Innovations

Acquisitions of Urban and Suburban Open Spaces/Lands for Non-Agricultural Uses "A Poverty of Food Security Strategy" in Emerging Urban Centers of Developing Countries (A Case Study of Okene Urban and Suburban Areas, Central Nigeria)

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Abstract
Food insecurity has become endemic in most developing urban areas, which needs attention. Acquisitions and conversion of open spaces to non-agricultural uses are increasing due to urbanization and industrialization. The conversion of urban open spaces/lands to residential, industrial/ commercial uses may have limited the spaces for agricultural practices leading to a shortage of food production in most countries. However, the effects of the conversion on food security/insecurity in most urban areas are poorly understood. This study unpacked the implication of converting urban open spaces/lands to other uses on food security. The objectives of the study are; to find out the trends in the acquisition of urban open spaces, who owns and sells the lands, who buys the lands, and for what purpose, and find out the food insecurity implication. The study used both primary and secondary data; the primary data were generated through a field survey, while the secondary data were collected from the archives of Okene Land Office, which revealed the yearly data on the open spaces acquisition. The area was, divided into ten (10) administrative wards, and Random-sampling techniques were used for the survey. Two hundred (200) copies of questionnaires were sent to the ten administrative divisions with Twenty (20) copies to each division. These were subsequently retrieved and analyzed. The study revealed that the rate of conversion of open spaces/lands to non-agricultural land uses has increased from 1.65% in 2005 to 14.9% in 2020. About 61% of the lands were, converted to Residential uses, 25% for commercial/industrial uses, and 13.3% for agricultural uses. The prices of land decrease away from the urban center towards the periphery except where intervening factors such as rugged surfaces, hillsides, hilltops, swampy, and shreds of gullies found within the urban centers. The non-agricultural uses of the open spaces have reduced the level of food production in the area and limited the peoples' food access resulting in food insecurity.

Key Words: *Acquisition, open spaces/land, sales, food security/insecurity, Clan/Community,*

Introduction

Rapid population growth and economic development have resulted in urbanization and increased industrialization in both developed and developing countries worldwide (Bongaarts, 2011; Szabo, 2016) This may have substantially affected the available land resources for increasing food production in urban and suburban areas and may be ultimately affecting the food security/insecurity of the people. This may have created adirectly proportional relationship between population increase in urban Centres and the conversion of open spaces/lands for non-agricultural uses such as residential, commercial, and industrial uses. However, there is no clear understanding of how such a relationship has affected food production

and its consequences on food insecurity in urban and suburban areas of developing and low-income countries.

Food insecurity is severe in most low-income countries with poor individuals and households, more affected (Smith et al., 2017). Food insecurity reduces people's choice, power, and opportunity to access and control their food practices (Allen, 2008; Caruso, 2014; Cadieux, 2015; Blake, 2018).Food insecurity can significantly result in a long period of food shortage and poor food practices for the people (Abellan&Guerena, 2022; Hammond et al., 2018; Piaseu, 2010; and Russell, 2014). This is particularly common where access to food production is reduced, poor transportation links that aid food exchange become blocked, and a significant reduction in available space for crop cultivation (FAO, 2018; Ville et al.,2019). Maintaining a balance between sustainable economic development and food security using open spaces of land for food production has become a major problem in emerging urban centers in developing and low-income countries (Bardhan, 2010). This study aims to unpack the relationship between the uses of open spaces/lands for non-agricultural purposes and food insecurity in urban and suburban areas.The objectives of this study, therefore, include; Finding out the trends in land acquisition in the area,finding out who owns and sells the lands, Finding out who buys the lands, and for what purpose, Finding out the food insecurity implication for the sales of agricultural lands

This investigation is organized into sub-sections beginning with the introduction which gives a brief overview of the subject under investigation. The literature review and the study area. Others are, methods and materials, Results and discussion which are further subdivided into, (i) Trends in land acquisition over 15 years (ii) who sells the land (iii) who acquires the land (iv) variation in the prices of the land across the urban centers (v) current land uses in the study area and (vi) Conclusion and policy implication of the study.

Review

The acquisitions of urban open spaces/lands for non-agricultural purposes in and around urban Centers may be a major factor causing a decrease in food production (Smith, 2013) and may have resulted in the continued problems of food insecurity in low-income countries. It may also have led to the loss of livelihood security in emerging urban centers of developing countries (FAO, 2011; Szabo, 2016). The land's primary non–food production demand comes from residential buildings, recreational facilities, industrial complexes, commercial hubs, educational infrastructure, mineral mining, and other uses. The growing demand fornon-agricultural land use within urban space may have created a land market. Sales and acquisitions of urban spaces for other uses instead of food production may be directly proportional to food and livelihood insecurity of the people in emerging urban areas (Walters, 2013). The high price and immediate benefit offered on the land may be the reason for the sale of land, especially where the owner does not derive bulk income when using the land for agricultural food production (Chakravorty, 2013; Wadhva, 1983).

Small-scale and medium enterprises have increased with more investment in new commercial ventures and expansion of production of non-agricultural products in most low-income and developing countries. These growths in economic activities have stimulated demand for more land and spaces for non-agricultural production causing rapid urban build-up, with no land left in the cities (Yuanbin, Zhang, 2013). In most cases, suitable land for agricultural food production is often considered more suitable for other uses, such as mining, where a heavy mineral deposit is found beneath the surface, real estate housing, and industrial activities (Raj &Azeez, 2011; Azadi et al., 2013). Food insecurity worsens when the effects of industrial and mining pollutants contaminate adjacent open spaces and agricultural land. Abu & Ifatimehin (2016)found the food produced from adjoining open spaces and agricultural land to an iron ore-mining field in Itakpe contaminated with heavy metals and other noxious chemicals. This has resulted in the food produced from such land changing colours when cooked. This makes such food unfit for consumption and ultimately creates more food insecurity for the people in the area. Theland on the outskirts considered suitable for agricultural purposes is fast being converted to other uses because such open spaces/land are cheaper to acquire for residential purposes (Rao, 2008; Ramesh, 2011).

Suitable open spaces and agricultural land appear to have been exhausted in the inner urban Centre and people are beginning to build residential houses on hillslope and hilltops, which may come with numerous consequences. These hillslopes and hilltops contain relics and metamorphosed volcanic landscapes over the years that still possess crop nutrients and therefore still make such lands viable for crop production (Musa & Abu, 2016a; Musa & Abu, 2016b). These arebeing, converted to other uses instead of food production, which would have helped increase the food security of the region. Inadequacies in the various land use acts and enforcement of the laws may have contributed to the indiscriminate use of open spaces/land for other purposes (Gefu, 2003; Abdulkadir, 2003). The indigenous customary landowners linked by communal and family affiliation control the bulk of peripheral land where active conversion from rural to urban uses also occurs, with family landholding being the dominant form of ownership and control (Ikejiofor, 2004). In recent years, this situation has changed allowing the local and state governments to acquire land without appropriate compensation to the owners. This has deprived many families, clans, and communities of access to their land for food production. The situation may have led to poor food production and subsequently resulted in food insecurity in the area. The people are, therefore, forced to look for alternative land for food production at a cost determined by market forces. Over the years, these factors created patterns or trends in land sales and acquisition within urban spaces. Hence, the aneed to investigate the trends in the sale and acquisition of open spaces of land in Okene and its consequent result on food security/insecurity.

The Study Area

The area has approximately 328km^2 and a population of 320,260 based on 2006 census figures. The study area is located between latitude 07^0 45^N and 7^0 52^N and longitude 6^0 43^E and 6^0 45^E. It shares common boundaries with Ososo and Ogori to the North-west, Adavi to the North East, Okpella in Edo State to the South West, and Ajaokuta to the East

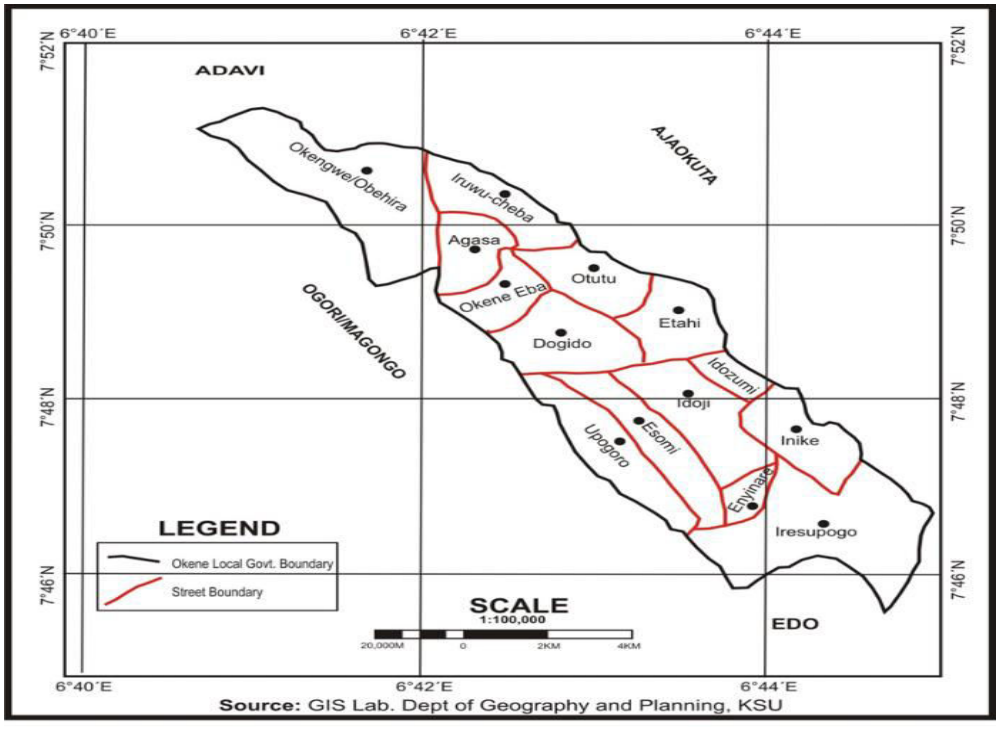


Figure 1: Map of the study area

Basement complex rocks characterize the study area with relics of metamorphic rocks. The soil is lateritic, with color ranging from brown to reddish due to excess Sesqui-oxides; it is a typical soil found in the guinea savannah zone. It supports the growth of grains, legumes, and tuber crops such as maize, guinea corn, Mellon, cassava, cassava, and yam (Iwena, 2000). Okene urban area and its environs have rugged topography with chains of hills found within and outside the urban space. Some of these hills are

steep ranging from 557.2m to 1000m with the contrasting side of gentle slopes with an average height of 243.84m to 500m above sea level on the gentle slope. Both the steep, gentle, and relative lowlands between the hills were extensively cultivated in the ancient time.

The people depend mainly on underground water and surface streams for domestic uses. The surface streams are seasonal and usually lightly polluted with solid wastes. Where mining of heavy metals such as Iron occurs, the water is heavily polluted and may be unfit for human consumption (Abu & Ifatimehin, 2016).Okene urban area has a mean annual temperature of about 27°c lowest temperature occurs between December and February, ranging between (21.50°$c$and 24.8°c), while the highest temperature occurs between April and May with about 38^{0C}. Rainfall lasts about eight months, with mean annual rainfall between 1,250 and 2,500mm. The town served as an administrative/commercial hub in the Kogi state central region. In addition, it connects the northern parts of Nigeria to the southern parts. There are good Restaurants, Hotels, and Guesthouses to meet the needs of tourists, visitors, workers, and businesspersons, who need suitable accommodations and recreational centers. The major ethnic group in Okene Local government is Ebira. The other ethnic groups are Yoruba, Igbo, Igala, Hausa, Edo, Nupe, and Bassa. Residential, commercial, agricultural, and tourism constitute the significant land use. Houses are, built around and between the hills. Recently, houses havebegun to emerge on the hillslopes and hilltops due to insufficient flat surfaces to build on.

Methods

A field survey involving the use of structured questions and information from the archive of Okene land and survey department constitutes both the primary and secondary data used for this study. The urban area was divided into ten (10) administrative wards, which are;Obehira, Agassa, Lafia, Otutu, Idoji/Enyinare, Okene–eba, Okengwe, Etahi, Iruvu-Cheba, Upogoro, and Inike. Random sampling techniques were, used in the questionnaire administration. Two hundred (200) copies of the questionnaire were, sent out with twenty (20) copies each to the ten administrative divisions in the study area. Data on the yearly acquisition and the uses of open spaces for non-agricultural use were, also collected from the archive of the Okene Land and Survey Department. These data were, subsequently analyzed and the result presented as shown below-

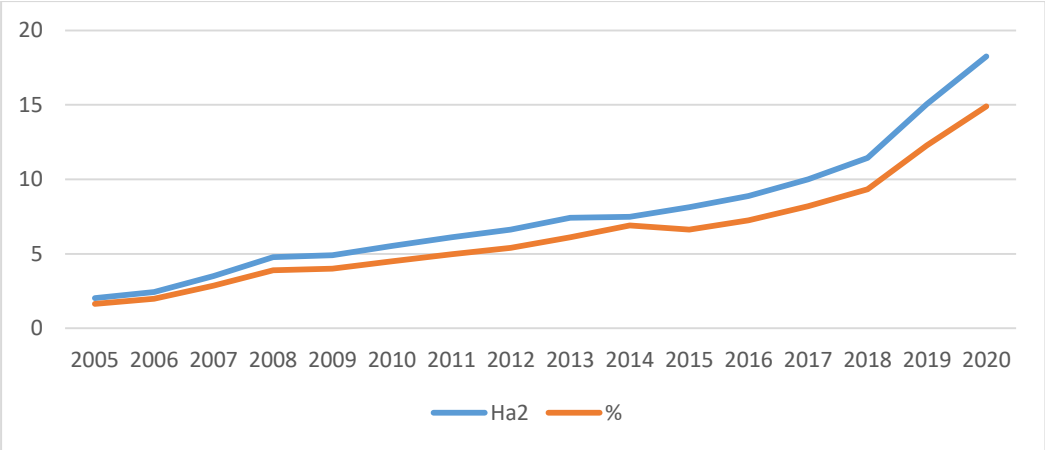
Results and Discussion

years	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Ha^2	2.02	2.43	3.52	4.77	4.90	5.52	6.10	6.63	7.43	7.48	8.13	8.88	10.00	11.45	15.05
%	1.65	1.98	2.87	3.90	4	4.50	4.98	5.41	6.1	6.9	6.63	7.24	8.2	9.34	12.28

Table 1. shows the total area of land used over fifteen years

Sources land and survey Okene

Trends in urban open spaces/land acquisition for Non-Agricultural purposes



Sources: Land and Survey Okene

Trends in Land Acquisition over 15 years

The investigation revealed that there is a steady increase in the conversion of open spaces/lands to non-agricultural use over the 15 years under investigation as shown in Table 1 above. The result shows an increase in open space acquisition and conversion to non-agricultural uses from 1.65% in 2005 to 14.90% in 2020. The people or organizations who acquire these open spaces/land convert them to other uses instead of crop cultivation or food production over the period under investigation. This explicitly indicates poor food production in the area and limits food availability in the region, which ultimately may result in poor food access for the people. There may not be an increase in food production where open spaces/land is sold to people, who are interested in estate, industrial, commercial, and tourism development instead of food production. Especially in low-income countries where the development of urban agriculture is still at its infant stage. The steady rise in non-agricultural land use may be due to the town's strategic location and its centrality in the country, being a nodal town connecting the northern and Southern parts of Nigeria. This may have sparked up different commercial activities, and the influx of people into the town resulting in a high demand for land to build residential houses and commercial outfits and therefore mounting steady pressure on the available open spaces and agricultural land for acquisition. This may have made the landowners accept the jumbo price offered for their land and therefore give up their agricultural land in exchange for cash. This has caused limited food production and poor access to food, taking into cognizance the limited knowledge and practice of urban food production methods or urban agriculture such as; backyard gardens, tactical gardens, street landscaping, and forest gardening. Others are greenhouses, rooftop gardens, green walls, vertical farms, animal husbandry; urban beekeeping, aquaponics, etc. which are limited in most urban centers in the developing countries. This ultimately creates food insecurity for the people.

Land Owners	Medium	No of respondents	Percentage %	Rewards for their services	Mode of payment
individual	Land Agents	10	5.6%	10%	Cash
Family	Family Rep.	30	16.7%	Token	Cash/Gift
Sub-Clan	Friends	40	22.2%	Amount not fixed	Cash/Gift
Main Clan	Clan Rep.	100	55.5%	₦10,000	Cash

Table 2.Who sells the land?

Sources: Field survey 2023 ($1 = ₦450)

Who Sells the Lands?

Generally, the majority of owners of the land inherited the land from their forefathers who were agrarian and engaged in subsistence agriculture in the past. The people in most parts of Nigeria live in a small-scale political kingship system where clan and communal land tenure system is practiced (Abu, 2023). This strengthens their social relationships and increases their productive capacity (Okeke-Agulu, 2012; Abu, 2023). Every clan has sizeable portions of land believed to have been acquired by their ancestors through war conquest in the past. Every sub-clan and family member within the main clan has plots of land. In the past, these plots could only be passed on along the family lineage. The land is kept under the

care of the clan heads, who not only monitor the transfer of these lands along the family lineage but also in charge of re-allocation as well as settling disputes relating to land matters among the relatives. This investigation revealed that, in the past, most clans did not permit the sale of their land to anyone not well known to them. Fertile farmlands and plots within the family compound have not been sold to outsiders in the past.

This investigation revealed that individuals, families, Clans, or the community sell their land as shown in Table 2 above. The study revealed that individuals representing 5.6% sold their land to other people for cash benefit. This category of sellers has bought the land in the past from the clan that owned the land and later resold it to others. These individuals sell their long-acquired land through land agents, who act as intermediaries. The agents are paid cash of 10% of the amount paid for the land as their service fee. Thirty(30) respondents representing 16.7 % account for the land owned by families. This category of sellers sold their land through family members who may or may not know the background of the buyer. They carry out mild investigations about the buyer to be sure that the buyer is a good person or is from a credible family. The family member who helps to sell the land is not rewarded for their services because he/she is a member of the family who also shares the money realized from the sale with the other members of the family. Forty-one (41) respondents representing 22.8 % account for land owned by the Sub-clan. This land is sold through friends of the sub-clan members or a committee set up and designated for such duties among the clan members. The committee that helps to sell the land is usually given gifts, which could be any amount of money or any other kind of gift. One hundred (100) respondents representing 33.3 % account for the land owned by the Main clan. Individuals and friends are not allowed to sell this type of land; it is usually the responsibility of the clan representatives to sell the land. The clan representative collects ₦10,000 naira only from the buyer for his/her, services while remitting the main cash realized from the sale to the clan head as shown in the table above. Selling the open spaces/lands that were previously used for agricultural purposes to people who use them for other purposes depletes the capacity to increase food production. As shown in Table 1 above, the rise in the conversion of open spaces and agricultural land to other uses limits the volume or quantity of food production in the region, especially where the knowledge and capacity to practice advanced urban agriculture are limited. Limitation to food production in an area with an increasing population results in food shortage and ultimately food insecurity.

Table 3.Who Acquired the Lands

S/N	PROFESSION	NUMBER	PERCENTAGE
1	Traders/Business/Investors	65	36.1 %
2	Civil servants	40	22.2 %
3	Farmers	30	16.8 %
4	Medical Practitioners	13	6.9 %
5	Commercial Drivers	10	5.6 %
6	Artesian	7	3.9 %
7	Teachers	10	5.6 %
8	Musician	5	2.8 %

Sources: field survey 2023.

Who Acquires the Land?

The investigation reveals that traders, investors, or business people bought 36.1% of the land within the period under investigation. Civil servants bought 22.2% of the land, Farmers bought 16.8% of the land, and Medical personnel bought 6.9% of the land. Others are Commercial drivers who bought 5.6% of the land, Artesian bought 3.9% of the land, teachersbought 5.6% of the land, Musicians, and othersbought 2.8% of the land. The result clearly showed that traders, investors, and people who are into various commercial activities devoid of agricultural food production acquire substantial land. Most buyers especially traders, investors, and business people are probably into real estate development, industrial activities, tourism, and trading. The investigation revealed that all categories of buyers used substantial parts of their purchased land for residential purposes. The investigation also reveals that most farmers carry out their farming activities in the rural areas of the neighbouring Edo, Ekiti, and Ondo states while others are, found across the country. The 16.8% accounted for by the farmers are mainly for residential purposes and not for agricultural purposes; rather they travel to the neighbouring rural areas to carry out their farming activities.This revealed that most of the food consumed by the people comes from outside of the urban area under investigation making food access difficult in the area. The food coming from outside the study area is often expensive because of varied factors such as transportation fares, tax, and other exegeses added to it. This creates food insecurity for the people as they depend substantially on food produced outside their domain.

Location	**Price Range (Per Plot)**	**Average amount (Per Plot)**
City Center/near city centers	₦750,000-₦1,500,000	₦1,250, 000
City outskirt	₦500,000- ₦750,000	₦625, 000
Undeveloped areas	₦300,000-₦400,000	₦350, 000
Hillslopes/Hilltops	₦150,000-₦250,000	₦200, 000

Table 4. Location and the Cost of Acquisition

Source: field survey, 2023. ($1 = ₦450)

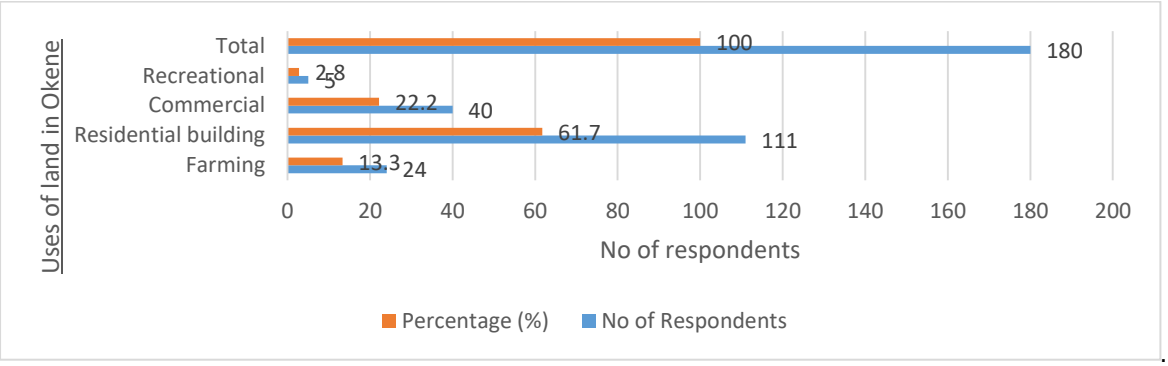
Variations in the prices of open spaces/Lands

This investigation revealed that the location and position of the open spaces/lands are significant determinants of the price. Open spaces/Lands located at the City center are sold between ₦750,000 and ₦1,500,000 with an average price of ₦750,000 per plot, while those at the city outskirt are sold between ₦500,000 and ₦750,000 with an average price of ₦625,000. The open spaces/lands found in the less or undeveloped areas are sold between ₦300,000 and ₦400,000 with an average price of ₦350,000, while the land on hilltops goes between ₦150,000 and ₦250,000 with an average price of ₦200, 000. This study shows that the monetary value attached to open spaces/lands decreases as one moves away from the City centers. This is probably because most commercial activities and infrastructural facilities are located at the City centers and people are ready to pay more for land to enable them to set up their businesses at the center for greater patronage and to build their residential houses close to their businesses. The high prices reduce as one moves away from the City center through to the outskirts or undeveloped area. However, the investigation revealed that the gradual decrease in the prices of open spaces/lands as one

moves away from the city center only holds for good and flat lands. The prices of land on the hill slopes, hilltops, and swampy, gullied, and rugged surfaces within the city center are relatively low. This may be because of poor and limited accessibility and difficulty in the installation of infrastructure facilities in those areas, for example, electricity poles, laying of pipes for potable water supply, and the danger of exposing houses to powerful winds and rainstorms that severely affect residential houses on the hilltops.

In addition, the establishment of industrial and commercial sites is usually associated with naturalor human-made advantages. Such advantages play an important role in determining the location of housing and residential development. The construction cost on flat land is always less than on rough land hilltops. Secondly, land with little or no slope may be more attractive for housing, location of businesses, and urban development. Most of the flat farmlands close to the city and major highways are, converted to urban uses with ease. Most owners of farmland often considered it profitable to sell their land for huge amounts of money rather than carrying out small-scale farming on it which comes with a small-scale economy. Thus, housing and industrial site development transform the urban fringes from prime farmland to new residential and industrial areas (Azadi, 2010). This limits food production in the area and therefore creates food insecurity in the region

Fig 4: Uses of Land in Okene



Source: Field survey

The Current State of Land Use in Okene

The investigation reveals that only 13.3% of the land is used for farming, 61.7% of the land is used for residential buildings, and 25% for commercial activities such as shops/stores, filling stations, rest houses, hotels, etc. The high percentage of use of open spaces/lands for residential buildings may be because the population of Okene keeps increasing due to the strategic and centrality of the town in the country. In addition, the city serves as a nodal town culminating in rapid urbanization, which indeed calls for a corresponding increase in housing units. This may also have caused the increase in commercial activities raising the percentage of land use for commercial activities to 25% and it keeps rising day by day. The small percentage of land used for farming which is 13.3% reveals the poverty of food production in the area. While land use for residential and commercial purpose keep increasing that of farming (food production) keeps reducing which shows an inverse relationship between the two categories of uses

The strategic location of the city encourages more influx of people into the city, which means an increase in demand for residential houses and more food required to feed the people, and yet the investigation reveals less food production due to low farming activities. This willlead to food insufficiency and ultimately result in food insecurity in the region because more people are coming into the area than the capacity of available land to produce the required food to feed the people.

Conclusion and policy implication of the Research

►Nigeria needs a clearly defined and structured land use policy to pilot its long-term and sustainable development programs, which must include food security policies. The process should be clear and must

include data generation and identification of people's aspirations and priorities. The new policy should include poverty eradication and conflict resolution arising from the use of open urban spaces and lands, which must not be gender biased.

►The finding of this investigation calls for revision of the various land use Acts to ensure that local/traditional institutions' needs are adequately addressed. The new policies must be politically sensitive, administratively expedient, and responsive to the need for which land is required. The concept of urban Agriculture should be incorporated to ensure food security in urban and suburban areas irrespective of the conversion rate of the traditional agricultural land and open spaces.

►Urban agricultural practices such as backyard gardens, tactical gardens, street landscaping, forest gardening, greenhouses, rooftop gardens, green walls, vertical farms, animal husbandry, urban beekeeping, and aquaponics, as practiced in other countries should be encouraged and included in the land use policies.

►The government should ensure the automation of the land administration system in the area to forestall indiscriminate hawking and allocation of land. This will enhance land use and physical development control. It may also help the government generate property tax to discourage the indiscriminate conversion of open spaces/agricultural land to commercial and residential uses.

In conclusion, this investigation recommends further investigation of the socio-economic characteristics of those occupying the houses on the hilltops.

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