A STUDY OF LAND USE CHANGES IN PERI-URBAN AREAS AND DEVELOPMENT IN SELECTED STATE CAPITALS OF THE SOUTH-SOUTH REGION OF NIGERIA

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Abstract

The present study is aimed at examining land use and land use changes in peri urban areas surrounding State capitals in the South-South region of Nigeria. Land use is the reason for which a land is used, peri-urban areas play key roles in the development and quality of life in the urban centres. The study was hinged on the theory of Urban Bias. The study adopted the cross-sectional research design with the use of survey method to achieve the purpose of the study. A structured checklist and questionnaire was used for the study and in order to examine the land use change patterns, to determine changes in land uses, land use maps for 1992 and 2022 was developed with the aid of Satellite Images (Landsat of 1990 and Google Earth Images for 2013) supported by field work. The study revealed that the peri urban areas surrounding State Capitals were densely populated with fragmented and multi sectorial land uses ranging from housing for residential, commercial as well as industrial usages, agricultural uses and that there is a dynamic rapid transition in the land use demography of the peri urban areas. The finding shows that development trends in the peri urban signifies steady advancement in basic infrastructural facilities such as educational, health, housing and transportation. The study recommends that Government implement effective land use policies that promote compact and mixed-use development, protect natural resources, and preserve agricultural land and that infrastructure investments be strategically planned to support the growing urban population, enhance connectivity, and improve the quality of life for residents.

Keywords: Peri-urban, Land Use, Land Use Changes, South-South Region, Urban Sprawl.

Introduction

Land-use change is one of the significant challenges that impact the natural landscape. It is also the primary driving force of global environmental change and significant to the sustainable development debate (Vliet, 2019). Causes and consequences of land-use change in the physical and social surroundings have been a research topic for over a decade (Veldkamp *et al*., 2004). These consist of their effects on the environment and the potential of natural systems to support the existence (Wizor and Mpigi, 2019). The land use of a region reflects the level of development in that region; hence land-use changes become essential in monitoring the development of a particular area. Due to ongoing migration and internal population growth, large areas in developing countries have gradually been converted to agricultural land, including cash crops, as soon as accessibility conditions allow (Schowengerdt, 2012). Population growth-induced agricultural intensification is taking place at an unprecedented rate.

The south-south region of Nigeria is the epicenter of urbanization in Nigeria and houses over twenty million homes. It accounts for about ninety-five percent of the country's foreign exchange earnings and eighty percent of its revenue as the oil and gas development revolves

within this region (Courson, 2009). This primary driver led to increasing population and urbanization, rapidly spreading to almost all parts of the region and beyond. This rapid urban growth is part of the global concerns and prediction of a continuous urban population growth which will almost double from 2010 to 2050.

According to Aster (2012), the world is becoming increasingly urbanized, and 45% of the population already lived in urban areas in 2000. It was projected that by 2025, 60% of the world's population would live in cities (Owoeye and Ibitoye, 2019). Population in the south-south has been more than triple what it used to be in the past years. The population was just 13.5 million in 1963; but with the influx of people into megacities in this region, the population rose to 17.6 million in 1991and 27.3 million in 2006(National Population Commission, 2006). Therefore, an attempt will be made in this study to map out the classes of land use in the state capitals of the south-south region of Nigeria within thirty years. The study would detect the land consumption rate and the changes that have taken place in this land-use classes, mainly built-up, farmland, forest, bare land, and water bodies.

Aim and Objectives of the Study

This study aims to examine Peri Urban Land Use and Development of State Capitals of South-South Region, Nigeria from 1999 to 2022. The specific objectives are to:

i. To evaluate land use changes in peri-urban areas of selected state capitals of south-south region, Nigeria.
ii. To quantify the change in land use demography of the peri urban of selected state capitals in South-South region, Nigeria.

Conceptual Clarifications

Land Use: Land use is the reason for which humans exploit land, according to one definition of the term. Land-use involves both how the biophysical qualities of land are manipulated and the intent underlying that manipulation, that is, the purpose for which the land is utilized (Yu *et al*., 2021). According to Lambin *et al*. (2001), the interplay that takes place in space and time between the biophysical and human components is what drives land-use change. There are also the possible repercussions on physical and social dimensions.

Peri-urbanization: The term "peri-urbanization" refers to "a process in which rural areas located on the outskirts of established cities become more urban in character, in physical, economic, and social dimensions, typically in piecemeal fashion," and it is one of the definitions of "peri-urbanisation" (Woltjer, 2014). The word "peri-urbanization" can also be used to refer to the process, which is frequently a very active one, through which rural areas that are situated on the periphery of already existing cities take on a more urban personality. This shift takes place in terms of the physical world, the economy, and society, and it frequently occurs in stages.

Theoretical Review

Theory of Urban Bias

This theory has been supported by the findings of a variety of different studies (London and Smith, 1996; Lipton, 1977). Michael Lipton, an expert in economic development, is one of the most prominent advocates of the urban bias theory. In his work from 1977, he explained this hypothesis by comparing the data of 63 nations with less developed economies to the data

of nine countries with more developed economies. The comparison revealed that the urban-rural disparity is seen to grow in poor countries as a result of the tendency of the governments of these nations to intervene in markets in ways that impose taxation on agriculture. This was discovered as a result of the fact that the urban-rural disparity is seen to grow in poor countries. On the other hand, the governments of the richer nations were acting in a manner that was directly opposed to what the governments of the poorer nations were doing (Lipton, 1977; Dixon and McMichael, 2016). In this sense, people who live in rural areas have been described as being parasitized by urban populations, which reap massive benefits from the consumption of inexpensive goods that are produced in rural communities and from the tax income that is generated by these rural areas. Urban populations have been described as being "parasited" by people who live in rural areas.

Empirical Review

Wakirwa (2010) used Landsat imageries to conduct an investigation into urban sprawl in the Gombe metropolitan area between the years 1991 and 2014. The attribute and statistics data that were obtained from the classification result and used for post-classification comparison between the years were used to establish the extent of urban land use. This was done by comparing the data to previous years. According to the findings, urban land use was rather high, occupying around 51.43 percent of the entire landmass. The spatial extent of urban sprawl consumed roughly 12.78% of land between 1991 and 2014, and a high annual rate of 12.78% was also observed in 2014. In 2014, this percentage was also observed.

Awoniran *et al.* (2013) investigated the pattern of land use in the Lower Ogun River Basin between 1984 and 2012 by employing the usage of topographic maps and Landsat photos. The findings of the research indicate that between the years 1984 and 2000, another land use was put into place on 80.08 percent of the land in the study area, while 19.92 percent of the land remained in its original use. Farmland, shrubs, urban/built-up areas, and forested wetland expanded at average annual rates of 6.01, 1.95, 0.89, and 0.17%, respectively, between the years 2000 and 2012, respectively. Additionally, 49.86% of the land use has been converted to other land uses, while 50.14 % of the land use has remained unchanged. It was clear that urban agriculture was having an increasingly negative impact on the ecosystem of the wetland, as evidenced by the deterioration of the soil and the loss of species.

Izah *et al*., (2018) conducted a comparative study to assess the pattern of land use change in southern Nigeria. The study took into account the whole landmass of the states of Ebonyi, Edo, and Ondo. The analysis made use of a time series of multi-temporal landsat satellite imageries from four different epochs dating from 2000, 2005, 2010, and 2016. These imageries were received from the United States Geological Survey. The following categories of land were taken into consideration for this study: bare surface, agriculture, forest, built-up area, mixed-land use, water body, rock outcrop, and unclassified terrain. From the years 2000 to 2005, Edo state saw an increase in the amount of cropland available; however, this trend reversed after 2005. In the years between 2000 and 2016, it gradually increased in the states of Ebonyi and Ondo; nonetheless, the rise was not significant in comparison to the amount of built-up land. According to the findings of the study that analyzed patterns of land use change, there was a significant shift in land use from the year 2000 to 2016 for the built-up land, forestland, farmland, and mixed land that comprised the three study areas. On the other hand,

land that is mostly made up of water bodies and rock outcrops shows less significant land use change. As more land is developed for human use, other types of land become less available.

Methodology

This study adopted a cross-sectional research design and a longitudinal research design. The survey method was used for descriptive purposes to extract evocative data like residents' comments, beliefs, views and activities of individuals, households, communities and governmental authorities (agencies) concerning peri-urbanization at eliciting further qualitative data.

Study Area

The South-South region of Nigeria comprises the area covered by the natural delta of the Niger River defined by its geology and hydrology. Its approximate northern boundaries are located close to the bifurcation of the Niger River at Aboh, while the western and eastern boundaries are around the Benin River and the Imo River, respectively. The area is approximately 25,900 square kilometers and consists of six states; Akwa-Ibom, Bayelsa, Cross River, Delta, Edo, and Rivers (see Fig 1).

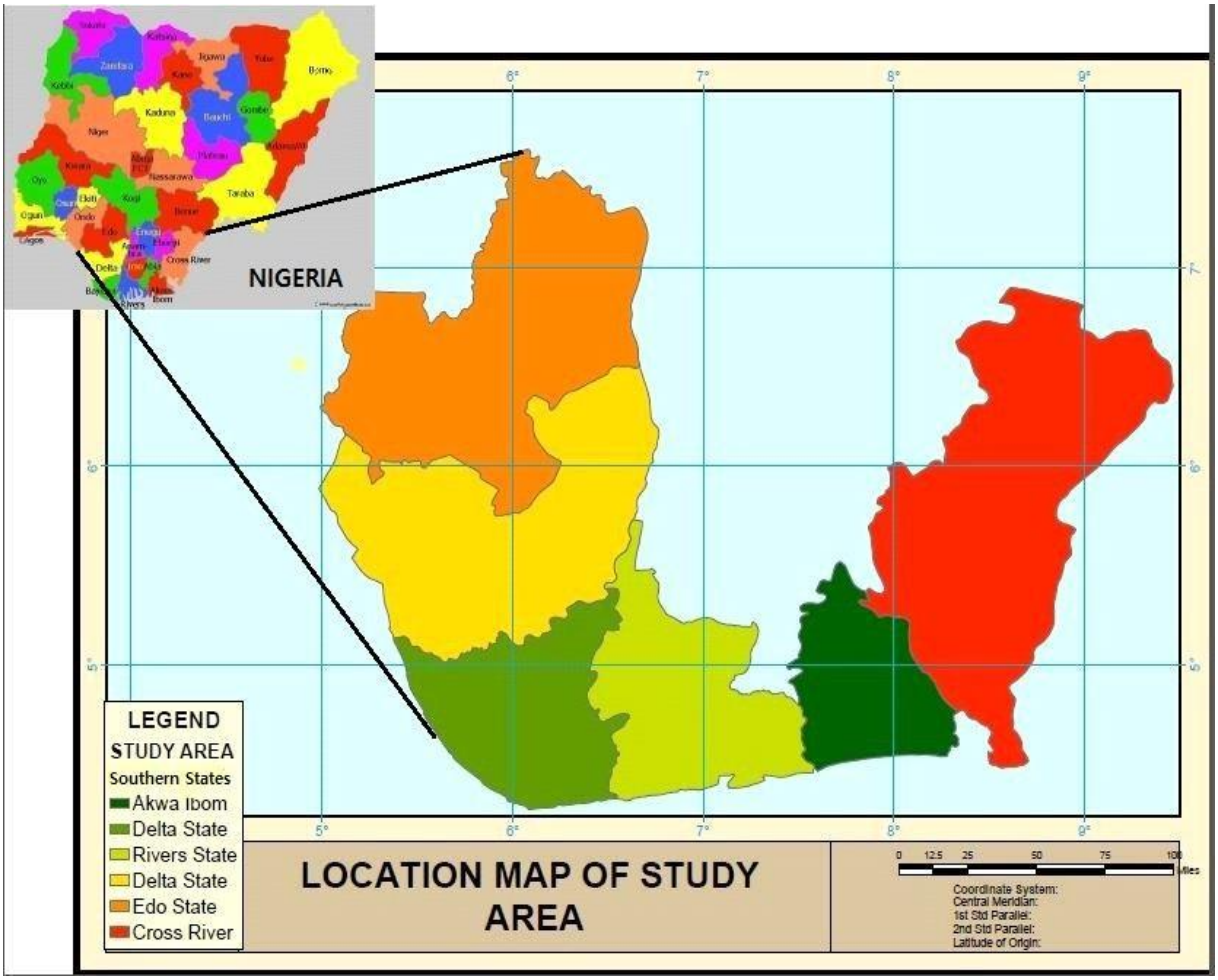

Figure 1: Study Area by Unique Mappers Team Network (Uniport) 2023.

Method of Data Collection/Instrumentation.

Data for this study was collected in two phases in line with the study objectives. The use of a structured checklist and questionnaire specifically developed for this study comprising of three sections with a total of nine questions, inclusive of socio demographic variables to obtain quantifiable data that estimates comments, observation and activities (Simpson-Hebert, 1983) during the cross-sectional survey of the sampled locations across study area. This phase was achieved by a face on one face interaction between the trained research assistants (enumerators) whom were residents of the locations due to the challenges of interpretation and socio-cultural variability of the peri urban areas.

In order to examine the land use change patterns, to determine changes in land uses, land use maps for 1992 and 2022 is developed with the aid of Satellite Images (Landsat of 1990 and Google Earth Images for 2013) which is further supported by field work. The administrative boundary of State Capitals in the South-South regions is obtained from urban planning and information institute. This assist in the analysis of dynamics in the peri-urban zones as it portrays the changes taking place with respect to settlement expansion, commercial and other social and infrastructural developments in the study areas. Previous and current maps of the municipalities is analysed so as to understand the spatial evolution of land use at the Peri-urban areas and to appreciate their development implications. Before each field reconnaissance trip was embarked upon, mission preplanning was conducted to ensure successful data collection.

Method of Data Analysis

Data collected from the surveys is presented using the tabular format and are analysed using descriptive and inferential statistics. The descriptive statistical tools in use involve nominal, frequency and percentage tables.

Landsat Thematic Mapper imagery constitutes the base data layer from which the land use and land cover (built-up and non-built up) maps is derived. System correction refers to the corrections performed at the ground receiving station based on previously known sensor (system) distortions such as the pitch, roll, and velocity of the satellite platform. The image processing starts by image classification within the administrative boundary of State capitals in the South-South regions. Four classes were chosen which are built-up (including any sort of housing construction, road, and bare land), forest (including bushes and shrubs), cropland, and grass lands. There are two methods of image classification. These are, supervised and unsupervised image classifications (Trigal *et al*., 2001). Supervised classification involves selecting pixels that represents land cover classes that are recognized by the analyst. This requires, however, prior knowledge of the area by the analyst. Unsupervised image classification is more computer-automated. It enables the analyst to specify some parameters that the computer uses to reveal statistical patterns that are inherent in the data. These patterns are simply clusters of pixels with similar spectral characteristics. This method is usually used when less is known about the data before classification (Tadesse *et al*., 2001).

After the processing and classification of satellite imagery, a site visit at some sites for verification purpose was done using Global Positioning System (GPS) equipment in order to obtain accurate location point data for each land use and land cover class included in the classification scheme.

Results

Table 1: Land Use Characteristics within Uyo Capital City and Environs

LAND USE CHANGES UYO CAPITAL CITY AND ENVIRONS						
Land use class	1993 (Sq. Km)		2012 (Sq. Km)		2022 (Sq. Km)	
Built up area	170	19.25 %	212.6	24.08%	254.32	28.80%
Forest	99.47	11.26 %	123.80	14.02%	62.42	7.07%
Water Body	150.03	16.99 %	110.26	12.49%	68.17	7.72%
Farmland	463.54	52.49 %	436.34	49.42%	498.08	56.41%

Source: Researchers Analysis tool (2021).

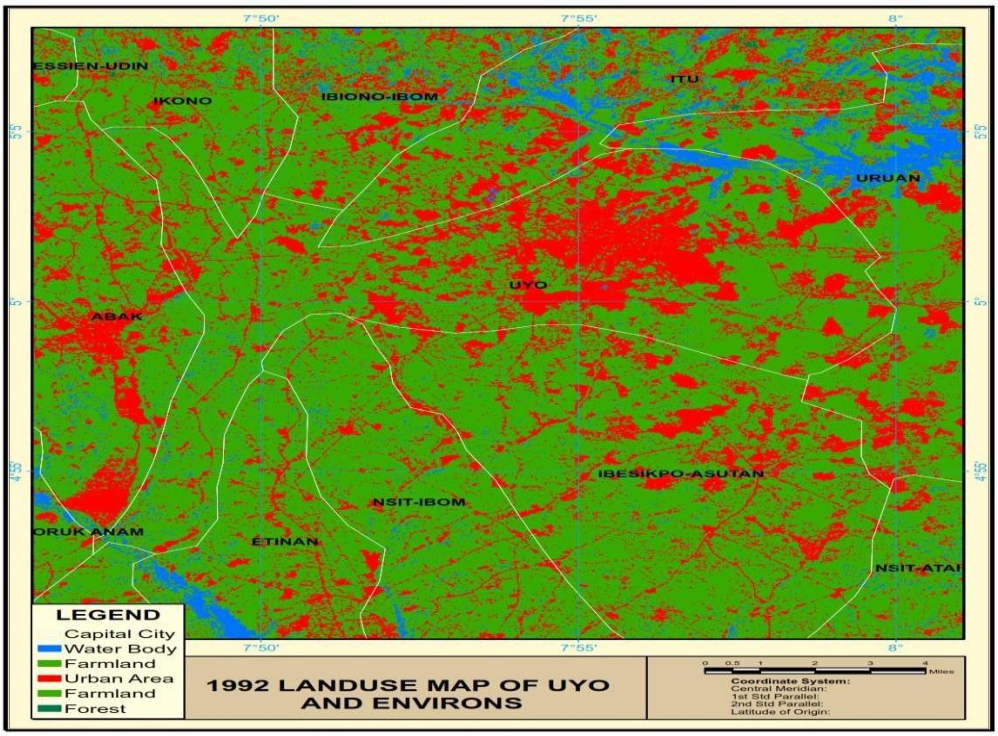

Figure 2: Land Use Map of Uyo Capital City and Environs (Landsat Satellite Image, 1992).

Table 2: Land-Use Characteristics within Yenagoa Capital City and Environs

LAND USE CHANGES YENAGOA CAPITAL CITY AND ENVIRONS						
Land use class	1992 (Sq. Km)		2012 (Sq. Km)		2023 (Sq. Km)	
Built up area	140.25	9.77%	191.07	12.46%	130.50	9.09%
Forest	438.57	30.54%	425.80	27.76%	431.86	30.07%
Water Body	79.80	5.56%	126.94	8.28%	114.63	7.98%
Farmland	777.40	54.14%	789.81	51.50%	759.02	52.86%

Source: Researcher's Analysis (1992, 2012, 2023)

The data as shown in table 2 shows the land use characteristics of Yenagoa Capital City and environs and shows changes in land use classes over three different years: 1992, 2012, and 2023. In 1992, the built-up area was 140.25 sq. km, which represented 9.77% of the total land. By 2012, the built-up area increased to 191.07 sq. km, accounting for 12.46% of the total land as shown in figure 4. In 2023, the built-up area decreased to 130.50 sq. km, making up 9.09% of the total land. There was significant growth in built-up areas between 1992 and 2012, but then

a decrease by 2023 as shown in figure 5. This indicates urbanization followed by potential urban planning or land-use policy changes. In 1992, the forested area covered 438.57 sq. km, making up 30.54% of the total land. By 2012, the forested area decreased to 425.80 sq. km, representing 27.76% of the total land. In 2023, the forested area increased slightly to 431.86 sq. km, accounting for 30.07% of the total land. There was a decrease in forested area between 1992 and 2012, which could be due to deforestation. However, there was a slight recovery in forested land by 2023, possibly indicating reforestation efforts or natural regrowth.

In 1992, water bodies covered 79.80 sq. km, accounting for 5.56% of the total land. By 2012, the area of water bodies increased to 126.94 sq. km, representing 8.28% of the total land. In 2023, the area of water bodies decreased slightly to 114.63 sq. km, making up 7.98% of the total land. There was an increase in water bodies between 1992 and 2012, followed by a slight decrease by 2023. Changes in precipitation patterns, land development, or land management practices may have influenced these fluctuations. In 1992, farmland covered 777.40 sq. km, making up 54.14% of the total land. By 2012, the area of farmland increased slightly to 789.81 sq. km, representing 51.50% of the total land. In 2023, the area of farmland decreased to 759.02 sq. km, accounting for 52.86% of the total land. Farmland remained the dominant land use class throughout the years, although there were some fluctuations. The decrease from 2012 to 2023 might indicate changes in agricultural practices or land conversion to other uses. These changes in land use over the years suggest complex interactions between urbanization, deforestation, changes in water bodies, and agricultural practices. Monitoring land use changes is essential for sustainable land management and environmental conservation.

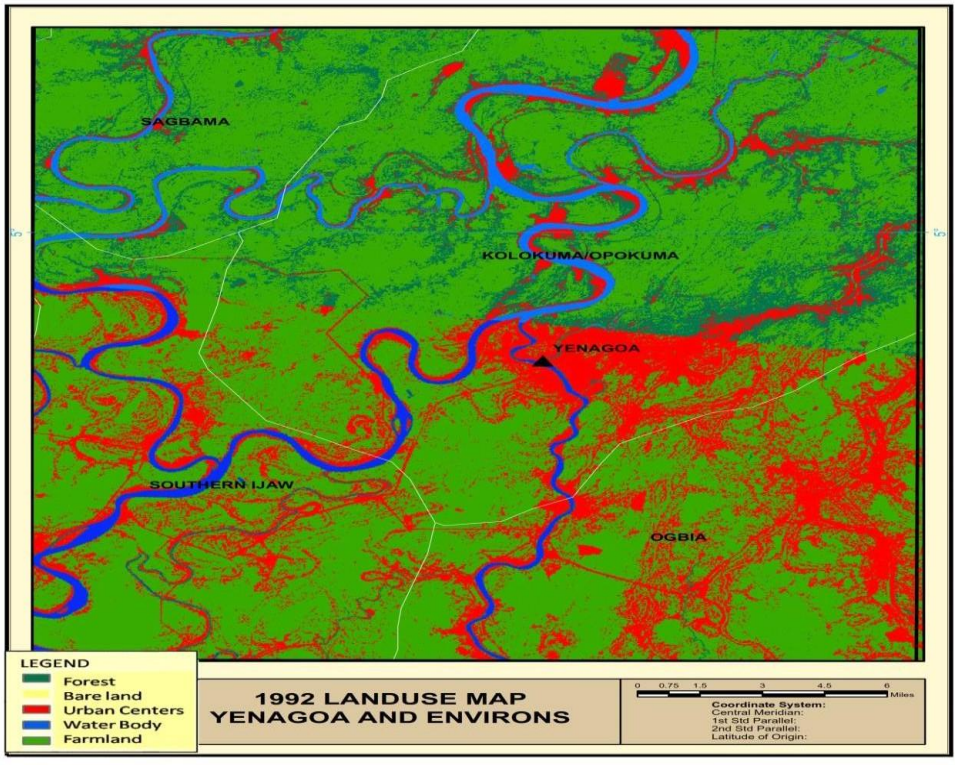

Figure 3: 1992 Land Use Map of Yenagoa Capital City and Environs (andsat Satellite Image, 1992).

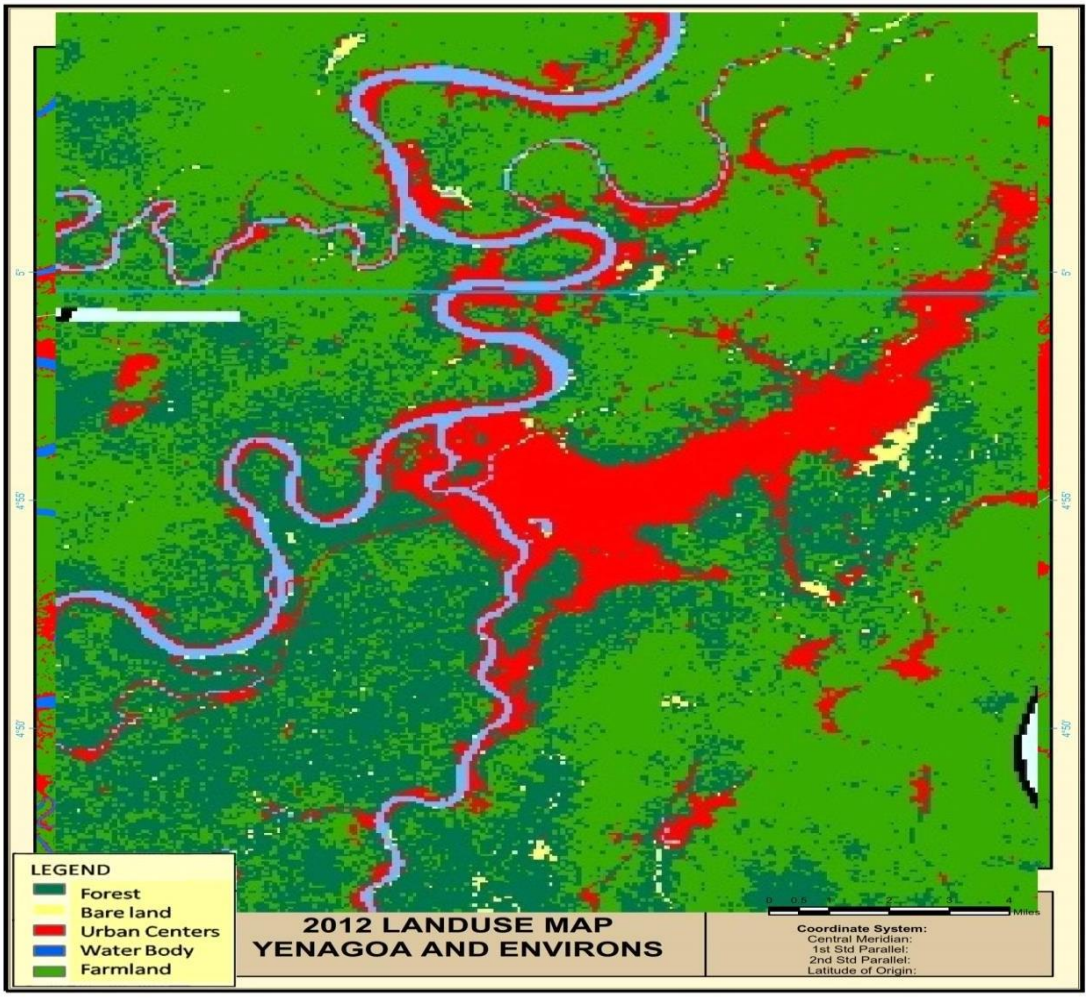

Figure 4: 2012 Land Use Map of Yenagoa Capital City and Environs (Landsat Satellite Image, 2012).

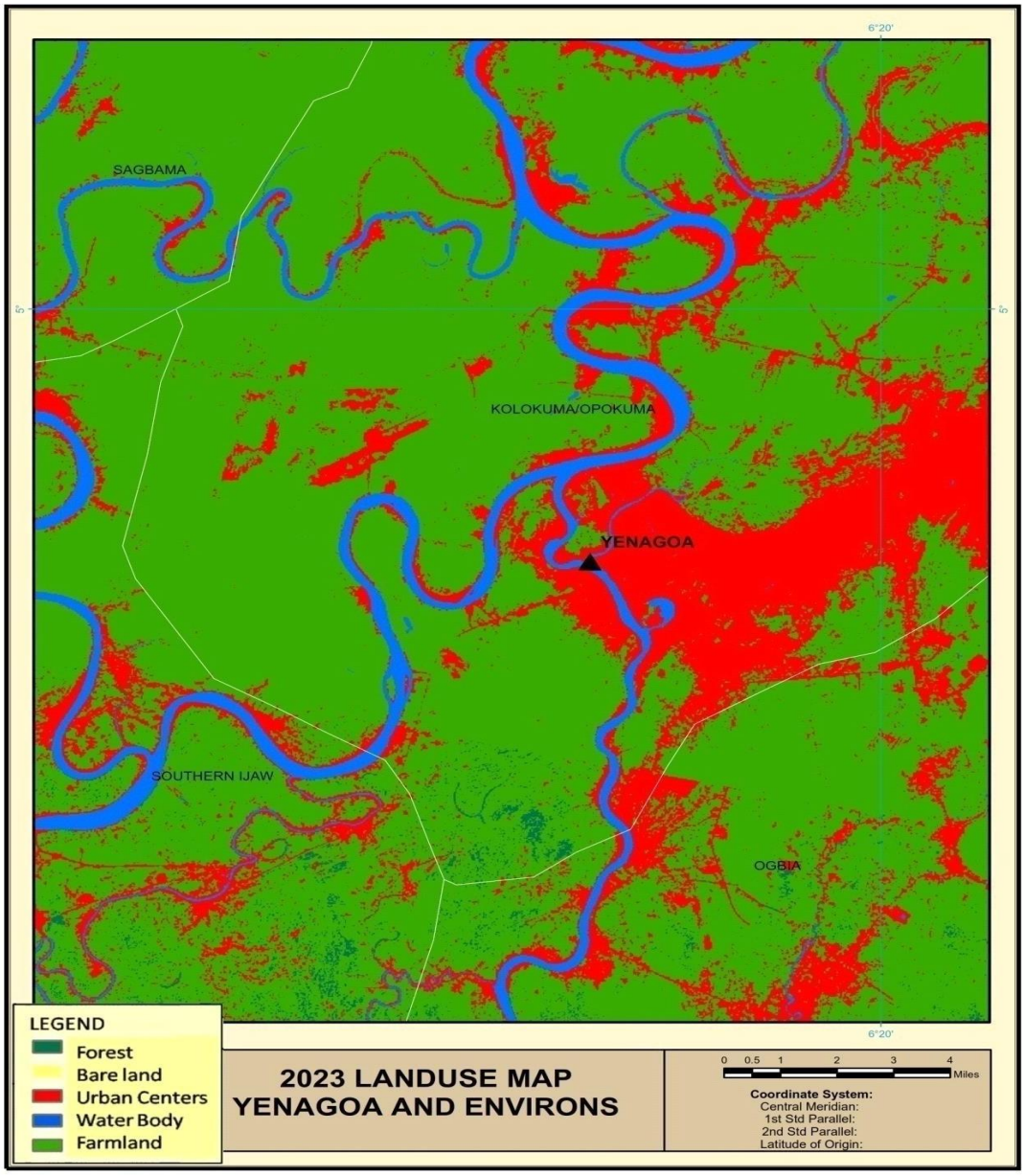

Figure 5: 2023 Land Use Map of Yenagoa Capital City and Environs (Google Earth Images, 2023).

Table 3: Table Showing Land-Use Characteristics within Calabar Capital City and Environs

LAND USE CHANGES CALABAR CAPITAL CITY AND ENVIRONS						
Land use class	1992 (Sq. Km)		2012 (Sq. Km)		2023 (Sq. Km)	
Built up area	48.75	12.26 %	107.07	25.16%	161.88	40.67%
Forest	213.89	53.80 %	166.63	39.15%	82.21	20.65%
Water Body	17.93	4.51 %	43.98	10.33%	51.26	12.88%
Farmland	117.50	29.55 %	107.89	25.35%	102.69	25.80%

Source: Researcher's Analysis (1992, 2012, 2023)

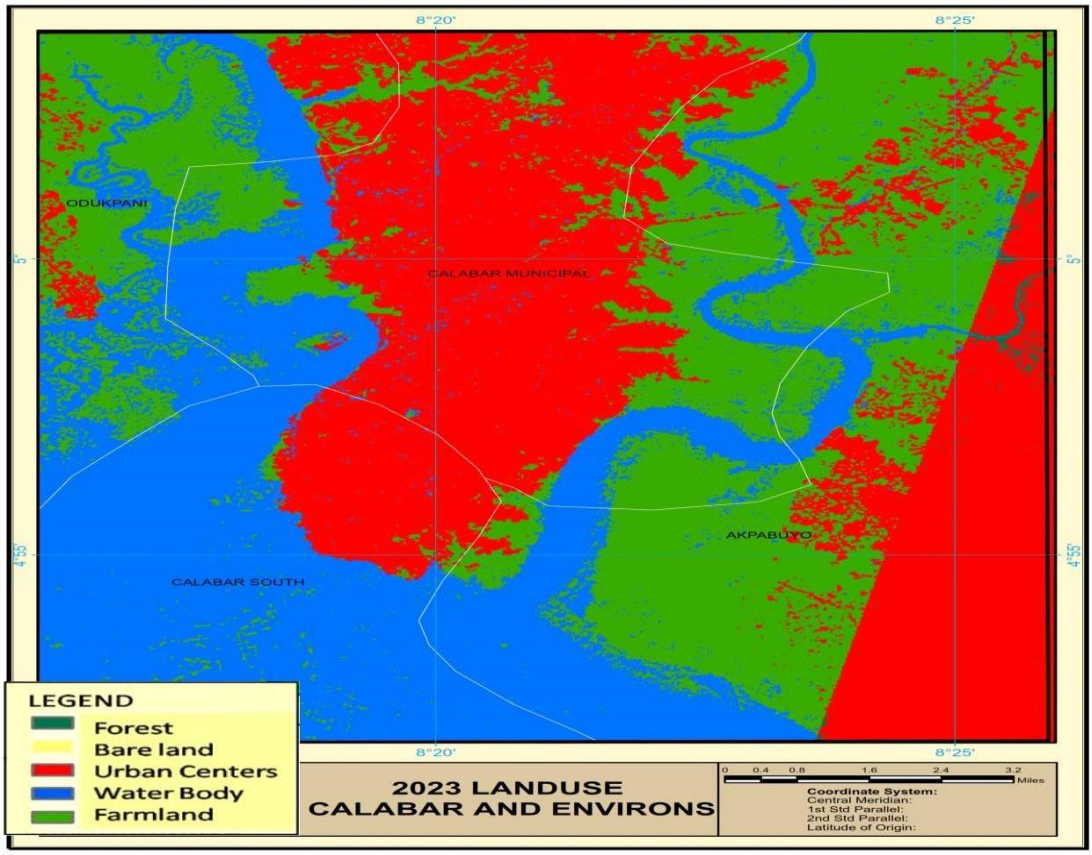

Figure 6: 2023 Land Use map of Calabar Capital City and Environs (Google Earth Images, 2023).

Table 4: Table Showing Land-Use Characteristics within Asaba Capital City and Environs

LAND USE CHANGES ASABA CAPITAL CITY AND ENVIRONS						
Land use class	1992 (Sq. Km)		2012 (Sq. Km)		2023 (Sq. Km)	
Built up area	18.64	3.02%	188.32	30.44%	251.32	43.22%
Forest	150.36	24.37%	38.60	6.24 %	41.00	7.051%
Water Body	27.7	4.489 %	41.76	6.74 %	112.34	19.32%
Farmland	420.3	68.11%	350.08	56.57%	176.81	30.407%

Source: Researcher's Analysis (1992, 2012, 2023)

The data as shown in table 4 shows the land use characteristics of Asaba Capital City and environs and shows changes in land use classes over three different years: 1992, 2012, and 2023. In 1992, the built-up area covered 18.64 square kilometers, which accounted for 3.02% of the total land. By 2012, there was a significant increase in the built-up area to 188.32 square kilometers, representing 30.44% of the total land.

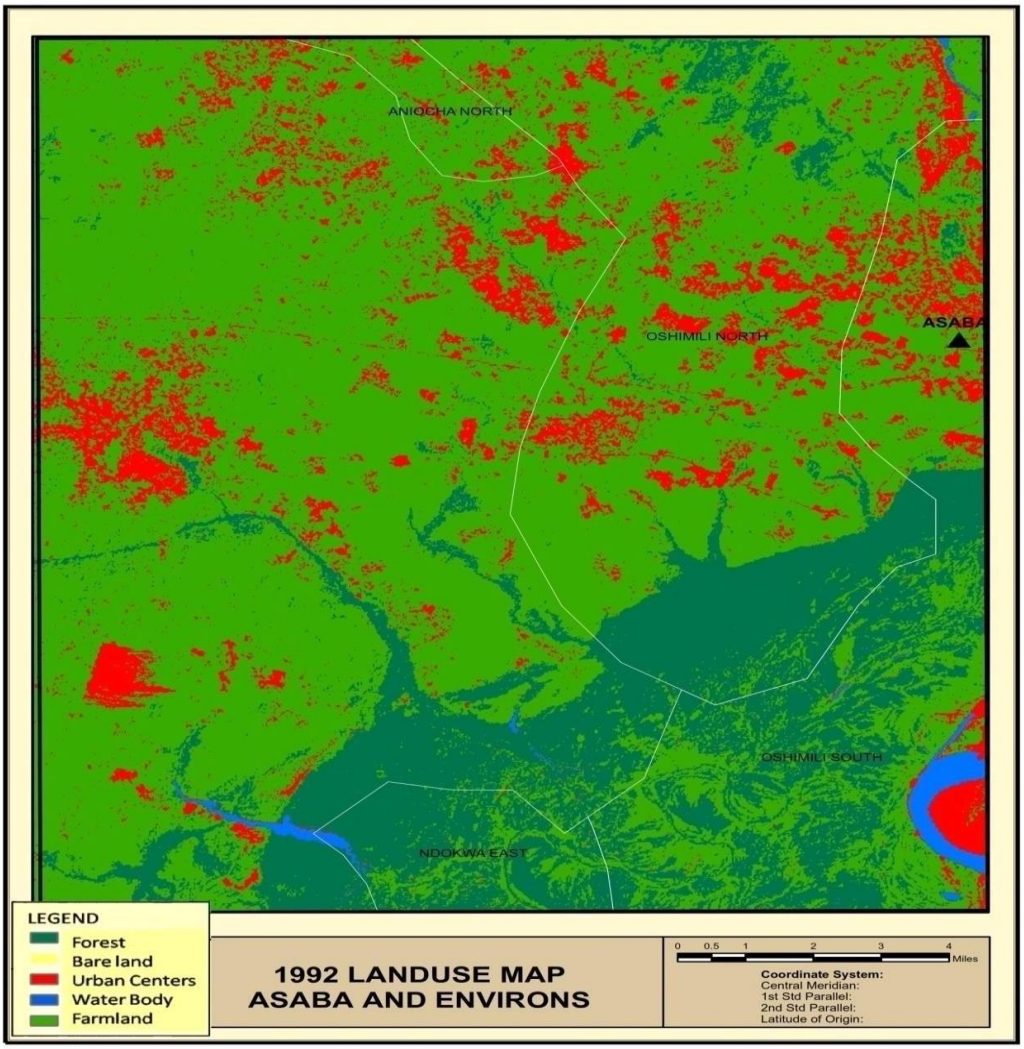

Figure 7: 1992 Land Use map of Asaba Capital City and Environs (Landsat Satellite Image, 1992).

In 2023, this area continued to expand, reaching 251.32 square kilometers, which is 43.22% of the total land. This indicates rapid urbanization and development over the years. In 1992, forests covered a substantial 150.36 square kilometers, making up 24.37% of the total land. By 2012, there was a significant decrease in forested land to 38.60 square kilometers, which accounted for 6.24% of the total land. This indicates deforestation or conversion of forests into other land uses.

In 2023, the forested area slightly increased to 41.00 square kilometers, but it is still significantly lower than in 1992. This indicates some effort to reforest but not a full recovery. In 1992, water bodies covered 27.7 square kilometers, accounting for 4.489% of the total land. By 2012, there was a moderate increase in the area of water bodies to 41.76 square kilometers, representing 6.74% of the total land. In 2023, the area of water bodies expanded significantly to 112.34 square kilometers, making up 19.32% of the total land. This suggests an increase in water resources, possibly due to environmental conservation or natural factors like increased rainfall. In 1992, farmland covered 420.3 square kilometers, which was the largest land use

category, accounting for 68.11% of the total land. By 2012, the area of farmland decreased to 350.08 square kilometers, representing 56.57% of the total land. This indicates a shift away from agriculture or the conversion of farmland to other uses. In 2023, there was a further reduction in farmland to 176.81 square kilometers, but it still accounted for a significant portion at 30.407% of the total land. This analysis suggests significant changes in land use patterns over the years. There has been substantial urbanization and a decrease in forested and farmland areas, which may have environmental and socioeconomic implications. The increase in water bodies could be positive for the environment, but further investigation is needed to understand the underlying causes of these changes and their consequences.

Table 5: Table Showing Land Use Characteristics within Benin Capital City and Environs

Land use class	1992 (Sq. Km)		2012 (Sq. Km)		2023 (Sq. Km)	
Built up area	146.7	8.81%	246.60	14.73%	541.77	32.62%
Forest	581.10	34.88%	528.76	31.58%	602.2	36.26%
Water Body	323.52	19.41%	276.97	16.54%	132.11	7.95%
Farmland	614.65	36.89%	611.30	36.51%	384.68	23.17%
Bare land	0.06	0.004%	10.87	0.65%	19.33	1.16%
Total	1666.03		1674.5		1660.76	

Source: Researcher's Analysis (1992, 2012, 2023)

The data provided represents changes in land use over three different years: 1992, 2012, and 2023. The land use is categorized into five classes: Built-up area, Forest, Water Body, Farmland, and Bare Land. Let's analyze the changes in each land use class over these years: In 1992, the built-up area covered 146.7 square kilometers, which was 8.81% of the total land. By 2012, this area expanded to 246.60 square kilometers, accounting for 14.73% of the total land. In 2023, it increased significantly to 541.77 square kilometers, representing 32.62% of the total land. This indicates a substantial increase in urbanization and infrastructure development over the years. In 1992, the forest covered 581.10 square kilometers, making up 34.88% of the total land. By 2012, there was a slight decrease to 528.76 square kilometers, accounting for 31.58% of the total land. In 2023, the forest area expanded to 602.2 square kilometers, representing 36.26% of the total land. While there was a temporary decline, the forest area has rebounded and even increased slightly over the years.

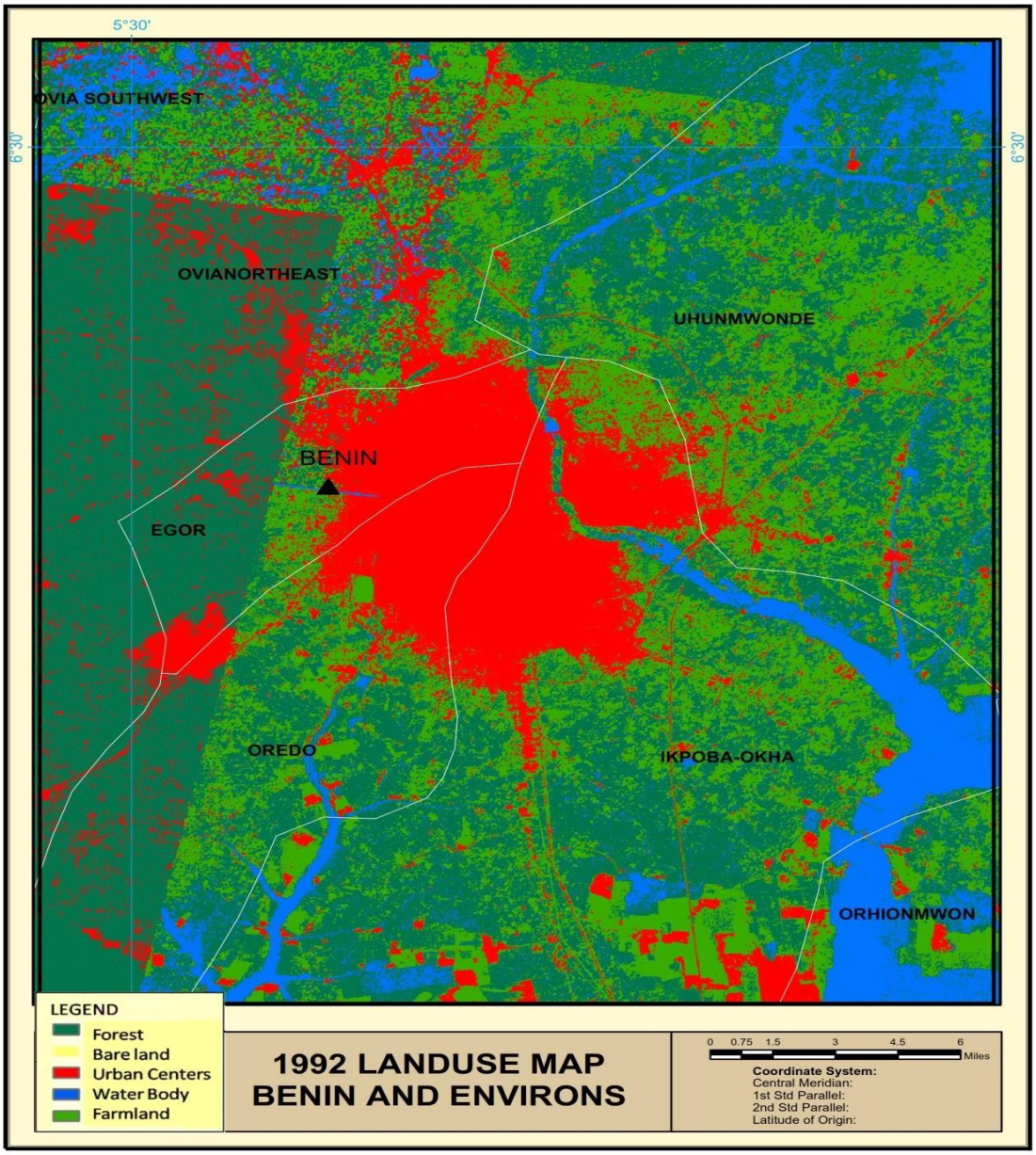

Figure 8: 1992 Land Use Map of Benin City and Environs (Landsat Satellite Image, 1992).

In 1992, water bodies covered 323.52 square kilometres, which was 19.41% of the total land. By 2012, this area decreased to 276.97 square kilometres, accounting for 16.54% of the total land.

Table 6: Checklist for Trend in Development Index of Peri Urban in State Capitals for the period under review (1990 – 2022)

KEYS; 1 = Strongly Disagree, 2 = Disagree, 3 = Agree, 4 = Strongly Agree

S/No	Criterion	Assessment Indicator	1	2	3	4
1.	Agricultural Activities	There are fewer farming activities as most of the agricultural lands has been lost to urban land use.	80 21.4%	109 29.1%	110 29.4%	75 20.5%
2.	Provision of Basic Facilities.	There is provision of certain basic facilities such opening of roads, electricity poles and transformers are spearheaded by the residents as community associations or groups (community organizing).	49 13.1%	90 24.1%	100 26.7%	135 36.1%
3.	Educational Facilities	There are presences of enough numbers of quality educational institutions (secondary &primary) by public or private funding.	90 24.1%	120 32.1%	80 21.4%	84 22.5%
4.	Health Institutions	There exist enough number of quality health facilities (health centres, clinics and pharmacies) owned by private or government.	60 16%	105 28.1%	110 29.4%	99 26.5%
5.	Economic Activities	There is an improvement in the volumes and quality of economic activities ongoing in the peri urban areas presently.	65 17.4%	85. 22.7%	93 24.9%	131 35%
6.	Social Services.	There is a reasonable improvement in the levels of social services offered in the peri urban areas such Hotels and Bars, Restaurants and Salons etc.	70 18.7%	110 29.4%	122 32.6%	72 19.3%
7	Housing	There is a serious improvement in the standard and quality of housing facilities in the peri urban areas within state capitals under the period in review.	54 14.4%	100 26.7%	140 37.4%	80 21.4%
8	Pollution Control	There is increasing cases of air and noise pollution in the peri urban areas due to increasing economic activities through not controlled.	74 19.8%	80 21.4%	120 32.1%	100 26.7%

Source: Researcher's Analysis Tool (2022)

Table 6 shows the respond to statement items on the issues of trends in the development of the peri urbans areas around the state capitals. In response to statement item 1 on the issue that there are fewer farming activities as most of the agricultural lands has been lost to urban land use, 75 respondents which represent 20.5% of the study population strongly agreed, 110 respondents representing 29.4% of the study population agreed, 109 respondents which represents 29.1% of the study population disagreed while 80 respondents which represents 21.4% of the study population strongly disagreed.

In response to statement item 2 of table 6, on the issue that there is provision of certain basic facilities such opening of roads, electricity poles and transformers are spearheaded by the residents as community associations or groups (community organizing), 135 respondents which represent 36.1% of the study population strongly agreed, 100 respondents representing 26.7% of the study population agreed, 90 respondents which represents 24.1% of the study population disagreed while 49 respondents which represents 13.1% of the study population strongly disagreed.

In response to statement item 3 of table 6, on the issue that there are presences of enough numbers of quality educational institutions (secondary & primary) by public or private funding, 84 respondents which represent 22.5% of the study population strongly agreed, 80 respondents representing 24.1% of the study population agreed, 120 respondents which represents 32.1% of the study population disagreed while 90 respondents which represents 24.1% of the study population strongly disagreed.

In response to statement item 4 of table 6, on the issue that there exist enough number of quality health facilities (health centres, clinics and pharmacies) owned by private or government, 99 respondents which represent 26.5% of the study population strongly agreed, 110 respondents representing 29.4% of the study population agreed, 105 respondents which represents 28.1% of the study population disagreed while 60 respondents which represents 16% of the study population strongly disagreed.

In response to statement item 5 of table 6, on the issue that there is an improvement in the volumes and quality of economic activities ongoing in the peri urban areas presently, 131 respondents which represent 35% of the study population strongly agreed, 93 respondents representing 24.9% of the study population agreed, 85 respondents which represents 22.7% of the study population disagreed while 65 respondents which represents 17.4% of the study population strongly disagreed.

In response to statement item 6 of table 6, on the issue that there is a reasonable improvement in the levels of social services offered in the peri urban areas such Hotels and Bars, Restaurants and Salons etc, 72 respondents which represent 19.3% of the study population strongly agreed, 122 respondents representing 32.6% of the study population agreed, 110 respondents which represents 29.4% of the study population disagreed while 70 respondents which represents 18.7% of the study population strongly disagreed.

In response to statement item 7 of table 6, on the issue that there is a serious improvement in the standard and quality of housing facilities in the peri urban areas within state capitals under the period in review, 80 respondents which represent 21.4% of the study population strongly agreed, 140 respondents representing 37.4% of the study population agreed, 100 respondents which represents 26.7% of the study population disagreed while 54 respondents which represents 14.4% of the study population strongly disagreed.

In response to statement item 8 of table 6, on the issue that there is increasing cases of air and noise pollution in the peri urban areas due to increasing economic activities through not controlled, 100 respondents which represent 26.7% of the study population strongly agreed, 120 respondents representing 32.1% of the study population agreed, 80 respondents which represents 21.4% of the study population disagreed while 74 respondents which represents 19.8% of the study population strongly disagreed.

Conclusion

The study concludes that the peri urban settlements are densely populated with fragmented and multi sectorial land uses ranging from housing for residential, commercial as well as industrial usages, agricultural uses and that there is a dynamic rapid transition in the land use demography of the peri urban for the period under review (1991 – 2022), the finding shows that development trends in the peri urbans signifies steady advancement in basic infrastructural facilities such as educational, health, housing and transportation.

Recommendations

The study recommends the following; that Government implement effective land use policies that promote compact and mixed-use development, protect natural resources, and preserve agricultural land. These policies should prioritize sustainable urban planning, efficient transportation systems, and the preservation of open spaces, allocate resources for the development of adequate infrastructure, including transportation networks, water and sanitation systems, and social amenities. Infrastructure investments should be strategically planned to support the growing urban population, enhance connectivity, and improve the quality of life for residents.

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