



# Land use Pattern in Coastal Areas of Lagos State: Issues and Challenges

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## Research Article

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## Abstract

An explosion in population, economic development in coastal cities worldwide lead to severe issues and challenges. One reason is that physical planning faces diverse social, economic and political challenges which hinder an organized and planned urban development, therefore leading to issues. This paper examines land use pattern in the coastal area of Lagos state: issues and challenges using both primary and secondary data. The result of the remote sensing analysis of google earth exposed that urban development was stronger in the study area (3.6% increase between 2011, 4.7% increase between 2017, and 12.5% between 2020). Also, the study showed that land-use planning flops due to the lack of implementation of legal regulations, laws, population surge. The study recommends the development of strategies that discourage the disturbance of swamp habitat and funding of more research on the implication of land use, health and life expectancy, and wetlands.

**Keywords:** Coastal; Challenges; Coastal Areas; Issues; Land Use; Lagos State; Pattern

## Introduction

Coastal areas are highly dynamic and undergoing rapid change [1]. Globally, urban sprawl is one of the key drivers of unsustainable development [2]. Natural hazards and extreme weather patterns impose risks on coastal areas that inland areas seldom encounter [3]. North Africa's increasingly populous cities face tangible risks today, but these will be amplified as the impacts of global climate change further manifest themselves over the decades to come [4]. In the 1960s and 70s, after the colonial rule, new bureaucracies, infrastructure, and companies employed coastal urban centres [5]. This led to rapid immigration to urban areas in

coastal areas of Anglophone Africa.

This makes it attractive because of the diverse opportunities available, improved social care and/or escape from armed conflicts and non-dependency on agriculture and diversify household income [6]. Africa's coastal cities have long benefited from their ready access to commerce and culture, also face distinct vulnerabilities due to their location [7]. The coastal zones in West Africa were fast-growing, for examples during the colonial era's commercial activities channel strategically along the sea coast [8]. Its negative impacts are particularly visible and crucial in the settlement of developing countries cities such as Lagos, Nigeria,

where unplanned land-use change obstructs sustainable management efforts.

In most developing economies, sustainability challenges emanating from the sprawling expansion of cities are synonymous with informal land use and tenure. Disorderly subdivision layout patterns, lack of public infrastructure and services, poverty, informal livelihood, increased social and economic costs, environmental degradation, loss of agricultural land and diminution of natural resources like forest and high-biodiversity wetlands are also obvious problems [9,10]. Several studies on the growth of the Lagos Megacity documented the general consequences of spatial expansion and peri-urbanization. This reflects in the challenges and incompetence of physical planning at a megacity scale and the dominance of unsustainable land use planning decisions [9].

The notion of Land-use change has been central to the sustainability debate because it a main driving force of global environmental change and it affects the earth systems as seen in the literature [9]. The Impacts of land use/land cover change are felt from global to local scales; there is worldwide biodiversity loss, global deforestation, global climate change via carbon circle, soil degradation and the ability of the biological systems to support human needs [3,11,12,6,2]. The sea-level changes will likely continue for centuries even if greenhouse gas (GHG) emissions concentrations were to be stabilized owing to the time scales associated with climate processes and feedbacks [13]. In Lagos megacities, being the prominent manufacturing and port city in West Africa.

Lagos is the heart of the business and economic development in Nigeria, accommodating about 65 per cent of the country's industrial establishments, more than 65 per cent of all commercial activities and around 60 per cent of Nigeria's non-oil economy; it is also home to four of the country's eight seaports [14]. The study also, affirmed that Lagos has been categorized as one of 50 cities most exposed to extreme sea levels, and is projected to experience a more than 800 per cent increase in population exposure by the 2070s. All this, coupled with other factors, lead to altered landscape patterns of urban areas due to substantial growth experienced by these areas over the years. The change in the landscape pattern is substantially caused by natural and human factors, through human activities such as population increase, urban sprawl, and agriculture which can affect the ecosystem and alter the relationships between people and their natural environment [15].

The expansion of urban areas and continued sprawl is

negatively affecting developing countries, the residential and industrial intrusions of growing urban areas lead to a constant decrease of high-quality agricultural land and forests in the marginal areas of cities and rural areas. This higher population pressure in Lagos has led to extreme pressure on natural resources [7]. For example, in the past four decades, urban expansion in Lagos triggered deforestation processes. Land use planning is key to meeting increasing demands for human needs and at the same time maintaining the natural environment. Land use denotes the uses of land for different purposes, which includes wildlife habitat, forest-agriculture, industrial, tourism, and settlement etc [16]. It is important in planning and management activities concerned with the surface of the earth [6].

The trend of land uses in coastal areas of Lagos is remarkable over the last half-century [17]. However, much still need remains to be done in implementing the new urban Agenda (2030); Coastal Zone Policy (2005) and the establishment of Integrated Coastal Zone Management (ICZM)- coordination, demarcation of land zoning, mangrove afforestation through community participation, better preparedness against disaster and the introduction of modern land management systems [3,18]. In light of this, the study intends to understand the pattern, trends and their consequences of land-use pattern in the study area [19]. In light of the above, this paper examines the land use pattern in coastal areas of Lagos State.

## Methods and Materials

This study was conducted using a mixture of primary and secondary data. The primary data was source through the use of a questionnaire which was systematically administered in a selected area within Lagos megacities (peri-urban areas). The secondary data were source from scholarly published works. The results of the data were analyzed and presented in a table.

## Results of Findings and Discussion

### Integrative Analysis of Interviews, Google Earth and literature

In the following, we present a comparative and integrative analysis of our three different data sets. Table 1 and 2, to which we refer throughout the text, provide information on integrative analysis of interviews explored to assess how reliable the observed or assumed trends and patterns of urban development in the study area.

Pattern of Changes	Confidence	
Urban sprawl	Very High	Very Low
Land fragmentation	Very High	Very Low
Scattered small settlement unit	Very High	Very Low
Scattered large settlement units	Very High	Very Low
<b>Drivers of Change</b>		
Population growth	Yes	No
Roads	Yes	No
Markets (trade and economy)	Yes	No
Agriculture	NO	Yes
Infrastructural development/	Yes	No
Tradition landowner Educational facilities	No	No
<b>Challenging</b>		
Changing lifestyle	Very High	Very Low
Lack of participation by people	Very High	Very Low
Lack of law enforcement	Very High	Very Low
Environmental Degradation	Very High	Very Low
Pollution	Very High	Very Low

Source: Author Field Survey, 2020

**Table 1:** Spatial Analysis of Changes

The result of the finding found that population growth is a driving force of urban development in both study areas (Table 2). Also, 60% of the literature reviewed confirmed this fact and provided many statements with a high agreement. Expert interviews and literature analysis with professional

in the built sector within the study area indicate that natural population growth and migration were the main drivers of land use in the study area, population growth is mainly based on migration due to employment opportunities in the industry and the servicing sectors within the drive radius.

Built-up area	2011	2017	2020
Area [ha]	91	118	312
Area	3.6	4.7	12.5
Settlement units [No.]	873	1156	201
Average settlement unit size in m2	1036	1021	15,554
Source: Author Field Survey, 2020			

**Table 2:** Comparison Of The Development of Settlement Pattern In The Study Area.

### Issues connected to Land Use Pattern in Coastal Areas of Lagos

Lagos megacities continue to grow in population density and urbanization [5]. Presently, it stands as the 14th largest urban area in the world and is on the cusp of becoming a primary coastal megalopolis. Lagos urban area is home to approximately 33% of the Lagos State population [20].

Urban development in Lagos is taking place by the conversion of coastal wetlands into urbanized communities which is a direct result of urban sprawl [9]. If this rate of growth of urbanization remains, the community will be forced to confront impacts on soil erosion, biodiversity, infrastructure demands, polarized demographics, and public health. As of 1978, the city had a population of 4, 300 people (see table 3).

End of Year	Metropolitan Lagos in thousands	Implicit Annual Growth Rate per cent	Non-Metropolitan Lagos in thousands	Total of Lagos State	Metropolitan Lagos as a percentage of Lagos State population
1978	3,779	9.3%	521	4,300	87.88%
1988	7,580	5.56%	812	8,392	90.32%
1994	9,975	4.3 %	1,026	11,001	90.67%
1998	11,842	4.48%	1,147	13,039	90.87
	2000				
	12,949			14,232	90.98
	4.48				
	1,2383				

Source: Called from Lagos Regional Plan (1980-2000)

**Table 3:** Population of Lagos State and Metropolitan and Non-Metropolitan Lagos 1978-2000.

Lagos experienced an influx of over 7 million people from 1990 to 2004. In 1990 the population was 7.74 million, which increased to 13.4 million in 2000, and in 2004 the population reached up to 15 million. With an urban area population of an estimated 11.7 million, Lagos is the 14th largest urban area in the world. By 2010, the population is projected to surpass 20 million [15].

From 2006-2008, the annual projected growth rate stood at 4.44%, which had a ranking of the 7th fastest growing urban area in the world [20]. The grown spatially from a traditional core settlement of about 3.85 sq km in 1881 to a metropolis of over 1,183 sq km. The metropolitan area constitutes about 33% of Lagos State, with 455 sq km [19].

### Causes of Land Use Pattern in Coastal Areas of Lagos

According to a World Bank Renewal Project, since 1981, the total estimated number of 'blighted slum communities

has grown from 42 to almost 100, due to a lack of social services and housing development projects [6]. Conversion from rural to urban area accounts for approximately 75% of the population growth of Lagos' metropolitan area [15]. Between 1986 and 2002 the developed area in Lagos Coastal Area increased by 13% (from 43% in 1986 to 56% in 2002), while swampland decreased by 11% and water area decreased by 3% [20].

### Patterns of Land Use in the Study Area

Considerable urban development rates and land fragmentation trends were observed in areas. This trend was confirmed by all three methods (very high confidence, Table 1). Analysis of google earth (Figure 1) shows that in the area, the built-up area increased in the period between 2011, 2017 to 2020, the number of settlement units (SUs) increased from 3.6% in 2011 to 4.7% in 2017 to 12.5% in 2020 respectively (Table 2).





**Figure 1:** Expansion of settlement expansion within the study area subset right middle, and left. Grey and black areas show expansion in 2011, 2017 and 2020, respectively.

### Causes/Driving forces for Land Use Change in the Study Area

In general, present good roads was identified as a strong driver of urban development. This has given rise to increasing demand for settlement areas for industrial employees and workers [21,22].

Zoning regulation was reported to be less strict, leading to mixed land uses, which were considered less desirable than separated land uses. In the study area, there is spill-overs from already congested areas were assumed to drive migration and informal urban sprawl.

Apart from roads, other infrastructural development such as electricity, schools, hospitals and water provision appears uncorrelated with urban development. Oduwaye [7] showed that in the past, the government had focused less on infrastructural development in fast-growing urban areas, which in turn caused immigration from rural areas where

public services are non-existent [23].

### Recommendations and Conclusion

Based on the finding of this study, it was observed that the study area is undergoing series of transformation in the pattern of land use due to informal urban expansion with small settlement units, historical development, strategic-geographical location and related economic priorities has led to a different speed and pattern of urban development in the study area. For example in the Lekki axis is faster than other parts of the state area, which is with high confidence due to its economic vibrancy and markets. The expansion of scattered large settlement units in the study area was due to economic advantage. Population growth remains an important driver of urban development with high confidence in both areas [24].

Based on the above, the following are recommended:

- Future land-use plans must be framed by firm wetland

conservation strategies that discourage the disturbance of swamp habitat. Additional research must be performed to forecast the health and life expectancy of the Lagos wetlands.

- Future land use plans must take into account potential impacts on the transportation of natural resources as well as foreign trade products. sound, practical waste management regulations would decrease the rate and severity of waterway pollution, as well as the risk of exposure to toxic chemicals in drinking water and stormwater drainage.
- Smart growth would prove economically beneficial to the food market, tourism, resource consumption, and wealth diversity/equity.
- Mixed-income housing in urban areas would strive to improve city-wide quality of life.
- The implementation of equal-access housing markets, educational resources, and employment services would decrease the occupancy of low-income, informal living standards that currently have negative impacts on water quality, public health, and biodiversity.

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