

**POPULATION GROWTH AND LAND USE CHANGE IN BENUE
STATE: IMPLICATION FOR SOCIAL SECURITY AND
ECONOMIC DEVELOPMENT IN SANKERA (2001 – 2023)**

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ABSTRACT: The Earth's environment has become progressively configured by multiple land use and land cover changes, which are all products of global intensification in anthropogenic activities relative to sustained population growth over space and time. This paper uses a frequency distribution table, simple percentages, t-test, correlation statistics, geographic information system (GIS) and remote sensing as techniques for data analysis to examine the phenomenon of population growth against the background of land use and land cover changes in the Sankera Geographical District of Benue State. These variables are examined in relation to their implications for social security and economic development. Primary data were obtained through the administration of 180 questionnaires via multi-stage sampling, field surveys and photo elicitation as well as key informant's interview (KIIs). The secondary data were sourced from journal articles with related focuses. The study revealed that there has been significant growth in the size of the population in the study area from 2001-2023, which is a combined function of excess fertility over mortality as well as migration. Similarly, the results of this study show that population growth in the study area has significantly impacted land use and cover changes, with adverse effects on social security and economic development. The paper accordingly recommends that effective family planning measures be made available for intending users, the adoption of more effective land use policies, agricultural mechanization and the pursuit of greater security to protect the vulnerable population in the locality.

Keywords: Population Growth, Land Use, Land Cover, Social Security, Economic Development

INTRODUCTION

The 21st century represents a spectacular era in the history of the Earth in which the planet's natural environment has progressively become configured with anthropogenic architectures. According to Asaasuen et al (2024), these phenomenal configurations are remote and proximate impacts of population growth over space and time. Importantly, the global population and demographic scenarios manifest a trend of exponential growth in human numbers from a few hundreds of millions in the years 1600 through 1830, during which it

took two hundred years (200) for world population to double to 1 (one) billion from 500 million people but only 100 years to again double to 2 (two) billion in 1930 and 45 years to yet again double to 4 (four) billion in 1975. Today, the world population is pegged at approximately 8.2 billion as of August 2024 (United Nations, 2024), with a corresponding rise in scenario configurations on the land surface of agricultural, residential, industrial, transportation and institutional affiliations all over the land area (Abayomi et al, 2024).

In East Asia and South Asia, population growth has been a principal factor in land use policies and overall development administration by the government and non-governmental organizations (NGOs). According to Tong and Qui (2020), in their study on the spatial interactions between population and land use as well as land cover change in China positive correlations exist strongly between expanding sizes of the human population and the spectrum of land use and land cover hereafter referred to as LULC change over time. This scenario is the same for Europe and North America, where human society has continuously sought to make remarkable advancements in science and technology to improve livelihoods through efficient utilization of the Earth's natural environment (Ejiroghene et al, 2022). This curiosity has paid off, as today, vast portions of the United States and European society have made significant impacts on the environment through efficient land use policies that regulate housing, agriculture, industry, transportation and communication, with the ultimate purpose of maximizing satisfaction through carefully citing structural facilities and choosing socioeconomic activities to minimize the pace at which land cover changes through land use and vice versa.

Across Africa and Nigeria in particular, the phenomenal transition from forestlands and grasslands to agricultural lands and farmlands has been rapid due to low levels of technological applications in the productive process (Genet, 2020). This state of affairs is even more alarming in Nigeria, where shifts from forestlands through grasslands and farmlands have occurred at incredible rates whereas change to built-up or structural facilities have increasingly become the new face of the land surface (Danfulani et al, 2022). In Benue State, population growth has continued to heighten since its creation in 1976. The 1991 census figure was 2.5 million whereas the 2006 National Population and Housing Census reported a value of 4.5 million, upon which the current estimate based on the 2022 projection was over 6.2 million people at an annual rate of 2.3 % growth (Benue State Government Official Website). These trends in human numbers have spurred multiple LULC changes, which, according to Asaasuen et al (2023), involve inevitable shifts from forestlands to agricultural lands and from agricultural lands to built-up or residential, industrial, recreational and institutional architectures. These efforts have collectively placed enormous pressure on land to the extent that though the carrying capacities of the respective communities have yet to be reached, social conflicts have been triggered by their blaze, and many socioeconomic factors have been overturned in the Katsina-Ala, Logo and Ukum local government areas, which together form the Sankera Geographical District of Benue Northeast Senatorial District.

Accordingly, global changes in land use and land cover are associated with population growth and the mounting pressure on land resources, which tends to trigger conflicts, especially in developing nations where there is limited application of scientific and technological apparatuses in the production of goods and services, as noted earlier. It is therefore against the background of the increasing magnitudes of LULC changes relative to social security and the implications for economic development that this study undertakes to

determine the links between population growth and LULC changes in the Sankera District of Benue State from 2002 - 2024 relative to social security and economic development.

Statement of the problem

The geopolitical district of the Sankera axis, comprising Katsina-Ala, Logo and Ukum local government areas, have experienced large-scale changes in land use and LULC between 2001-2024, involving phenomenal shifts from forestry through agriculture and farmlands to built-up architectures through industrialization, urbanization, and globalization. These developments, which are products of continuous endeavors by human society to improve livelihoods and lifestyles, have intensified daily because of the increasing human population. Importantly, alongside these developments, there has been an unprecedented collapse of social security, especially from 2015-2023, which has made socioeconomic life unbearable in the geopolitical district which justifies a study such as this.

Objectives of the study

The following issues have been itemized to provide direction for activities in the study.

1. To examine the trend of population growth in the Sankera Geographical District from 2000-2023.
2. To identify the remote and proximate causes of population growth in the Sankera Geopolitical District.
3. To examine the impact of population growth on LULC change in Sankera.
4. To examine the relationship between LULC change and social security.
5. To examine the adverse effects of increasing insecurity on economic development in the Sankera Geographical District.

Hypotheses

1. There is no significant difference in the population size of the Sankera Geographical District from 2001- 2022.
2. There is no significant relationship between fertility rates and population growth in the Sankera Geopolitical District.
3. There is no significant relationship between population growth and LULC change in the Sankera Geographical District
4. LULC change has no significant effect on increasing insecurity in Sankera.
5. There is no significant link between degenerating security conditions and economic downturns in the Sankera Geopolitical District.

The Study Area

The Sankera Geopolitical District is a northern division of Benue Northeast Senatorial District, which is one of the three Senatorial districts of Benue State. The geopolitical district comprises the Katsina-Ala, Logo and Ukum local government areas, located between Latitudes 7° - 7° , $50'N$, and Longitudes 9° $50'E$ – 10° $00E$. The geopolitical district is bounded on the west by the Guma and Buruku Local Government Areas, on the south by the Kwande Local Government Area and to the East and North, the study area shares boundaries with Taraba State.

Physical and socioeconomic profile

The general topography of the study area is a gently undulating landscape with pockets of hills. The Dikpo hill in the eastern part of Harga, Katsina-Ala local government area, which extends approximately 300-400 m above sea level, is the highest among them. There are pronounced uplands in Logo LGA, including Shisho, with multiple solid minerals such as salt, lead and quartz, as well as concentrated deposits of fluoride in Ayilamo which is already being mined along Anyiin Road. The study area has a tropical wet and dry season climate with rainfall from April - October and a dry season from November - March. In addition to numerous lakes such as Lake Aketa and Anyibe as well as streams and rivers such as the River Katsina-Ala, Loko and Gbor-Aya support a multiplicity of land uses on the fertile soils that are nourished by rainfalls and mineral elements that wash down from the hills. These and favourable attributes of the natural environment have guaranteed extensive land uses, which have intensified gradually over time, involving crop cultivation, livestock rearing, fishing, agroforestry, and recently, mining activities, all of which have improved the lifestyles and economic fortunes of the masses in the study area.

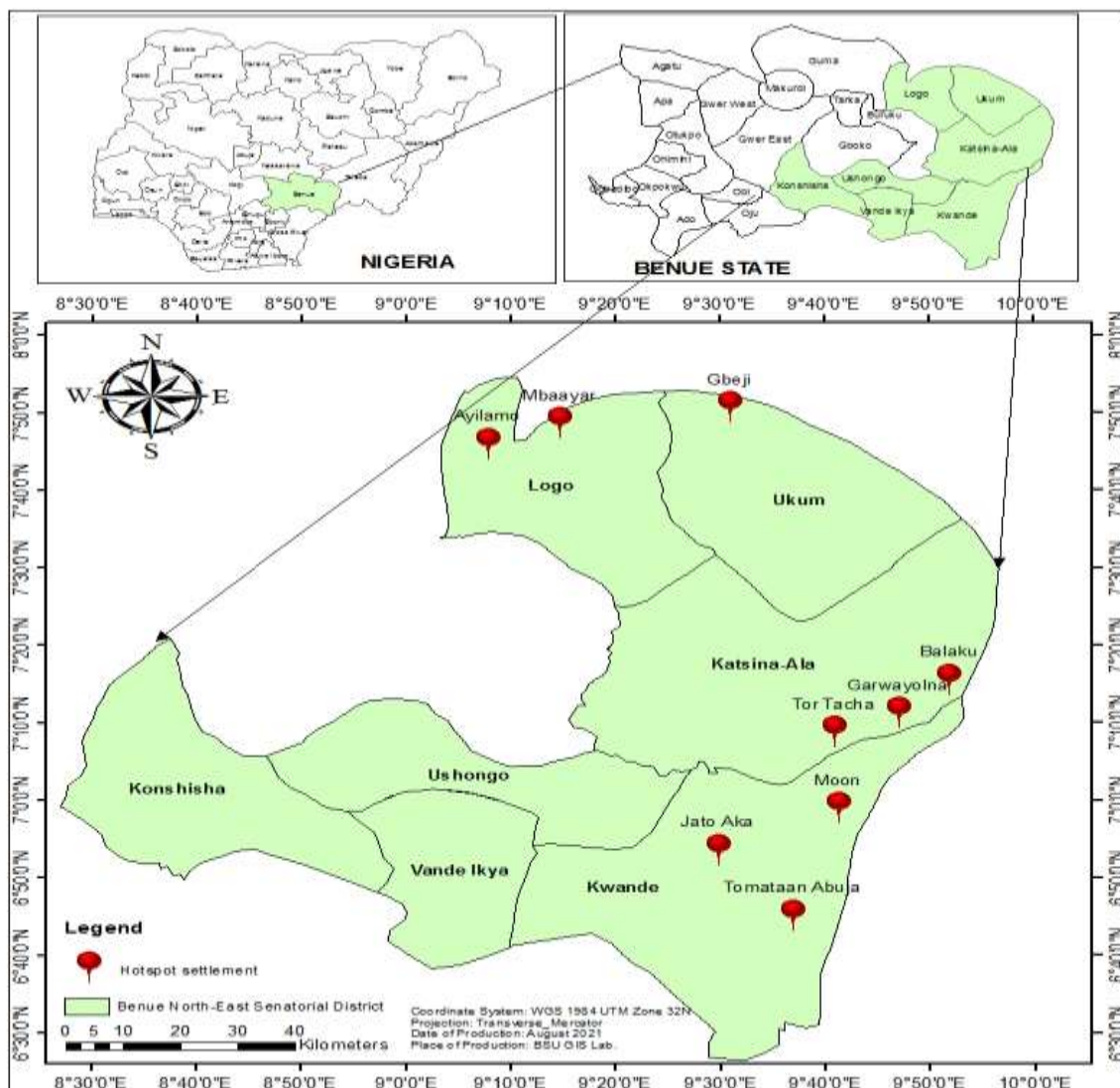


Figure 1. Benue Northeast Senatorial District showing the Sankara Geographical District

This segment of the study is a review of works from other studies with related focal issues, and it focuses on the framework of the objectives of this study.

Remote and proximate causes of population growth

Population growth in a locality across the globe is factored by the demographic structures of natural increase and migration. According to Anantric et al, (2022) natural growth, which is the differential advantage of fertility rates over mortality rates, occurs through early marriages and strong attachments to polygamous families. This feature, which is typical of traditional African societies, tends to rapidly increase the population size through new births into households. Similarly, in later studies on population growth in Taiwan and Brazil, South America, East Asia Shih et al, (2022) and Tangera et al, (2023) reported that population growth has been exponential due largely to high fertility rates caused by polygamous households typical of developing countries where household heads look upon large family sizes as good sources of labor hands for agricultural and other socioeconomic activities.

On the other hand, primacy, which is the socioeconomic advantage a settlement has over other neighbouring settlements with respect to agricultural, industrial, commercial, educational and health services, is also a great factor in attracting population growth through migration from less privileged settlements to the highly privileged settlements, (Cao et al, 2023). Importantly, all the foregoing issues of demographic and socioeconomic affiliations play vital and competitive roles in the growth of the population within the study area. The inhabitants of Gaambe-Ya, Gambe-Tiev and Ugondu are essentially farmers, with a significant majority operating polygamous families as a way of life relative to their occupational status as farmers. Similarly, upon the creation of Katsina-Ala, Logo and Ukum local government areas in the early 1990s, population thresholds started concentrating in certain fixed locations of Katsina-Ala, Tor-Donga, Anyiin, Ayilamo and Zaki Biam, respectively, with increasing magnitudes of agro-based as well as other industrial and recreational conglomerations. These factors individually and collectively serve as impetuses for the influx of migrants from far and near including predominantly traders from the Ibo ethnic identity from eastern Nigeria, which has today ranked those rural settlements as population growth poles in the study area (Iortyom et al, 2022).

Impact of population growth on LULC change

Population growth has had spectacular impacts on LULC in the form of phenomenal and dramatic changes in the patterns of usage and cover. In a study on land use and land cover change associated with high population density in rural localities called “urural” using global LULC change based on time series analysis from 2000-2020, Agrawal et al, (2024) reported that population growth and LULC change are significantly correlated, involving physical changes in shifts from farmlands, vegetal cover and biodiversity in the wake of increasing built-up architecture. This study finding implies that as the population size increases, LULC changes also intensify.

Furthermore, Maaku et al (2023), in their study on LULC dynamics in the upper Benue River Basin via Land-Sat images and geographic information system (GIS), reported significant decreases in the size of land occupied by vegetation similar to the sizes of open grasslands, arable lands and grazing fields. The study attributes the changing LULC in the face of increasing magnitudes of settlements and industrial development proliferation to growth and

concerted efforts increase productivity to reflect the ever-increasing demand conditions. Similarly, in a study focused on the alarming global disappearance of green spaces in urban and peri-urban areas via geospatial data, remote sensing and photo elicitation, Amy et al, (2024) reported that an increasing rate of urbanization led to increasing rates of loss of green spaces in many cities across Europe at a rate of 20% between 2000 and 2022. The study recommended intensification of the green environment through forestation programs and strengthening of the “urban green” policy within member states of the European Community. This is because mere exposure to green space strongly protects against poor health within human body.

Impacts of LULC change on social security and development

The impacts of LULC changes on social security are quite alarming, especially in an economic atmosphere where land policies are not regulated. According to Bazaluk et al, (2023), in a study conducted on determinants of economic growth in Turkey and Bangladesh using panel casualty test as the basis for analysis, the results show that LULC changes occur due to increasing pressures from population growth, which often surpasses the carrying capacity of the land. In such circumstances, conflicts often arise due to unresolved disagreements that are sustained over space and time among land users with multiple agrarian, pastoral, residential and industrial and /or institutional affiliations. In Brazil, land use has undergone significant changes resulting in corresponding changes in land cover. Abrell et al (2024), in their study on the decline in shifting cultivation in the wake of the era of agroforestry via trends analysis, reported that this sequential change in LULC has placed pressure on land resources as product of phenomenal adjustments in processes due to population growth and straining social relations.

In Africa, LULC changes have enormously contributed to strained social relations and insecurity. In a study on land use conflicts in Tanzania, Bergius et al (2020), reported that climate anomalies of rainfall variability and population growth over time without corresponding shifts from a crude production apparatus to a modern apparatus led to an increase in pressure on land, which in turn, led to social tension and conflicts. The study also revealed that the destruction of socioeconomic structures always occur when such unresolved conflicts assume violent dimensions. Similarly, Asaasuen (2023), in a study of farmer-herdsmen conflict relative to population growth in the Benue Northeast Geographical District via geospatial techniques such as GIS, environmental remote sensing (ERS) and Pearson correlation as the bases for empirical analysis reported that population growth was not the prime factor driving land use conflict in the area but rather climate change in the far north and that the consequential influx of pastoral migrants focused on the pre-Newtonian livestock grazing style in to the study area, which offered abundant pasture land. The study also noted that the continued adoption of primitive methods for agricultural productivity in the face of a growing population over fixed land areas has painted population growth, incorrectly thought, as the driving force of the conflict.

Theoretical Framework

This study adopts the Malthusian population theory of 1798 named after Thomas Roberts Malthus. The basic tenet of the theory holds that the world population grows at geometric progression whereas food production, which is the means to sustain it remains at arithmetic progression. On this basis, Malthus’ prophecy states that the exponential growth in world

population with a doubling effect every 25 years on fixed land area would lead to a crisis within human society whereby famine, wars, epidemics and other checks would develop and result in catastrophic poverty and depopulation. The theory faced a series of constructive criticisms in the areas of insufficient foresight into the possibility of scientific and technological breakthroughs and their subsequent application to increase food production through agricultural mechanization. In the same vein, the theory does not foresee potential of sophistication in medical sciences capable of controlling both fertility and mortality rates while ignoring economic development and its inherent role in self-regulation of family size due to enhanced socioeconomic statuses which always opts for small family sizes. The phenomenal choice of this theory, irrespective of the foregoing, is informed by the fact that this study dwells mainly on population growth and land resource utilization, which are the central issues raised by the Malthusian theory and have translated to changes in LULC over time in the study area, with a series of implications for social security and economic development.

METHODOLOGY

This study administered 180 questionnaires, with 90 each in the Katsina-Ala and Logo LGAs via a multistage sampling technique in which Amaafu and Tor Donga, as well as Anyiin, Abeda and Ayilamo, were clustered and served questionnaires via purposive sampling. The study also conducted field surveys during which photographs were snapped and are presented here under the technique of photo elicitation. Again, GIS and remote sensing were engaged in the production of maps that were preparatory for a comprehensive analysis. Finally, frequency tables, simple percentages were used in the data presentation and analysis whereas Student's t test was employed in testing Hypothesis one because of its suitability in measuring the magnitude of the differential between variables. Pearson correlation was used to test of hypotheses 2, 3, 4 and 5 because it suitable for measuring the strength of the associations between variables.

RESULTS AND ANALYSIS

The results are presented here in line with the order of the study objectives.

Demographic characteristics of the respondents

Data on the demographic and socioeconomic profiles of the respondents were collected and are presented in Table 1.1.

Table 1.1 Demographic characteristics of the respondents

Demographic variables	Frequency	Percentage
Gender: <i>Male</i>	142	78.88
<i>Female</i>	38	21.11
Family Structure:		
<i>Nuclear</i>	74	41.11
<i>Polygamous</i>	100	55.55
<i>Separated</i>	06	3.33
Occupation:		
<i>Farming</i>	140	77.77

<i>Civil Service</i>	26	14.44
<i>Business</i>	14	7.77
Educational background		
<i>Primary school</i>	120	66.66
<i>Secondary school</i>	45	25
<i>Tertiary education</i>	15	8.33
Residential Location		
Rural isolated	48	26.66
Rural nucleated	57	31.66
Urban	75	41.66

Source: Field Survey, July 2024

Table 1.1 indicates that 78.77% of the respondents were male and 21.11% were female. The table also indicates that 41.11% of the sampled respondents were nuclear households whereas 55.55% were polygamous households and 3.33% were separated either by divorce or death. In the same vein, the table indicates that 77.77% of the population was farmers whereas 14.44 % and 7.77% were in the civil service and business engagements, respectively. Similarly, the table indicates that 66.66% of the sampled respondents had primary school as their highest educational attainment whereas 25% and 8.33% attained secondary and tertiary education, respectively. Furthermore, the table indicates that 26.66% of the sampled respondents resided in isolated rural locations whereas 31.66% and 41.66% resided in nucleated rural and urban locations, respectively.

Testing of hypotheses

This segment of the study is a test of hypotheses on the basis of on the study objectives.

Hypothesis 1 “*There is no significant difference in the size of population in Sankera Geographical District from 2001- 2023.*”

Table 2.1 over the next page is based on differentials in the means of the population sizes from 2001- 2022. From the table, the population size in the sampled local government areas over the past 22 years, which is classified into two groups from 2001- 2011 and 2012 -2023, shows a T-value of 2.228, which is indeed a significant difference. In essence, that there has been significant growth in the size of the population. Therefore, the null hypothesis, which denies the existence of a significant difference in the population size of the study locality from 2001 to 2022 is hereby rejected in favor of its alternative form, which states that there is a significant difference in the population size of the Sankera Geographical District between the timeframes of 2001-2011 and 2012-2022 and by extension 2023 implying that there has been significant growth in population size leading to the difference.

Table 2.2 Test of the mean difference between population sizes in the Sankera geographical district from 2001-2011 and 2012-2022.

T-Test: Paired Two Sample for Means			2001	243,000
	<i>Variable 1</i>	<i>Variable 2</i>	2002	252,000
Mean	290909.0909	425909.1	2003	261,000
Variance	1112890909	2.43E+09	2004	270,000
Observations	11	11	2005	279,000
Pearson Correlation	0.999919782		2006	289,000
Hypothesized Mean Difference	0		2007	299,000
Df	10		2008	310,000
t Stat	-28.04984071		2009	321,000
P(T<=t) one-tail	3.85146E-11		2010	332,000
t Critical one-tail	1.812461123		2011	344,000
P(T<=t) two-tail	7.70291E-11		2012	356,000
t Critical two-tail	2.228138852		2013	368,000
Source: Extract from SPSS Output			2014	381,000
			2015	395,000
			2016	409,000
			2017	423,000
			2018	438,000
			2019	453,000
			2020	470,000
			2021	487,000
			2022	505,000

Hypothesis 2 “There is no significant relationship between the fertility rate and population growth in the Sankera Geopolitical District.”

Table 3.1 Test of relationship between fertility and population growth in Sankera Geopolitical District

Variables of interest	N	Pearson Correlation	Sign (2 Tailed)
Fertility rate	180	0.333	0.000

Population growth

The correlation is significant at the 0.01 level when it is 2 tailed. Source: IBM SPSS Extract. July 2024

Table 3.1 indicates a correlation coefficient of 0.333 which is significant on the positive scale at 0.01 on the software. This implies that fertility rates in the study area move in the same direction as population growth. Thus, the higher the fertility rate is, the higher the rate of population growth. However, the weak status of the coefficient raises the question of the homogeneity of other issues, which also factor alongside fertility in the overall growth of the population and its size within the study area.

Hypothesis 3. *“There is no significant relationship between population growth and LUL change in Sankera.*

Table 4.1 Test of the relationship between population growth and LULC change in Sankera.

Variables	N	Pearson Correlation	Sign 2 tailed
Population growth	180	0.899	0.000

LULC change

The correlation is significant at the 0.01 level. (2 tailed). Source: IBM SPSS Extract, July 2024

Table 4.1 indicates a strong positive correlation coefficient of 0.899 which is highly significant at 0.01 level. This test implies that LULC changes in Sankera occur as a direct response to population growth which pulls it in the same direction as it grows. Thus, high population growth leads to corresponding intensification of changes in LULC. Therefore, the null hypothesis, which denies the existence of a significant relationship between population growth and LULC change, is accordingly rejected, and an alternative hypothesis that there is a significant relationship between population growth and LULC change is put in place.

To further strengthen the finding above, photo elicitation technique was employed during fieldwork, in which pictures of the emerging of new dwelling units and settlement areas were snapped and are presented here as plates. These are fresh homes springing up upon lands that were hitherto virgin lands devoid of homes or farms. It is clear that only an increasing population can lead to the development of such new homes and farms thereby expanding the scope of settlement and agricultural landscape, as new households emerge changing forested lands to farmlands and then gradually built-up architecture.





PLATE 1: Up: New residential/dwelling units emerging on arable and pasture lands on the outskirts of Ugba town, Logo LGA as household sizes expand implying increasing magnitude of population growth.

Down: A flood plain near Katsina-Ala town once considered unproductive, now with new homes and intensively cultivated with rice.

Source: Fieldwork, July 2024.

Hypothesis 4 *“LULC change has no significant effect on growing insecurity in Sankera Geopolitical District.*

Table 5.1 Test of the relationship between LULC change and growing insecurity

Variables	N	Pearson Correlation	Sign (2 Tailed)
LULC change	180	0.377	0.000

Growing insecurity

The correlation is significant at the 0.01 level (2-tailed). Source: IBM SPSS Output, July 2024

Table 5.1 indicates a significant but weak correlation coefficient of 0.377 for the positive rating. This test therefore disproves and accordingly rejects the null hypothesis, which denies the existence of a significant relationship between LULC changes and growing insecurity in Sankera in favour of an alternative hypothesis that there exists a significant relationship. Notwithstanding the significant relationship, the weak status of the coefficient is a pointer to

the possibility of other factors interplaying in the security situation alongside LULC changes. These factors are therefore subject to additional research.

Hypothesis 5 *“The degenerating security in Sankera has no adverse effects on economic development in the area.*

Table 6.1 Test of the relationship between degenerating security and economic downturn in Sankera

Variables	N	Pearson Correlation	Sign (2 tailed)
Degenerating Security	180	0.655	0.000

Economic development (Adverse effects of degenerating security)

The correlation is significant at the 0.01 level. Source: IBM SPSS Extract, July 2024

Table 6.1 indicates a strong positive correlation coefficient of 0.655, which is significant at the 0.01 level. This test implies that growing insecurity and its adverse effects on economic development move together at all times. As such, increasing magnitudes of degenerating security produce corresponding increases in adverse effects on economic development. Thus, the null hypothesis, which states that the degenerating security situation in Sankera has no adverse effects on economic development, is hereby rejected in favour of an alternative hypothesis that degenerating security in Sankera has adverse effects on economic development in the area.

To further strengthen this finding, pictures of destruction of socioeconomic structures were snapped during field work and are presented here under photo elicitation. Plate 2. is inside of an admission room at a village clinic in Yooyo Ward of Katsina-Ala LGA, which was set ablaze in violent attacks by herdsmen on the community. There are many more such destructions that cannot be included here due to inadequate space.



PLATE 2: Relic of patients' admission ward at Community health clinic Utenge, Yooyo Ward, Katsina-Ala LGA burnt down by herdsmen in 2020. Source: Fieldwork July 2024.

DISCUSSION OF FINDINGS

This study aimed to investigate population growth and LULC changes over time in the Sankera Geopolitical District from 2001-2023 against the background of implications on social security and economic development. The study revealed that there has been significant growth in the size of the population, as proven by the 2006 National Population and Housing Census figures and 2023 estimates, which established significant differences between the population sizes of 2001 and 2023. This finding aligns with earlier findings by Asaasuen (2023) in a study on population growth from the perspectives of farmers-herdsmen conflict in the locality via correlation, geographic information system, (GIS), environmental remote sensing and photo elicitation, who reported that the population size in Sankera has significantly increased over space and time through the numerical advantage of fertility over mortality as well as the sequential influx of migrants through immigration. Despite the same position of the two studies on population increase, there is a contrasting issue. This study dwells on population growth as it affects LULC relative to social security and economic development in the study area whereas the earlier study focuses on population growth as a factor in the farmers-herdsmen conflicts in Sankera Geographical District.

Similarly, this study revealed that population growth in the area is rooted in the phenomenal numerical advantage of fertility over mortality, which has been the major factor behind the steadily increasing population size during the period covered by this study. This finding also aligns with earlier findings by Taagera et al (2023) in their study on drivers of population growth in Brazil via time series and trends analysis, in which they reported that high fertility rates was seen as a way increase labour hands by household, heads who consequently opted for polygamous marriages.

Furthermore, this study revealed that population growth has a significant impact on LULC change in the area of increasing shifts from forestlands to agricultural and built-up landscapes with multiple socioeconomic applications of residential, industrial, recreational and religious affiliations. This finding harmonizes with those of Onuegbu and Egbu (2024) in their study of land use change in Abakiliki LGA, Nigeria, using Land Sat images in which they reported that rapid urbanization is gradually reconfiguring the landscape in which 21,000 hectares of vegetation cover are lost to built-up architecture from 2010-2022. In an earlier study by Akpan (2021) examining population growth and agricultural land use from 1961-2018 in Nigeria, via correlation statistics, trend equations and the World Bank database, population growth was reported to have increased at the rate of 2.57% annually whereas agricultural land use totaled 68% increase over the period. The study revealed that there was massive land use change, which translated to corresponding changes in land cover.

Moreover, this study revealed that LULC has a significant impact on social security inherent in increasing pressure on land through population growth. This finding harmonizes with findings of Mulenga (2024) in his study on population growth, land use and conflict in Zambia, South Africa who used the theory of Thomas Malthus and the demographic transition and reported that increasing pressure on land resources leading to LULC changes results in strained social relationships and conflicts, which adversely affects the development pathway. Similarly, this finding agrees with the findings of Sadigov (2022), who studied land use and social relationships and reported that increasing magnitudes of LULC changes exert enormous pressure on social security due to indiscriminate land fragmentation and shortages, which often become unresolved and hence threaten social security. This finding aligns with

that of Auwalu et al (2021), who studied urban expansion and land cover scenarios in Lagos via multi-temporal datasets downloaded from the United States Geological Survey at 10 year intervals from 1999-2020. Their study revealed that built-up architectures expanded in landscape from 496 square kilometres in 1990 to 860 square kilometre in 2000 and from 1113 square kilometre in 2010 to 1256 square kilometre in 2020. These aggressive expansion rates in areas with limited land area included substantial decreases in vegetation cover, water bodies and bare land, with great potential for conflict and violence.

This study finally revealed that there is a significant link between degenerating social security and economic development in Sankera. This state of affair was largely due to the outbreak of violence from unresolved conflict, which resulted in large-scale destruction to much socioeconomic architecture like educational, health and residential structures. This finding aligns with those of Nuisl et al (2021), who studied of urbanization and land use changes noted that unsustainable land management practices intensity pressure on land, which results in conflict and disastrous effects on socioeconomic development. The study also revealed that population growth and violence had weak correlations, but indiscriminate LULC changes showed strong positive correlations with violent conflicts that emanate from insecurity. Takin et al (2024), in their analysis of social insecurity and violence relative to LULC changes in Togo, West Africa reported that violence had adverse effects on socioeconomic development, involving setbacks in agricultural and industrial productivity and income among the masses of any nation. Across Nigeria, this finding aligns with findings by Aunbiade (2024), who studied insecurity and Nigeria's socioeconomic development using Conflict Theory by Karl Marx as the basis for investigating the causes and effects of insecurity. The findings revealed that while poverty, religious and multi-ethnic affiliations are core causes, large-scale destruction to agricultural, health, educational and industrial architectures, which tend to intensify poverty and hardship, are the major impacts of growing social insecurity in Nigeria. This finding again aligns with that of Asaasuen (2023), who studied population perspectives in the farmer-herdsmen conflict in the Benue North Geographical District, in which the study used Pearson correlation, GIS and remote sensing alongside secondary data and reported that growing insecurity has adversely impacted socioeconomic development in Sankera, with widespread destruction to security, agricultural, residential, health and educational architectures, which have accordingly intensified poverty in the study area.

Conclusion

This study focused on population growth and LULC changes in Sankera from 2001-2023, with a focus on implications for social security, as they affect socioeconomic development in the area. Using multiple empirical apparatuses, the study revealed that there has been significant growth in the population size of the study area due largely to demographic affiliations. Similarly, the study revealed that while this population growth has produced a series of changes in land use and land cover, the latter, in turn, has had significant impacts on social security, leading to violent conflicts with spectacular and unprecedented setbacks in socioeconomic development in the area that require the attention of all development stakeholders.

Recommendations

1. Family planning measures should be made available and affordable to the masses for free choice and adaptation by desiring households to check fertility rates.

2. Land use and housing policies in rural localities should be regulated to minimize the indiscriminate proliferation of lands brought under agricultural, residential industrial and/or institutional architectures.
3. Agricultural practices of agrarian and livestock rearing should be modernized in line with best internal standards to maximize production per unit of land.
4. There should be a radical balancing of ethnic identities within the security outfit in Sankera to objectively protect the interest of social security and justice.

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