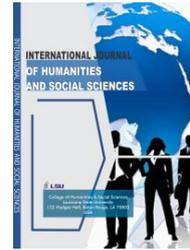


# Impact of Population Growth on Land Use and Urban Development Control Strategies in Port Harcourt Metropolis 2000-2023

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## Abstract

*In Port Harcourt Metropolis, rapid population growth has had a major impact on land use patterns and urban development, increasing the strain on housing, infrastructure, and natural resources. This study employed purposive sampling approaches. 348 responders were selected as a sample. The primary source of data for the study is primary data. Tables, frequency counts, basic percentages, descriptive statistics, mean, and standard deviation were used to analyze the obtained data. The study highlights important issues in urban planning, including environmental degradation, lax enforcement of development control rules, and ineffective zoning laws. According to research, migration and economic opportunity have fueled increasing urbanization, which has resulted in land-use disputes, deforestation, and traffic, calling for better planning and governance. The report suggests a strategy framework for sustainable urban development that incorporates smart growth principles, better land-use planning, and more robust regulatory enforcement. In light of ongoing population increase, these actions are intended to improve Port Harcourt's urban landscape's sustainability and resilience.*

**Keywords:** *Population Growth, Land Use, Urban Development, Control Strategies.*

## 1. Introduction

Unprecedented environmental change, economic expansion, and population growth have all occurred during the 20th century. In recent years, there has been a great deal of discussion about the connection between resource depletion, population growth, and environmental degradation on a global scale. Between 1900 and 2000, the world's population increased fourfold, from 1.6 billion to 6.1 billion people (United Nations, 2001). This high population expansion can be largely attributed to declines in neonatal mortality rates and famine-related deaths. Additionally, the life expectancy of nations around the world has increased due to advancements in medicine and public health. Better economics and continued human growth have been made possible by industrialization.

Changes in the urban environment and the amount of land needed for food production are always facilitated by the world's cities' expanding populations. According to various writers, the growth of urban areas has a significant impact on the availability of land for agriculture and has an unprecedented influence on peri-urban land alterations (Wang, 2019; Idowu et al., 2020). The majority of cities have seen changes due to a number of factors: The high cost of landed property in urban centers and, inevitably, the low cost of land in peri-urban areas are examples of non-implementation of planning and zoning laws. One of the positive aspects of current urban studies study is the growth of peri-urban areas worldwide. The degree of urbanization, urban agglomeration, and peri-urban development rises in tandem with the rate of population migration. The peri-urban areas of Nigeria have grown rapidly due to a variety of physical, economic, social, and political reasons that have impacted urban growth. (Idowu et al, 2020).

Urbanization is a global phenomenon that is happening everywhere in the world. According to Pacione (2005), the source of the rising levels of urbanization and urban agglomeration is a combination of net in-migration to urban regions and the natural rise in the urban population. Many academics believe that demographic shifts are the primary cause of spatial change in any part of the world, with social, economic, and political activity also being implicated. These factors have resulted in competition for land for different purposes (Popoola, 2015). Likewise, Sadia (2000) suggested that there are essentially two types of elements that influence and determine the urban development process and trend in any city. These elements fall into two categories: spatial and non-spatial. The non-spatial components are made up of demographic, social, economic, and political elements,

whereas the spatial aspects are land price surface, road accessibility, topographic land elevation, and private housing plan.

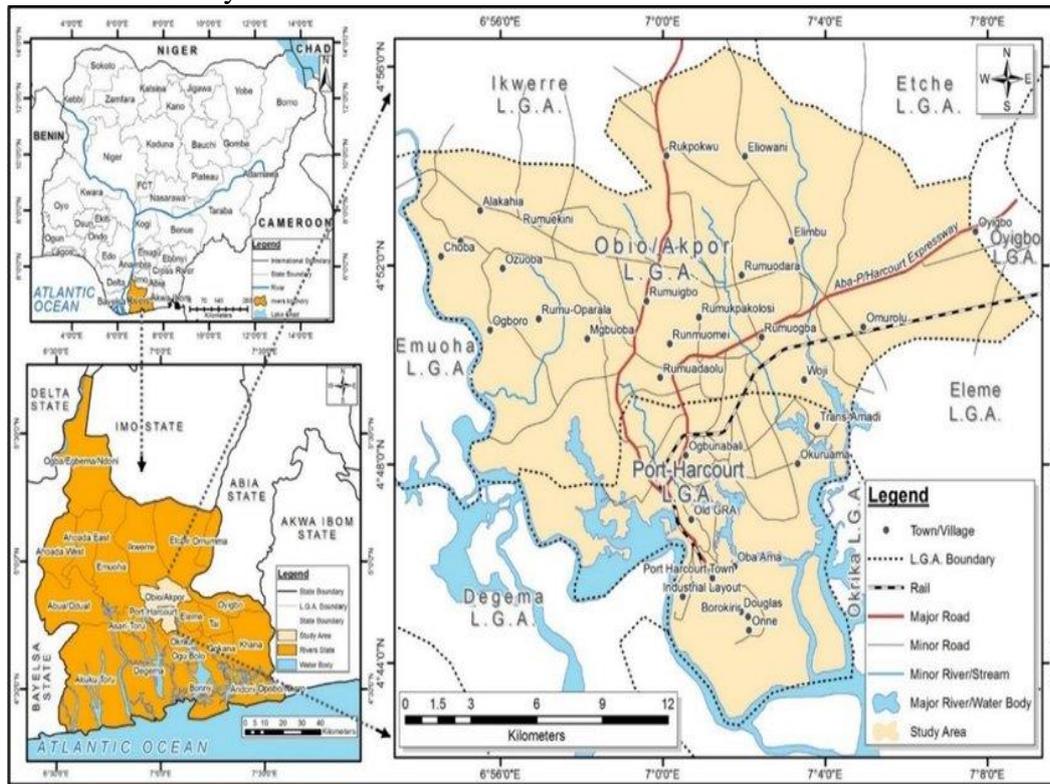
Because there are more cars on the road due to higher population density, there is pollution and traffic congestion. Ineffective transportation networks created by poorly planned urban growth make commuting challenging and raise greenhouse gas emissions. To solve these issues, sustainable urban transportation strategies like mass transit and pedestrian-friendly infrastructure are crucial (Newman & Kenworthy, 1999). The need for housing, roads, water supplies, electricity, and sanitation increases as the population grows. This frequently results in the quick transformation of undeveloped or rural land into residential and commercial spaces. In cities with weak planning regulations, informal settlements emerge, contributing to congestion and poor living conditions (Angel et al., 2011). Governments and urban planners face the challenge of providing adequate services and infrastructure while balancing environmental sustainability.

Population growth has a significant effect on land usage, resulting in increasing demand for infrastructure, urbanization, and environmental deterioration. Nonetheless, these issues can be managed with the use of efficient urban growth control techniques. Promoting sustainable urbanization requires the employment of public-private partnerships, green infrastructure, affordable housing initiatives, land use planning, and smart growth policies. In the face of population expansion, policymakers must take proactive and coordinated measures to guarantee that cities continue to be livable, resilient, and environmentally sustainable.

## **2. Method**

Latitude 4°47'21" North and longitude 6°59'55" East of the equator determine the strategic location of Port Harcourt, which is located in southern Nigeria (Port Harcourt City Government, n.d.). Obio/Akpor Local Government Area (OBALGA) and Port Harcourt City Local Government (PHALGA) are the two main LGAs that make up this significant urban hub in Rivers State (Port Harcourt City Government, n.d.). The city is roughly 360 square kilometers (140 square miles) in size. Port Harcourt is an important part of Nigeria's oil industry, which shapes its socioeconomic environment, and is home to major multinational oil businesses. The city's economy is based on a wide range of industries, including manufacturing, services (including legal, hospitality, medical, educational, and engineering), and extractive industries. Additionally, agricultural and agro-based businesses thrive, contributing to the city's economic diversification. Port Harcourt Metropolis plays a major role in Nigeria's economy, especially as a hub for the petroleum industry (Okwakpam, I. O., & Mark, E. O., 2021).

FIGURE 1: Study Area



Source: ESRI ArcGIS, 2024

**Sampling Technique**

The study made use of Purposive Sampling Techniques. 348 respondents were selected.

**Method of Data Collection**

To gather information, the researcher provided participants with a standardized questionnaire to fill out. Data for the study was collected over the course of a month. To ascertain the impacts of population expansion in the Port Harcourt Metropolis between 2000 and 2023, a questionnaire was distributed to the selected respondents.

**Data Analysis**

The researcher used a combination of straightforward statistical approaches to facilitate comprehension in order to produce trustworthy results that will suitably enhance knowledge. In order to obtain information on the demographic variables and the study's research questions, the Statistical Package for Social Sciences (SPSS) version 23.0 was used to analyze the generated data using tables, frequency counts, simple percentages, descriptive statistics (primarily arithmetic mean and bar chart), mean, and standard deviation. A criterion mean of 2.5 was applied for examining the mean values of the study questions. Values below the criterion mean were rejected, but mean values within and above the criterion mean were approved.

**3. Results**

Table 1: Influence of population growth on land use in Port Harcourt metropolis

ITEM	ITEMS	MEAN	STD	REMARK
1	Population growth has led to optimized land use practices and efficient urban planning in Port Harcourt Metropolis.	2.79882	0.22931	
2	The expansion of residential areas has been well-coordinated with population growth in Port Harcourt Metropolis.	2.83432	0.1387	
3	Population growth has had minimal impact on land	3.00592	0.18633	

	use patterns in Port Harcourt Metropolis.			
4	Land use in Port Harcourt Metropolis has become chaotic and disorganized due to rapid population growth.	3.08876	0.09413	
5	The government's land use policies have failed to adapt to the changing population dynamics in Port Harcourt Metropolis.	2.88757	0.44451	
	<b>GRAND MEAN</b>	<b>2.92308</b>	<b>0.2186</b>	<b>ACCEPTED</b>

Criterion score = 2.50

Source: Author’s field work, 2023

SPSS version 23

The results presented in Table 1 offer insights into how population growth influences land use in Port Harcourt Metropolis, as perceived by respondents. The study examined various aspects, including the optimization of land use practices, coordination of residential area expansion, impact on land use patterns, chaotic effects due to rapid population growth, and government policies' adaptability to changing population dynamics. The mean scores and standard deviations provide a nuanced understanding of respondents' perceptions regarding these relationships.

Population growth in Port Harcourt Metropolis has led to optimized land use practices and efficient urban planning, with a mean score of 2.80. The expansion of residential areas has been well-coordinated with population growth, promoting sustainable growth. However, population growth has minimally impacted land use patterns, possibly due to factors like land use regulations and economic considerations. Some respondents express concerns about land use becoming chaotic due to rapid growth, and the government's land use policies have failed to adapt adequately to changing population dynamics, emphasizing the need for flexible and responsive policy frameworks.

Table 2: Planning instruments used in the control of urban development Port Harcourt metropolis

ITEM	ITEMS	MEAN	STD	REMARK
1	Zoning regulations are effectively used to control urban development in Port Harcourt Metropolis.	2.7929	0.08636	
2	Comprehensive land use planning strategies have been successful in managing urban development in Port Harcourt Metropolis.	2.84615	0.11965	
3	The current planning instrument in Port Harcourt Metropolis adequately addresses urban development challenges.	2.79882	0.30519	
4	The planning instrument lacks enforcement mechanisms, leading to uncontrolled urban sprawl in Port Harcourt Metropolis.	2.69231	0.17568	
5	There is a need for a more robust planning instrument to regulate urban development effectively in Port Harcourt Metropolis.	3.01183	0.43195	
	<b>GRAND MEAN</b>	<b>2.8284</b>	<b>0.22377</b>	<b>ACCEPTED</b>

Criterion score = 2.50

Source: Author’s field work, 2023

SPSS version 23

The data presented in Table 2 offers insights into the effectiveness of planning instruments used to control urban development in Port Harcourt Metropolis, as perceived by respondents. The study evaluated various aspects, including the use of zoning regulations, comprehensive land use planning strategies, adequacy of the current planning instrument, enforcement mechanisms, and the need for a more robust planning instrument. The mean scores and standard deviations provide an understanding of respondents' perspectives regarding the efficacy and challenges associated with these planning instruments.

The survey reveals that zoning regulations and comprehensive land use planning strategies are effective in controlling urban development in Port Harcourt Metropolis. However, concerns have been raised about the current planning instrument's inability to address urban development challenges, lack of enforcement mechanisms, and the need for a more robust instrument to regulate development effectively. The results suggest a need for continuous evaluation and improvement of planning frameworks to address evolving urban complexities and promote sustainable urban growth.

#### **4. Discussion**

The study in table 1 explores the relationship between population growth and land use in Port Harcourt Metropolis, focusing on optimized land use practices, residential expansion coordination, impacts on land use patterns, challenges from rapid population growth, and government policy adaptability. Respondents generally believe population growth has led to efficient urban planning and optimized land use, with a mean score of 2.80. However, some respondents believe population growth has minimally impacted land use patterns, possibly due to existing regulations, infrastructural limitations, and economic considerations. Concerns are raised about the chaotic nature of land use due to rapid population growth, necessitating more effective planning strategies. The study emphasizes the need for flexible and responsive policy frameworks to address urban development needs and mitigate the negative impacts of rapid population growth.

The study in table 2 examines the perceptions of respondents regarding the efficacy of planning instruments used to control urban development in Port Harcourt Metropolis. The results show a positive view of zoning regulations and comprehensive land use planning strategies, with a mean score of 2.79 and 2.85 respectively. However, some respondents expressed concerns about the adequacy of the current planning instrument in addressing urban development challenges, with a mean score of 2.80 and a moderate standard deviation of 0.31. The lack of enforcement mechanisms, leading to uncontrolled urban sprawl, is also a concern, with a mean score of 2.69 and a moderate standard deviation of 0.18. The need for a more robust planning instrument is emphasized, with a mean score of 3.01 and a moderate standard deviation of 0.43. The findings suggest that key stakeholders, including government authorities, urban planners, developers, and the community, must collaborate to address identified challenges and implement innovative planning strategies that align with the city's long-term development vision.

#### **5. Conclusion**

Land use and urban development are greatly impacted by population growth in Port Harcourt Metropolis, which also fuels urban expansion, raises the demand for housing and infrastructure, and exacerbates environmental deterioration. Inefficient land use and socioeconomic problems result from the overexploitation of natural resources, the loss of agricultural land, and the emergence of unplanned settlements as cities expand to accommodate growing populations. These problems can lead to pollution, traffic jams, and a lower standard of living if they are not properly managed. Urban development control measures are crucial to addressing these issues. Zoning laws, smart growth strategies, and efficient land use planning can all contribute to sustainable urban growth. Resilient and livable cities are a result of affordable housing initiatives, green infrastructure, and environmental protection policies. Public-private partnerships (PPPs) are also essential for funding and carrying out infrastructure initiatives that promote sustainable urbanization.

In the end, balancing population increase with environmental sustainability and economic success requires proactive and integrated urban planning. To build cities that are effective, inclusive, and flexible enough to accommodate future expansion, governments, urban planners, and communities must collaborate. Societies can lessen the negative effects of population expansion and promote sustainable, well-planned urban settings by putting effective limits on urban development into place.

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