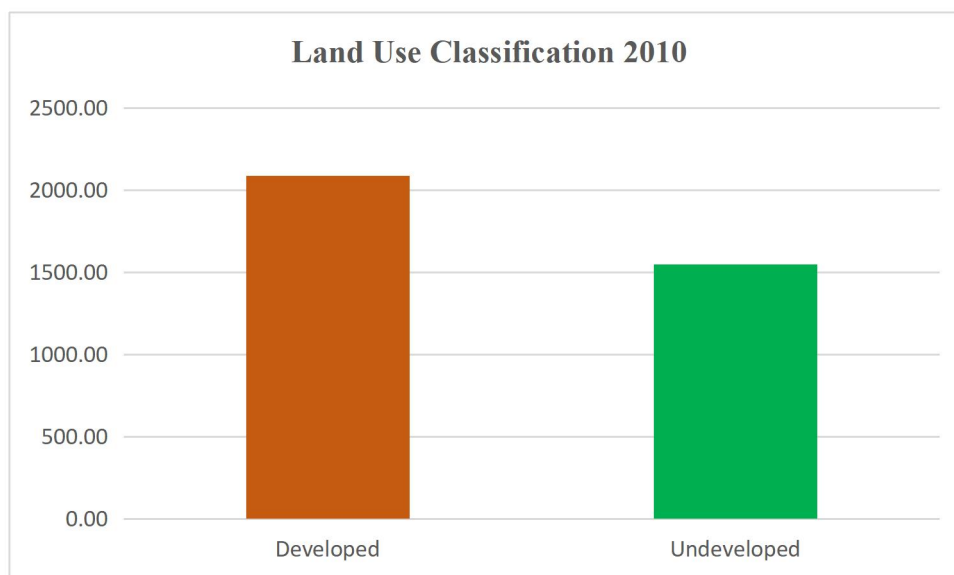


Figure 4.91: Land Use Classification 2010 Chart

Source: Fieldwork 2023

In year 2015, the developed land classification rises to 63% of the entire study area at 2,288.73 hectares of land. On the other hands, the undeveloped land use reduced to 37% at 1,343.53 hectares. See Table 4.24 and Figure 4.91 below.

Table 4. 25 Land Use Classification 2015

Land use Category	Area (hectare)	Percentage
Developed Area	2288.73	63%
Undeveloped Area	1343.53	37%
Total	3632.26	100%

Source: Fieldwork 2023

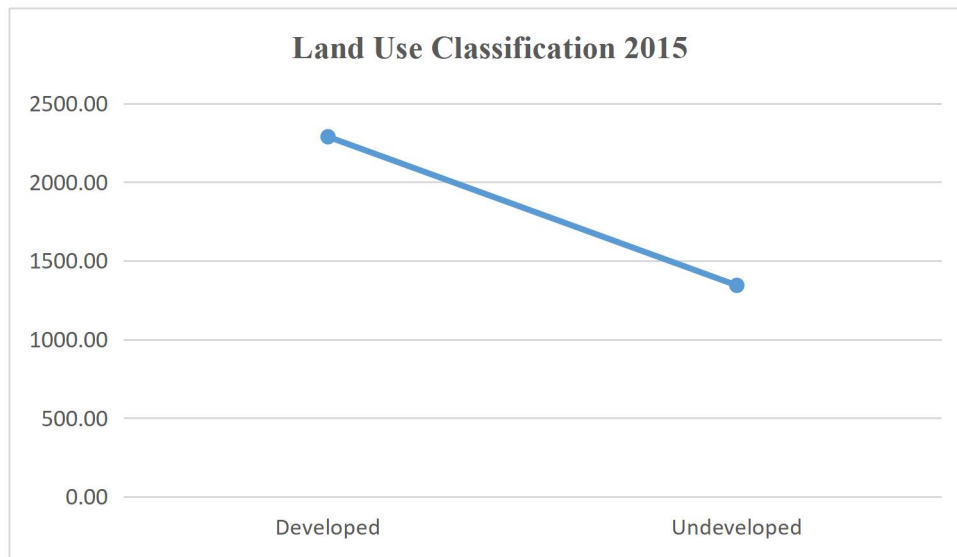


Figure 4:92. Land Use Classification 2015 Graph

Source: Fieldwork 2023

Table 4.26 and figure 4.93 contains the land use classification analysis for year 2020. The developed portion of the study area, as at the period stands at 2,570.41 hectares against undeveloped land of 1,061.64 hectares which represents 71% and 29% respectively.

Table 4.26 Land Use Classification 2020

Land use Category	Area (hectare)	Percentage
Developed Area	2570.41	71%
Undeveloped Area	1061.64	29%
Total	3632.04	100%

Source: Fieldwork 2023

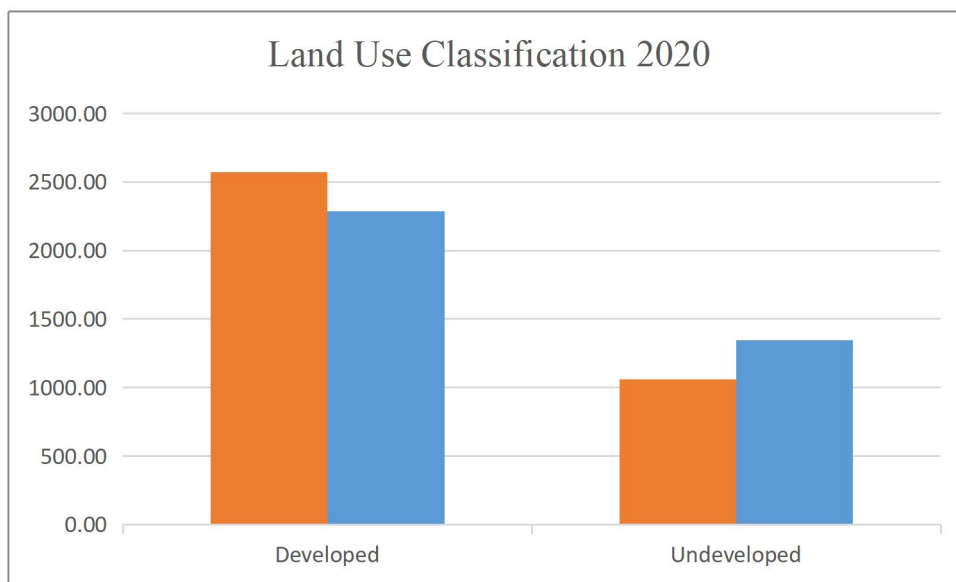


Figure 4.93 Land Use Classification 2020 Chart

Source: Fieldwork 2023

Table 4.27 below gives an overview of the spatial analysis of the percentage of land use changes for the last 20-years under classification of developed and undeveloped. As the development land percentage increases from year 2005 to 2020, while in opposite is the undeveloped land in the study area.

In 2005, the developed land stands at 32% of the total landmass of 3,632.04 hectares of land. For the year 2010, it was 57%, 2015, 63% and in 2020, 71% which is 2,570.41 hectares. For the undeveloped land classification, it stands at 68% in 2005, 43% in 2010, 37% in 2015 and 29% in 2020.

Table 4.27 Overview of Growth Trend over Years

Land use Category	Year (Percentage)			
	2005	2010	2015	2020
Developed Area	32%	57%	63%	71%
Undeveloped Area	68%	43%	37%	29%
Total	100%	100%	100%	100%

Source: Fieldwork 2023

Endnotes

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Chapter Five

Conclusion

This chapter provide the summary of findings based on the studies objectives. A survey was conducted, targeting a representative sample of residents of Eleyele, Adetokun, Alafara and Ologuneru areas of Ibadan. A structured questionnaire was used to collect data. A total of 346 respondents participated in the survey, with specific sample size apportioned to each areas. Further to this is the conclusions of the research, specific recommendations, contributions to knowledge, and suggestions for further studies.

5.1 Summary of Findings

The summary of findings of this study are presented based on the study's objectives. The survey conducted on the study area consisted of demographic information and questions related to age, gender, income, marital status, employment, and household numbers/ownership which are hereby presented as follows:

Objective One. Assessment of the Socio-Economic Characteristics of the Respondents in the Study Area

This assessment of the socioeconomic characteristics of residents in the Eleyele, Adetokun, Alafara and Ologuneru areas of Ibadan, includes an analysis of gender, age distribution, income levels, occupational status, household numbers and ownership status to gain a comprehensive understanding of the socioeconomic profiles of the respondents.

As contained in the study, seven socio-demographic characteristics factors were considered and these includes; gender, age, occupation, marital status, ownership status, household numbers, and monthly income. The analysis of the summary of these attributes are as follows:

Respondent's Gender - majority (62.4%) of the respondents were male while 37.6% were female. A comparison of the gender distribution across the different residential communities revealed a similar result as the overall study area. With high numbers of males to females as major finding in the study area indicate a proactive reactions to the menace of land degradation and other community related vices.

Age Distribution - the mean age of respondents in the study area was 46 years. In addition, the minimum and maximum age was 18 years and 82 years respectively. Findings from the study further revealed that majority (43.1%) of the respondents age falls between 41-50 years. This was followed by respondents with age group 51-60 years (24.3%), 31-40 years (14.7%) and below 31 years (9.2%). The least age group were respondents above 60 years; thus, accounting for 8.7% only. Findings that showed a high percentage of middle age in an area portend a proactive cooperation towards common goals of security, environment and community health.

Occupation - Majority of the respondents were employed in all the four peri-urban areas of the study. While 41.0% of the respondents were engaged in business activities, 33.5% were civil servants and 9.0% were technocrats. However, 9.0% of the respondents were retirees while 6.9% were students. Although similar trends were observed across the peri-urban communities; however, in Adetokun community, a high proportion (39.2%) of the respondents were civil servants compared to other sampled communities. These findings indicate a mix of employment patterns in both areas.

Marital Status - The marital status of respondents in the study area revealed a large proportion (79.8%) were married. On the other hand, 10.7% of the respondents had never been married while 5.8% spouses were deceased. Respondent who cohabitates accounts for 2.0% while separated respondents accounts for 1.7% only. Across the sampled communities, a similar result was observed, as majority of the respondents were married. With the high number of married families in the study area, a relatively secure environment could be guaranteed.

House Ownership Status - more than half (68.5%) of the respondents owned their residential apartments while 31.5% of the respondents indicated to be tenants. This finding indicates that adequate participation in community development would enhance improvements to the environment.

Household Numbers - an average household size of approximately 5 persons. In similar manner, the minimum and maximum household size was 2 and 16 persons respectively. However, it was observed that a large proportion (66.8%) of the respondents had a household size of 4-6 persons. This was followed by respondents with household size 1-3 persons (22.3%) and above 6 person (11.0%) respectively. Further findings across the sampled communities revealed more of the respondents in Ologuneru community had a household size between 4-6 person compared to Eleyele (64.3%), Adetokun (62.8%) and Alafara (67.4%) communities. The average household size across the study area is reflective of sociocultural characteristics of typical family settings in Ibadan and this will moderately has positive effects on factors of land degradation like urban growth.

Respondents' Monthly Income - a bulk of the respondents (39.5%) earned between ₦50,000 and ₦75,000. This was followed by 30.6% of the respondents who earned between ₦75,000 and ₦150,000. In addition, 20.2% of the respondents received a monthly income above ₦150,000 while only 9.2% of the respondents claimed to earn less than ₦50,000 on monthly basis. Similar results were observed across the peri-urban communities. These income disparities highlight the economic diversity within the surveyed areas.

Objective Two: To identify the Drivers of Land Use Change and Degradation in the Study Area

The residential location choice of the respondents was as a result of budget rent/land cost. This accounted for about 50.0% of residents' responses in the study area. On the other hand, 22.4% and 20.6% of the respondents affirmed that easy accessibility and the quality of environment influenced their choice of residential location. The least drivers of residential location as opined by the respondents in the study were choice related to inheritance and nearness to kinship; thus, accounting for 7.0% and 0.3% respectively.

Across the peri-urban communities, a similar trend was observed in Eleyele, Adetokun and Alafara communities. In Ologuneru community, although, majority (58.5%) of the residents' residential choice was as a result of the cost of land/rent, however, the aspect of quality of the environment was as well important to the dwellers while compared to the residential choice of residents in the other sampled communities. This implies that low rent and land cost is an important factor that attracted respondents to the peri-urban areas and contribute to rapid population growth with its attendant effects on deterioration of the land and environment.

The housing types in the sampled communities revealed a high dominance of the bungalow apartments which accounted for 55.2% of the identified residential housing types in the study. This was followed by block of flats apartment and storey buildings which accounted for 24.9% and 16.8% of residential housing types in the study area. Other types of residential housing such as tenement (2.9%) and studio apartment (0.3%) were among the least proportion of the housing types in the study area. This finding is in line with the factor of attraction of respondents to the area for ease of housing construction, especially bungalow residents.

The preference of the respondents to the development of the community with other developed inner city was examined and the findings established that about 52.0% of the respondents preferred their current neighbourhood in comparison with developed inner city. On the other hand, 48.0% of the respondents disagreed with the level of development of the current neighbourhood in relation with the developed inner city. More than two-third (87.6%) of the respondents opined to have been satisfied with living in the peri-urban communities. A comparison across the sampled communities showed that respondents in Ologuneru community (95.2%) were more satisfied with their community compared to respondents in Adetokun (89.9%), Alafara (89.6%) and Eleyele (75.7%) respectively. The ambiance in the peri-urban area against the built up inner city is a confirmation on the preference by the respondents.

On their perception about the construction of new infrastructure such as rail lines and road networks, there has brought growth and development experienced in the neighbourhood, the respondents in the study affirmed to the rapid development of the neighbourhood as a result of the construction of new infrastructure. However,

respondents with indifferent (neither agree nor disagree) perception were observed to be higher in Adetokun community compared to 31.4%, 29.1% and 9.5% in Eleyele, Alafara and Ologuneru communities respectively. This unit of variable measurement on new infrastructure confirms the influence of the new rail line and others on the increase in housing developments in the study area.

Objective Three: Investigate the Impacts of Land Use Degradation on the Livelihood of the Inhabitants of the Study Area.

Dominant land use in the study area, was residential. This accounted for 97.0% of the respondents' claim. On the other hand, less than 4.0% of the respondents developed their land for commercial and industrial purpose. Based on this finding, it was deduced that, a large proportion of land in the peri-urban communities were developed for residential purposes.

In terms of respondents' awareness of change in land use, findings from the study area revealed that 64.2% of the resident in the study area were aware of the rapid development and land use changes in their neighbourhood. It is important to note that the perceived land use changes and development were largely observed by respondents in Ologuneru (83.4%), Alafara (74.4%) and Adetokun (67.6%) communities. In Eleyele community, a large proportion (64.3%) of the respondents were skeptical of rapid development and land use changes experienced in their neighbourhood because of the closeness of the area to developed sides of Ibadan North Local Government area.

The level of agreement to which land use changes had affected residents' means of livelihood in the study area showed a non-affirmative view among the respondents in the entire study area. Findings showed that about 52.0% of the respondents in the study rarely or slightly felt the effect of land use changes on their means of livelihood. A closer look at findings in the different sampled communities revealed similar trends. For instance, in the sampled peri-urban communities, it was evident that the proportion of the respondents who felt little or

no effect of land use changes on means of livelihood was higher compared to respondents who claimed otherwise or were indifferent.

The residents' perception of the effect of land use changes on agricultural activities in the neighbourhood reveals a large majority of residents in Eleyele (55.7%), Adetokun (45.3%) and Ologuneru (52.4%) communities provided a non-affirmative response to the fact that land use changes had an effect on agricultural activities. However, majority of the respondents (54.6%) at Alafara community agreed to the fact that land use changes affected agricultural activities in the neighbourhood.

Majority (68.0%) of the respondents in the study area agreed to observe the improvement in socio-economic activities as a result of population increase. On the other hand, about 26.0% of the respondents claimed to rarely and slightly experience improvement in the socio-economic activities at the neighbourhood while 2.3% of the respondent had an indifferent perception.

About two-third (63.9%) of the respondents agreed to the fact that a perceived upward growth in development had an effect on rent and land cost in the study area. Furthermore, a comparison of residents' perception in the four peri-urban communities revealed that a higher proportion of the observed changes in rent and land cost was mostly opined by residents in Alafara community (83.7%) compared to other sampled communities of Ologuneru (69.0%), Eleyele (57.1%) and Adetokun (54.0%) respectively. Based on this finding, it was established in line with a Chi-square test conducted that, there was a significant difference in residents' perception on the effect of rent and land cost as a result of rapid upward growth in development in the four peri-urban communities.

On perception of the residents about land use change and effects on their means of livelihood, a Spearman correlation test was conducted to determine the relationship. As such, the relationship between the questions: Does change in land use affect your means of livelihood in the community? This was examined with three key questions such as: Does change in land use affect agricultural activities in the neighbourhood? Is there any noticeable increase/improvement on socio-economic activities in the neighbourhood as a result of increase in

population? Lastly, does upward growth in developments in the neighbourhood affect rent and land cost? Based on this finding, it was established that a high land use changes results in a higher effect on agricultural activities in the study area

Objective Four: Examine the Socio-Cultural Impacts of Peri-Urbanization in the Study Area.

Perception of the residents about their socio-cultural characteristics revealed that majority (73.1%) of the respondents in the study area were of mixed tribes. 20.2% were indigenes while non-indigenes accounted for 6.6% only. In the sampled communities, it was observed that more indigenes reside in Eleyele community compared to 18.2% and 16.7% in Adetokun, Alafara and Ologuneru communities respectively. In addition, the existence of social and cultural integration among the dwellers was observed in line with high proportion of mixed tribes in the sampled communities.

Residents' perception about community development participation in the study area was examined and established that 48.5% of the respondents participated in monthly community development association meetings. In addition, about 30.0% of the respondents paid CDA levy/dues while 21.7% of the respondents were involved in community rehabilitation activities. Based on this findings, it was however, established that, in the sampled peri-urban communities, respondents participated in the different social-cultural development activities.

The impact of security of the peri-urban communities during festive period was assessed and findings revealed that although, 30.1% of the respondents in the study affirmed to have rarely experienced the disruption of the environment during the period; however, a considerable proportion of the respondents suggested otherwise. Furthermore, in terms of residents' perception of criminal activities within the peri-urban communities, findings revealed that about 44.0% of the respondents across the sampled peri-urban communities indicated a

non-occurrence of criminal activities. On the other hand, majority (56.4%) of the respondents indicated to have experienced criminal activities at several instances in the community. With this finding, it was deduced that inadequate security remains a common challenge across the sampled communities.

Objective Five: Investigate the Level of Impacts of Land Degradation on the Health of the Interface Dwellers

The land degradation issues identified in the study area includes flooding, sand lifting, reduction in water course, erosion, indiscriminate waste disposal and climate effects of heat wave, and rainfall. In terms of flooding, majority (49.1%) of the respondents were indifferent while 18.2% were rarely affected by flood occurrence in recent years. Furthermore, about 33.0% of the respondents in the study area agreed to being affected by flood; but, on different scale. With this finding, it was established that, flooding remains a reoccurring environmental and health challenge in the peri-urban communities in recent years. It is important to note that some of the factors contributing to flooding in the study area is associated with the rapid/uncontrolled development activities and the encroachment of setbacks of water-bodies in the community. Owing to this reality, majority (76.3%) of the respondents in the study area observed a reduction in the size/strength of water bodies, as well as changes in the drainage pattern of the sampled communities. Only a minute proportion accounting for 10.1% rarely observed any changes in the drainage pattern and decrease in the level of water body in the study area.

In similar manner, majority of the respondents were neither satisfied nor dissatisfied (neutral) with the process of soil/sand lifting in the study area. About 32.7% of the sampled respondents had an indifferent perception regarding the process of soil lifting activity in the study area. On the other hand, 21.4% of the respondents were observed to be satisfied while 27.5% were slightly satisfied. Respondents who were rarely satisfied accounted for 18.5% only. The proportion of respondents who were rarely satisfied was further observed to be higher in Eleyele community (27.1) compared to the other sampled communities of Alafara (24.4%), Adetokun (14.2%) and Ologuneru (7.1%).

Another type of environmental degradation experienced by respondents in the study was associated with the increase in volume of waste generated and the indiscriminate disposal of waste. As observed, 86.1% of the respondents perceived that there was an increase in the volume of waste generated in the study area. However, in terms of waste disposal, less than a quarter (24.0%) of the respondents observed a proper method of disposing waste.

Specifically, the perceived effect of climate change on rainfall in each communities showed that, on the average, respondents perceived that rainfall has been strongly affected. Rainfall as natural phenomenon increases the course of rivers to create flooding, erosion and storm.

In a bid to examine the health implications of land use changes and degradation of development across the sampled peri-urban communities, observations were carried out to determine respondents' view on encroachment practices on government acquisition and other vulnerable areas in the study area. Findings showed 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 about 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. The implication of building on government acquisitions is informalities and slum generation and its attendant unpleasant results.

Perception on the awareness of health hazards in the vulnerable areas shows that about 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.

Summary of Analysis of the Growth Trend and Land Use Classification in the Study Area

A spatial analysis from the satellite image acquisition of the study area was carried out. This exercise spans a 20-year in retrospect of 5yearly interval starting from 2005, 2010, 2015 and 2020 of the entire study area and maps for each year were downloaded. The land use change classification based on developed and undeveloped was used to determine the land degradation hotspots which is tantamount to developed part of the study area.

The entire study area stands at 3,632.04 hectares of land representing 2,570.41 hectares of developed land and 1,061.64 hectares of undeveloped land as at 2020, as downloaded from the google earth. The developed land use classification progresses upwardly from 32%, 57%, 63% and 71% in 2005, 2010, 2015 and 2020 against undeveloped land use which decreases for the same period from 68%, 43%, 37% and 29% respectively. This result was in line with the factors termed as drivers of peri-urbanisation development namely; urban growth, institutional and infrastructural development. The land degradation hotspots are identified only through observatory schedule reconnaissance to the study area which shows, deforestation, heavy sand lifting, soil flooding/erosion and reduction in water volume/conversion of natural streams and rivers into gutters and mere domestic water channels due to unplanned developments.

5.2 Conclusions

Research findings in this study shows that land degradation in the peri-urban interface is a function of natural and artificial occurrences with perceptual knowledge of the residents, its impacts on the socio-cultural activities, means of livelihood and health challenges. The objectives of the study were used as a guide to the findings from the literature and field work. The study has shown that socio-economic characteristics in the study area was a well mix and less ethnic segregation with high socio-cultural activities. It suggest that the study area is socially prone to land degradation. By implications, the settlement clusters of heterogeneous socio-cultural population suggest a significant level of vulnerability to land degradation.

Major factors accounting for the change in land use and degradation as perceived by the residents were; budget rent and land cost, quality of environment, as preference for residing in the peri-urban interface. With the attendant implications on high numbers of informal developments, indiscriminate soil lifting and destruction of ecosystem notwithstanding, respondents still hold a high preference of the study area to the urban area.

Rapid housing developments in the peri-urban areas, from field and empirical evidences from the study area shows a substantial gated housing developments by promoters in all the locations. It is in response to the lifestyle, security and community status of the residents of gated estates. The construction of the new rail line that traverses part of Ologuneru with its beautiful scenery of train movement has attracted housing developments in the area. In the same vein, Oyo state government approval and allocation of Elenusonso GRA in Alafara peri-urban region according to the respondents attracted housing developments into the area.

The effects of land use change from agricultural to majorly residential in all the locations – Eleyele, Adetokun, Alafara and Ologuneru have impacted on the means of livelihood of the residents. This accounted for high numbers of business activities as new vocations by the residents, as a result, agricultural land use now has a very low rating compared to residential and commercial. The transformation in socio-economic activities of the residents from the study shows population growth, increase in housing rent and land costs. The spatial image of the study for a spate of 20 years is in line with the respondents' perception on the rapid housing developments in the four locations.

Findings on socio-cultural characteristics of the locations has high percentage of mixed tribes. This is in line with the findings harped on the mix tribe, their income levels and ability to effect segregation of their residential and socio-cultural dichotomy. In contrary to the general belief, the study revealed that the core indigenes has a very low population percentage of the residents. This insignificant numbers of the indigenes accounted for the respondents' high level of unawareness of disruption of traditional practices at the festive periods. The study also shows high awareness of crime activities in the locations with its attendant inadequate security as common challenge to the residents of the peri-urban areas. The findings on residents' participation

in community development association indicated below average and further low numbers of contributors to community development activities.

The effects of climatic change measured by rainfall, heat wave and flooding variables, gives an average perception of the respondents save rainfall that was above average. The spatial satellite image acquired gives a 3,632.04 hectares of entire study area landmass representing 2,570.41 hectares of developed land and 1,061.64 hectares of undeveloped land as at 2020, as downloaded from the google earth. The developed land use classification progresses upwardly from 32%, 57%, 63% and 71% in 2005, 2010, 2015 and 2020 against undeveloped land use which decreases for the same period from 68%, 43%, 37% and 29% respectively. In line with this, the study reveal an overwhelming response on the perception of residents on the reduction in water body volumes and gradual changing in the course of river flow and streams drying off.

Findings on land degradation from this study further shows majorly artificial deterioration over natural. The sand lifting challenges, soil flooding/erosion, the vulnerability of the residents under high voltage wires, building and non-maintenance of oil pipelines setback form housing developments and business activities. From the findings, 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.

5.3 Recommendations

As land is being exploited for urbanization purposes, such as housing, infrastructure development, and commercial areas, the available arable land for farming decreases. Inadequate land management practices, such as deforestation, improper waste disposal, and unsustainable resource extraction, contribute to soil erosion, water pollution, and air pollution. The impacts of land degradation on the peri-urban interface in Ibadan are wide-ranging and multifaceted, affecting agricultural productivity, environmental health, biodiversity, and socio-economic well-being.

Addressing these problems is crucial to ensure sustainable development, protect natural resources, and improve the quality of life for peri-urban residents. The urban growth and its expansion into peri-urban interface requires attention of government on policy implementation and monitoring. Not only planning law but, government environmental and emergency agencies' presence must be felt in these areas. The era of concentration of planning attention in the urban centers to the detriment of peri-urban areas being left into developing to informalities should be arrested.

The routine presence of health and environmental officers to enlightening the residents on health implications and hazards of building or setting up daily businesses on vulnerable areas is discernible. There should be a raise awareness and education. Promote awareness and education on the impacts of land degradation in the peri-urban interface in Ibadan. This includes conducting community workshops, training programs, and public campaigns to inform residents, farmers, and policymakers about the importance of sustainable land management practices.

Strengthen land use planning and management strategies in the peri-urban interface to prevent further land degradation. This involves implementing zoning regulations, land-use restrictions, and conservation measures to ensure sustainable land development and minimize soil erosion, deforestation, and overgrazing.

Promote sustainable agricultural practices to encourage the adoption of sustainable agricultural practices, such as conservation agriculture, agroforestry, and organic farming, to reduce soil erosion, improve soil fertility, and enhance water management in the peri-urban interface. Promotion of reforestation and afforestation initiatives in the peri-urban interface to restore degraded land and enhance ecosystem services. Planting native tree species can help stabilize soils, reduce erosion, and improve biodiversity.

Strengthening soil and water conservation measures by implementing soil and water conservation measures, such as terracing, contour plowing, and construction of check dams, to reduce soil erosion and improve water infiltration in the peri-urban interface. Also there is need for development of monitoring and early warning

systems to detect and respond to land degradation in a timely manner. This includes establishing monitoring networks, using remote sensing and GIS technologies, especially LiDAR data sensor that has capacity to pick degradation spots and setting up alert mechanisms to inform local communities and authorities about potential land degradation hotspots.

Exploration and supporting alternative livelihood options for communities in the peri-urban interface to reduce their dependency on agriculture and minimize unsustainable land-use practices. This could include promoting non-agricultural income-generating activities, vocational training, and access to credit for small businesses. Lastly, improve policy and institutional frameworks for land management is needed in the peri-urban interface. This involves enhancing coordination among relevant government agencies, integrating land degradation considerations into development plans and policies, and providing adequate resources for enforcement and implementation of sustainable land management practices.

5.4 Contributions to Knowledge

The study on the impacts of land degradation on the peri-urban interface in Ibadan contributes to knowledge in several ways:

1. The study explores the sociocultural and economic impacts of land degradation. While many existing studies tend to focus on the environmental aspects of land degradation, this study broadens the analysis to examine the broader implications for local communities. By examining the social and economic consequences of land degradation in peri-urban areas, this study provides valuable insights for policymakers and practitioners to understand the full extent of the problem and develop effective interventions.

2. The study identifies the drivers of land degradation in the peri-urban interface in Ibadan. By analyzing the underlying causes and factors contributing to land degradation, this study provides a deeper understanding of why peri-urban areas in Ibadan are experiencing land degradation. The knowledge of effects of land degradation is crucial for designing targeted interventions and policies to prevent or mitigate it in these areas.

3. It explores potential solutions and strategies to address land degradation in the peri-urban interface. While the literature reviewed acknowledges the issue of land degradation, there is limited research on effective approaches to combat the problem in peri-urban areas. This study aims to fill this gap by investigating best practices, innovative techniques, and successful case studies from other similar contexts. By highlighting feasible and sustainable solutions, this study contributes to knowledge on effective interventions to address land degradation in the peri-urban interface in Ibadan.

Overall, the study contributes to knowledge by providing a comprehensive analysis of the impacts of land degradation on the peri-urban interface in Ibadan, specifically focusing on the sociocultural and economic aspects. It also identifies the drivers of land degradation and explores potential solutions to address the problem. The findings and recommendations from this study can inform policy-making, enhance land management practices, and promote sustainable development in peri-urban areas.

5.5 Suggestions for Further Studies

This research has succeeded in revealing the means for sustainability of socio-economic characteristics of peri-urban residents through mitigating the effects of both human and natural deteriorations in their environment but further research is still needed.

1. Long-term monitoring and assessment of land degradation: Conduct further studies that involve long-term monitoring and assessment to understand the rate and extent of land degradation in the peri-urban interface in Ibadan. This could involve regular data collection on key indicators of land degradation, such as soil erosion rates, vegetation cover, and land use change.

2. Spatial analysis: Investigate the spatial patterns and trends of land degradation in the peri-urban interface. This could involve the use of geographic information system (GIS) and remote sensing techniques to analyze changes in land cover and land use over time and identify areas most susceptible to degradation.
3. Impacts on ecosystem services: Assess the impacts of land degradation on ecosystem services in the peri-urban interface. This could involve studying the effects of land degradation on water resources, biodiversity, carbon sequestration, and other ecosystem services, and quantifying their economic value.
4. Livelihood vulnerability: Explore the vulnerability of different socio-economic groups in the peri-urban interface to land degradation. This could involve analyzing how land degradation affects livelihood strategies, income generation, and food security among different communities, and identifying potential coping strategies and adaptation mechanisms.
5. Stakeholder perceptions and behavior: Investigate the perceptions, knowledge, and behavior of different stakeholders (e.g., farmers, landowners, policymakers) towards land degradation in the peri-urban interface. This could involve conducting surveys, interviews, and focus group discussions to understand their awareness, attitudes, and practices related to land degradation and conservation.
6. Policy analysis: Examine existing policies and governance arrangements related to land use and management in the peri-urban interface, and assess their effectiveness in addressing land degradation. This could involve analyzing policy frameworks, institutional arrangements, and implementation challenges, and identifying opportunities for policy improvements and interventions.
7. Socio-cultural dynamics: Explore the socio-cultural factors and dynamics that influence land degradation in the peri-urban interface. This could involve examining cultural beliefs, practices, and norms related to land use, agricultural production, and conservation, and their potential impact on land degradation processes.

8. Comparative studies: Conduct comparative studies between the peri-urban interface in Ibadan and other peri-urban areas in Nigeria or other countries. This could provide insights into the similarities and differences in the drivers, impacts, and responses to land degradation in different peri-urban contexts.
9. Participatory approaches: Engage local communities and stakeholders in participatory research to better understand their perspectives, knowledge, and experiences related to land degradation in the peri-urban interface. This could involve using participatory mapping, focus group discussions, and participatory action research to co-develop knowledge and interventions for sustainable land management.
10. Evaluation of interventions: Evaluate the effectiveness and sustainability of existing or proposed interventions and strategies to address land degradation in the peri-urban interface. This could involve assessing the outcomes and impacts of various interventions, identifying success factors, and providing recommendations for future interventions and policy actions.

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Appendix I

Questionnaire on Impact of Land Degradation on Peri-Urban

Reference Number

Interface in Ibadan

Dear Respondent,

This is my research questionnaire as a PhD Student in Built Environment, Faculty of Environmental Design and Management, Lead City University, Ibadan. The research topic is **The Impact of Land Degradation on the Peri-Urban Interface in Ibadan**. It is aimed at identifying the factors that drives people from the city into the suburbs and its attendant land degradation. The effects of these degradation forces on the dwellers' socio-cultural, health and their means of livelihoods would be examined in order to enhance policy decision towards ameliorating the menace.

The questions in this research are designed to gather necessary information for purely academic research only. Given this, all responses from individuals shall be treated in strict confidential and no personal details obtained from this exercise shall be revealed to a third party not involved in this research work. By your participation in this survey, you are contributing to a research effort meant to improve the livelihood of the community and its aftermath recommendations would be beneficial to the humanity. Thank you immensely for your time and efforts in completion of this questionnaire. The following instructions will assist you in completing the questionnaire accurately:

- This survey questionnaire may take about 10-15 minutes to complete.
- Research assistant may be contacted for clarity if needed.
- Answer all questions, but leave out those that are not applicable or where you are unsure about your answer.
- Please read all the instructions before answering.
- Go through all options in each question before ticking an option.
- Provide exact figures, or tick () applicable options within boxes

Ismail Bimpe Adewoyin

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SECTION 1. SOCIAL DEMOGRAPHIC INFORMATION

1.1. What is your gender? (Please tick one option only)

Female

Male

1.2. What is your age? (Please indicate number of years only)

Numbers of years

--	--

1.3. What is your Occupation? (Please tick one option only)

Civil Servant

Retiree

Technocrat

Business

Student

1.4. What is your marital status? (Please tick one option only)

Married

1

Living together like married partners

1

Never married

2

Widower/widow

3

Separated

4

5

1.5. What is your present ownership status? (Please tick one)

Owner

Tenant

1.6. Number of household members (Including yourself)

--	--

1.7. What is your total monthly gross income more or less? (Please tick one option only)

Less than N50, 000

N50, 000- N75,000

N75, 000- N150, 000

More than N150, 000

SECTION 2. DRIVERS OF PERI-URBAN INTERFACE DEVELOPMENTS

0 – 5 years

6 – 10 years

2.1. How long have you been living in this community?

11 – 15 years

(Please tick one option only)

16 - 20 years

2.2. What informed your residential location in this community?

Budget Rent/Land Cost

1

Inheritance

2

Easy Accessibility

3

Quality of Environment

4

Nearness to kinship

5

2.3. Do you prefer this developing environment to the developed inner city?

Strongly agree

Agree

Disagree

Strongly disagree

Neither agree or disagree

2.4. Are you satisfied with living in this community?

Very satisfied

Satisfied

Dissatisfied

Very dissatisfied

Neither satisfied nor dissatisfied

2.5. Household daily modes of transport? (You may tick more than one option)	Walking	1
	Motorcycle	2
	Private car	3
	Minibus/taxi	4
	Bus	5

2.6. Does the new rail line, newly rehabilitated road and the institute premises contribute to growth in developments in this neighbourhood?	Very Strongly	1
	Strongly	2
	Slightly	3
	Rarely	4
	Neutral	5

2.7. Type of land use? (Please tick one option only)	Residential Use
	Commercial Use
	Industrial Use
	Institutional Use
	Others

2.8. Residential housing types? (Please tick one option only)	Bungalow	1
	Studio apartment	2
	Tenement	3
	Block of flats	4
	Storey (Duplex, Semi-detached)	5

SECTION 3. LAND USE CHANGE EFFECTS ON LIVELIHOOD OF THE PEOPLE

- Very Strongly
Strongly
Slightly
Rarely
Neutral
- 3.1. Has there been rapid developments and change in land use in your neighbourhood?
-
- Very Strongly
Strongly
Slightly
Rarely
Neutral
- 3.2. Is there dominance of agricultural land use in the community at your first visit?
-
- Very Strongly
Strongly
Slightly
Rarely
Neutral
- 3.3. Does change in land use affect agricultural activities in the neighbourhood?
- Residential use
Commercial use
Institutional use
Recreational use
None
- 3.4. What the prevailing change in land use?

Very strongly

1

2

3

4

5

3.5. Does change in land use affect your means of livelihood in the community?

Strongly
Slightly
Rarely
Neutral

3.6. Is there any noticeable increase/improvement on socio-economic activities in the neighbourhood as a result of increase in population?

Very strongly
Strongly
Slightly
Rarely
Neutral

1
2
3
4
5

3.7. Does upward growth in developments in the neighbourhood affect rent and land cost?

Very strongly
Strongly
Slightly
Rarely
Neutral

SECTION 4. SOCIO-CULTURAL CHALLENGES IN THE COMMUNITIES

4.1. From your perspective, which group of people constitute the population in this study?

SN	Variables	Tick	
1.	Indigene		
2.	Non-Indigene		
3.	Mixed-tribes		

4.2. Is there any community activities' participation?

SN	Activities	Tick

1.	Monthly CDA meetings	
2.	CDA levy/dues	
3.	Community rehabilitation	

Very strongly

Strongly

Slightly

Rarely

Neutral

4.3. Is there any disruption, through traditional practices like festivals?

4.4. Which of these recreational facilities is/are available in this neighbourhood?

SN	Variables	Yes	No
1.	Open space		
2.	Resort centers		
3.	Hotels		
4.	Public bars		

Never

Almost never

4.5. Has there been crime activities in the community like land grabbing, burglary, theft, kidnapping and armed robbery

Occasionally/sometimes

Almost every time

Every time

1

2

3

4

5

SECTION 5. ENVIRONMENTAL AND HEALTH CHALLENGES IN THE COMMUNITY

5.1. Indicate the presence of the following agencies in the study area?

SN	Variables	Yes	No
1.	Local government officials		

2.	Town planners		
3.	Health workers		
4.	Security agencies		
5.	Federal/State Environmental Protection Agencies		

Very strongly

Strongly

Slightly

Rarely

Neutral

1

2

3

4

5

5.2. Has there been land boundary/encroachment clashes between government/traditional owners?

5.3 Is there encroachment on government acquisition, road setbacks and vulnerable areas?

(Vulnerable areas are: high tension wires, oil pipelines)

SN	Variables	Yes	No
1.	Government acquisition		
2.	Rail lines		
3.	High tension wire		
4.	Oil pipelines		
5.	Others		

Yes

5.4. Is there any control measure against development on vulnerable areas indicated in (5.3) above? No

Very strongly	1
Strongly	2
Slightly	3
Rarely	4
Neutral	5

5.5. Any awareness on health hazard due to development in vulnerable area in (5.3) above?

5.6. Any increase in waste production due to population growth?

5.7. Is there a regularised and orderly pattern of development?

5.8. Has this community been affected by flooding in recent years?

5.9. Is there an existing culture of tree planting to avoid land degradation?

5.10. Which of these strategies is adopted to minimize negative effects of tree cutting, bush clearance and land degradation?

SN.	Variables	Yes	No
1.	Replanting		
2.	Tree cutting control		

3.	Residential landscaping		
----	-------------------------	--	--

Very Strongly
Strongly
Slightly
Rarely
Neutral

5.11. Are you satisfied with soil/sand lifting activity on the land around your residence?

Very strongly
Strongly
Slightly
Rarely
Neutral

5.12. Do you observe a reduction in strength/size of rivers/stream and their change in status to drainages due to developments activities?

5.13. Indicate the level of effect of climate change on the followings:

SN	Indicators	Very strongly	Strongly	Slightly	Rarely	Neutral
1.	Heat waves					
2.	Rainfall					
3.	Flooding					

5.14. What is your source of water supply?

SN	Sources of water	Yes	No
1.	Stream/spring		
2.	Borehole		
3.	Deep well		
4.	Pipe borne		
5.	Potable		

Very strongly
Strongly

5.15. Is there any negative impact of drilling on buildings?

Slightly

Rarely
Neutral

Very strongly	1
Strongly	2
Slightly	3
Rarely	4
Neutral	5

5.16. Is there indiscriminate refuse disposal?

5.17. What methods of waste disposal are available?

SN	Methods	Yes	No
1.	Private service provider		
2.	Incineration		
3.	Public waste management agency		
4.	Dumping in the streams		

Respondent's description:

- i. Peri-urban Interface residents of the case study areas. (Neighbourhood residents)
- ii. Local/State Development Authority officials
- iii. Estate Developers in the Peri-urban Interface
- iv. Professionals/experts in Peri-urban development (Estate, Land Surveyor, Planner, Lawyer, Architect).
- v. Community Heads and Housing Association Heads.

Appendix II

A - Personal Interview Guide – Traditional Heads (Baales)

Community..... **Date**.....

1. Can you please tell us about the history of this community from the period you became the Baale?
2. Were you living in this community prior to your becoming the Chief/Baale of this community?
3. How vast is your jurisdiction in terms of land mass?
4. Do you have a family/community layout map of your jurisdiction?
5. Is there any government acquisition of any part of your family land in this neighbourhood?
6. What attracts residents into this community?

7. What are the developmental achievements or changes since you become the Baale of this community?
8. Is this community residents by a single tribe or multi-tribes or religion or dialects?
9. Can you mention few of the tribes that are now residents in this community?
10. What are the land related challenges you experience as the Baale in this community?
11. How do you assess crime rate in this community?
12. What can you say about soil lifting, flooding, climate, refuse disposal, wetland surface changes that turn rivers/streams into gutters?

B. Personal Interview Guide – Professionals – Estate Surveyors & Valuers, Town Planners/Architects/Lawyers/Land Surveyors/developers) and government officials

Office..... **Date**.....

Designation..... **Rank**.....

1. How long have you been practicing/working in this neighbourhood?
2. How do you perceive concept of Peri-urban Interface?
3. What are your observations about government land use policy in peri urban interface?
4. Can you describe how rapid is development of this area in the last 5, 10, 15years and what factors contribute to it?
5. Which of the development types dominate this communities?
6. Does the infrastructural developments commensurate with the population in this area?
7. What environmental challenges have you noticed in this neighbourhood?
8. How does peri-urban development influence environmental degradation?
9. What role has State Environmental Protection Agency assumed in the emergencies of development in this peri-urban areas?
10. Are the wetland area in this neighbourhood left for agricultural activities or building developments?
11. Does the current allocation of government GRA land in the community affect land cost and rentals?
12. Does the new rail line that traverses this community positively or negatively affect developments in this environment?
13. Since when has developments begins to spring up along and around such areas like Eleyele Dam water banks, new rail lines and behind NIHORT?

C - Personal Interview Guide – Private Estate Developers/Family land owners

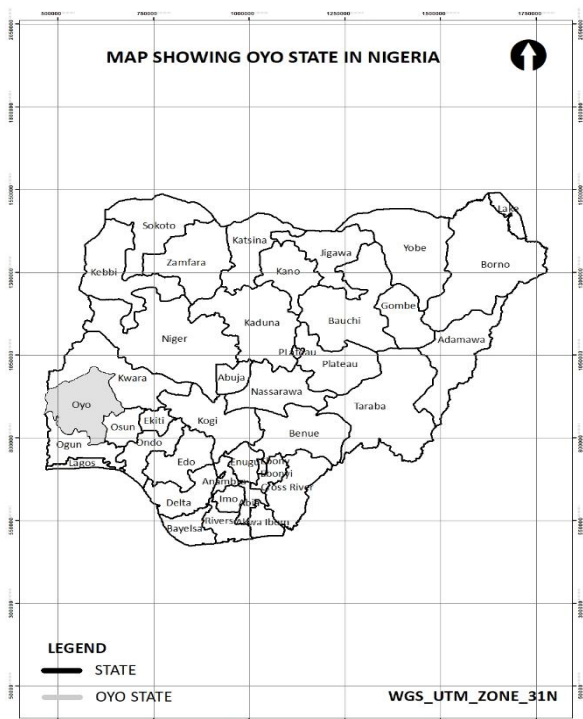
Community..... **Date**.....

1. What inform your choice of this neighbourhood for your Housing Estate Scheme?
2. How did you acquire this vast land? Government or Family land source?
3. What documentation have you done on this vast land?
4. What are the challenges (infrastructure, land grabbing, government policy, etc) are you experiencing and how have you been able to curtail them in this community?
5. Have you experienced any or typical environmental challenges? Natural or artificial?
6. What is the public response to your land sales/ housing scheme in this area?
7. What attracts private land buyers in to this area?
8. What effect does loosing farm lands to other use has on your livelihood?
9. Where sand deposits were sold, what effect does it have on sales?
10. What efforts have you made to abate land grabbing?
11. Do you agree that many plants and wild animals are now in extinction due to growth in developments in the area?

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Appendix III

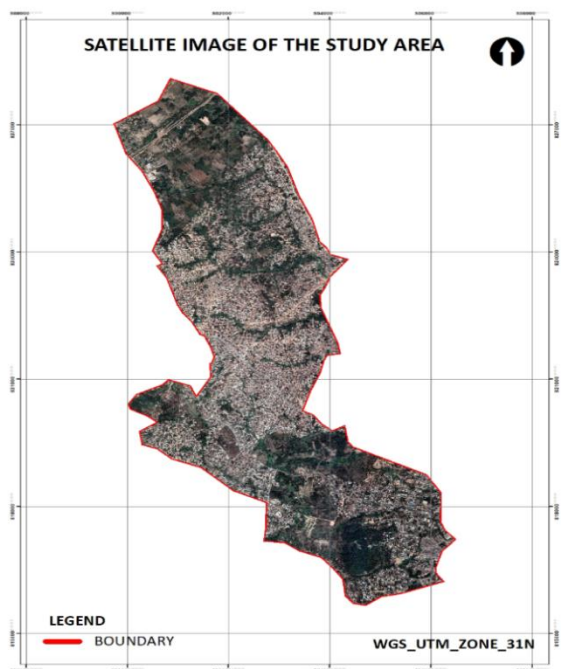
The Nigerian Political Map of Oyo State & The Study Area



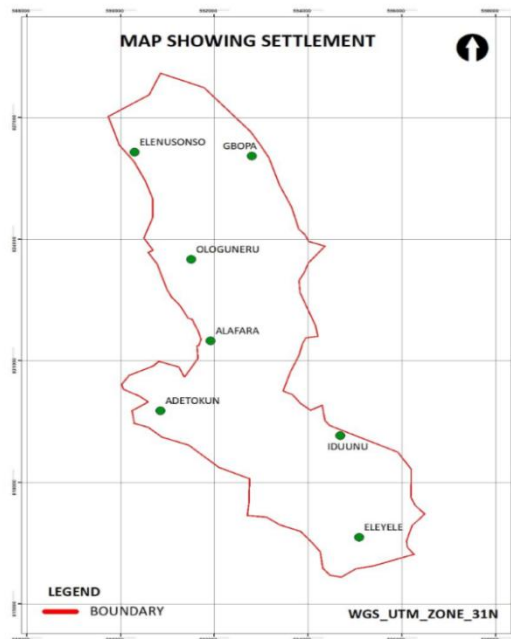
Oyo State in Nigeria Political Map
Source: Author's Fieldwork 2023



Study Area (marked in red) in Oyo State's context.
Source: Author's Fieldwork 2023



Satellite Image of the Study Area
Source: Author's Fieldwork 2023



Settlements in the Study Area
Source: Author's Fieldwork 2023

Appendix IIV

Reliability Test Statistical Tables

	PRE	SLC	NID	RDL	LCA	AMA	POP	UGD	DIS	CRI
1	Strongly di...	Very dissa...	Strongly di...	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never
2	Strongly di...	Dissatisfied	Strongly di...	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never
3	Strongly di...	Dissatisfied	Strongly di...	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never
4	Disagree	Dissatisfied	Strongly di...	Rarely	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
5	Disagree	Dissatisfied	Strongly di...	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
6	Disagree	Dissatisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
7	Disagree	Dissatisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
8	Disagree	Dissatisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
9	Disagree	Satisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
10	Disagree	Satisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Sligh...	Rarely	Never
11	Disagree	Satisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Sligh...	Rarely	Never
12	Disagree	Satisfied	Disagree	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
13	Disagree	Satisfied	Disagree	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
14	Disagree	Satisfied	Disagree	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
15	Disagree	Satisfied	Neutral	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
16	Disagree	Satisfied	Neutral	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
17	Disagree	Satisfied	Neutral	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
18	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Sligh...	Sligh...	Rarely	Never
19	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Sligh...	Sligh...	Rarely	Never
20	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Sligh...	Sligh...	Rarely	Never
21	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Neutral	Sligh...	Rarely	Never
22	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Neutral	Sligh...	Sligh...	Never
23	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Stro...	Sligh...	Sligh...	Never

	PRE	SLC	NID	RDL	LCA	AMA	POP	UGD	DIS	CRI
25	Disagree	Satisfied	Neutral	Neutral	Sligh...	Sligh...	Stro...	Sligh...	Sligh...	Never
26	Disagree	Satisfied	Neutral	Stro...	Sligh...	Sligh...	Stro...	Neutral	Sligh...	Never
27	Disagree	Satisfied	Neutral	Stro...	Sligh...	Sligh...	Stro...	Neutral	Sligh...	Never
28	Disagree	Satisfied	Neutral	Stro...	Sligh...	Sligh...	Stro...	Stro...	Sligh...	Never
29	Disagree	Satisfied	Neutral	Stro...	Sligh...	Sligh...	Stro...	Stro...	Sligh...	Never
30	Disagree	Satisfied	Neutral	Stro...	Sligh...	Sligh...	Stro...	Stro...	Sligh...	Never
31	Disagree	Satisfied	Neutral	Stro...	Sligh...	Sligh...	Stro...	Stro...	Sligh...	Sligh...
32	Disagree	Satisfied	Neutral	Stro...	Sligh...	Neutral	Stro...	Stro...	Sligh...	Sligh...
33	Disagree	Satisfied	Neutral	Stro...	Sligh...	Neutral	Stro...	Stro...	Sligh...	Sligh...
34	Agree	Satisfied	Neutral	Stro...	Sligh...	Neutral	Stro...	Stro...	Sligh...	Sligh...
35	Agree	Satisfied	Neutral	Stro...	Sligh...	Neutral	Stro...	Stro...	Sligh...	Sligh...
36	Agree	Satisfied	Agree	Stro...	Neutral	Neutral	Stro...	Stro...	Sligh...	Sligh...
37	Agree	Satisfied	Agree	Stro...	Neutral	Neutral	Stro...	Stro...	Sligh...	Sligh...
38	Agree	Satisfied	Agree	Stro...	Neutral	Neutral	Stro...	Stro...	Neutral	Sligh...
39	Agree	Satisfied	Agree	Stro...	Neutral	Neutral	Stro...	Stro...	Neutral	Sligh...
40	Agree	Satisfied	Agree	Stro...	Neutral	Neutral	Stro...	Stro...	Neutral	Sligh...
41	Agree	Satisfied	Agree	Stro...	Neutral	Neutral	Stro...	Stro...	Neutral	Sligh...
42	Agree	Satisfied	Agree	Stro...	Neutral	Stro...	Stro...	Stro...	Neutral	Sligh...
43	Agree	Satisfied	Agree	Stro...	Neutral	Stro...	Stro...	Stro...	Neutral	Occ...
44	Agree	Satisfied	Agree	Stro...	Stro...	Stro...	Stro...	Stro...	Neutral	Occ...
45	Agree	Satisfied	Agree	Stro...	Stro...	Stro...	Stro...	Stro...	Neutral	Occ...
46	Agree	Satisfied	Agree	Stro...	Stro...	Stro...	Stro...	Stro...	Neutral	Occ...
47	Agree	Satisfied	Agree	Very...	Stro...	Stro...	Stro...	Stro...	Neutral	Occ...

Do Not Copy, Lead C...

	PRE	SLC	NID	RDL	LCA	AMA	POP	UGD	DIS	CRI
70	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
71	Strongly di...	Very dissa...	Strongly di...	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never
72	Strongly di...	Dissatisfied	Strongly di...	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never
73	Strongly di...	Dissatisfied	Strongly di...	Rarely	Rarely	Rarely	Rarely	Rarely	Rarely	Never
74	Disagree	Dissatisfied	Strongly di...	Rarely	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
75	Disagree	Dissatisfied	Strongly di...	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
76	Disagree	Dissatisfied	Disagree	Sligh...	Rarely	Rarely	Sligh...	Rarely	Rarely	Never
77	Disagree	Satisfied	Neutral	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
78	Disagree	Satisfied	Neutral	Sligh...	Rarely	Sligh...	Sligh...	Sligh...	Rarely	Never
79	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Sligh...	Sligh...	Rarely	Never
80	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Sligh...	Sligh...	Rarely	Never
81	Disagree	Satisfied	Neutral	Sligh...	Sligh...	Sligh...	Sligh...	Sligh...	Rarely	Never
82	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Stro...	Occ...
83	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Stro...	Occ...
84	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Stro...	Alm...
85	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Stro...	Alm...
86	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
87	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
88	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
89	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
90	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
91	Strongly a...	Very satisfi...	Strongly a...	Very...	Very...	Very...	Very...	Very...	Very...	Alm...
92										

1

Data View Variable View

Bio-data

A. Personal Data

1. Full Name: Ismail Bimpe, ADEWOYIN

2. Address: Plot 3, Ajobiewe Layout, Tipper Bus Stop, Ologuneru, Ibadan.

Phone Number: 08023234280

Email: ismailadewoyin@gmail.com

Date and Place of Birth: 27th February, 1968. Saki, Oyo State

3. Nationality: Nigerian

4: Name and Address of Next of Kin: Muhammed Olanrewaju Adewoyin,
Plot 3, Ajobiewe Layout, Tipper Bus Stop,
Ologuneru, Ibadan.

B. Educational Background with Dates

Educational Institutions Attended with dates:

- L. A. Primary School, Isale Taba, Saki Oyo State 1972 - 1978
- Ansar-Ud-Deen High School, Saki, Oyo State (WASCE) 1980 – 1985
- The Polytechnic Ibadan, Saki Campus (OND) 1985 -1988
- The Polytechnic Ibadan, (HND) 1989 -1991
- University of Ibadan (MSc Housing) 2002 – 2006

Academic Qualifications

- Primary School Leaving Certificate 1978
- West African School Certificate 1985
- Ordinary National Diploma 1988
- Higher National Diploma 1991
- MSc Housing Development & Management 2006

C. Working Experience with Dates

- | | |
|--|------------------|
| Daniyan Associates, Estate Surveyors & Valuers, Jos Plateau State. Pupil Surveyor. | 1991 – 1992 |
| Segun Williams & Co, Estate Surveyors & Valuers, Lagos. Associate Partner, | 1993 – 1995 |
| Stofek Nig Limited, Lagos. Head, Estate Department, | 1995 – 1997 |
| Jide Taiwo & Co, Lagos and Ibadan Branches. Principal Surveyor. | 1997 – 2002 |
| Ismail Adewoyin & Co, Estate Surveyors & Valuers, Ibadan. Principal Partner. | 2003 – Till Date |
| Kakab & Associates, Housing Development & Facility Management. C.E.O | 2009 – Till Date |

D. Membership

1. Nigerian Institution of Estate Surveyors & Valuers. NIESV (Associate, ANIVS, Since 2000)
2. Estate Surveyors & Valuers Registration Board of Nigeria. ESVARBON, (Registered Valuer, RSV, Since 2001).

E. Publications

1. I. B. Adewoyin (Main Author), A. V. Falegan, & F. M. Adedire. (Co-authors). *Socio-Economic Characteristics of Peri-Urban Interface Residents, in an African Primate City*. **ABSU Journal of Architecture, Technology, Engineering & Environmental Studies**. Volume 3, Number 1 of March, 2023.
2. A. V. Falegan, (Main Author) I. B. Adewoyin, & F. M. Adedire. (CO-authors). *Investigating the Environmental Challenges of Exploding Cities – Focus on Selected Informal Settlements of Abuja, Nigeria*. **Ethiopian Journal of Environmental Studies & Management**. Volume 16 Number 3. 2023

Book

1. Ismail Adewoyin (Author). *Striving for Liberation and Leadership - The Travails of A Convener*. Published by Kakabijawuta Nig. Ltd. Ibadan 2022. ISBN 978-978-52214-2-4

F. Major Conferences Attended

1. Nigerian Institution of Estate Surveyors & Valuers 33rd Annual Conference Akure 2003
2. Nigerian Institution of Estate Surveyors & Valuers 40th Annual Conference Lagos, 2010
3. Nigerian Institution of Estate Surveyors & Valuers 41st Annual Conference Kaduna, 2011
4. National Institute for Policy & Strategic Studies, Kuru, Experts and Eminent People's Conference held at NICON HILTON, Abuja. Nov. 27 – Dec. 2, 2017

G. Awards and Fellowships

1. NIESV Participation Certificate Seminar On: Facility Management Practice in Nigeria held at Federal Palace Hotel, Victoria Island, Lagos. Dated 4th September, 2002
2. NIESV Lagos Branch MCPD Certificate of Participation On: Estate Surveying & Valuation Practice in the 21st Century at Command Officers' Mess, 1, Marina Lagos. Dated 3rd December, 2003.
3. NIESV Lagos Branch MCPD On: International Valuation Standard with Respect to Valuation Practice in Nigeria, held at LTV 8 Hall, Agidingbi, Ikeja dated 25th February, 2009.
4. NIESV/ESVARBON Certificate of Participation On: Standardization of Development Appraisal held at NECA Ultra-Modern Complex CBD Ikeja, Lagos, dated 9th September, 2009.
5. NIESV Oyo Branch/ESVARBON MCPD Workshop Certificate of Participation On: Issues and Challenges of Assets Declaration by Public Office Holders held at Civic Center Ibadan on Wednesday, 17th August, 2011
6. NIESV Oyo Branch/ESVARBON MCPD Certificate of Participation On: Transforming Nigerian Economy Through Effective Land Management & Property Taxation held at North Campus, The Polytechnic, Ibadan dates 9th May, 2013
7. National Association of Okeogun Students NAOOS, Adeyemi College Of Education Merit Award On: Leadership and Development of Okeogun Area. Held at Theatre Hall, Adeyemi College of Education, Ondo. July 2016
8. National Association of Okeogun Students NAOOS FEDPOFFA Chapter Merit Award On: Leadership and Okeogun Development held at Fed. Polytechnic Offa, August 2017
9. National Association of Okeogun Students Union Obafemi Awolowo University Ile Ife Chapter, Merit Award: As the Guest Lecturer on Annual Oka Week. November 19, 2019.

H. References

1. Professor M. N. Tijani,
Department of Geology,

University of Ibadan,
Ibadan. Nigeria
Telephone: 08023252339

2. Hon. Justice M. L. Abimbola,
Oyo State High Court of Justice,
Ring Road,
Ibadan.
Telephone: 08033334189

.....
Signature

.....
Date

The University Compliance Certification

This is to certify that, this project by Ismail Bimpe ADEWOYIN with matriculation number LCU/PG/002117 in the department of Urban and Regional planning in the Faculty of Environmental Design & Management, Lead City University, Ibadan, is in full compliance with the approved University format and style.

Signature

Date

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