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# THE IMPACT OF URBANIZATION ON FARM SIZES IN KUJE AREA COUNCIL OF THE FCT (2010-2017)

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## ABSTRACT

The research examined the effect of urbanization on farm sizes in Kuje Area Council of the Federal Capital Territory, Abuja between the periods of 2010-2017. The objectives of the research which were pursued include; examining the demographic characteristics of people living in Kuje Area Council; the causes of Urbanization; the trends of Farm size reduction between 2010 -2017; and correlation between farm sizes and farm yields in the area council. Data was sourced from both primary and secondary sources. Questionnaire was the major source of data while respondents were selected through systematic sampling technique. The results of the findings were presented and discussed with the aid of tables and graphs. Relationships were tested using the Chi-square. These findings reveal interesting results; it was found that there exists a consistent decline in farm sizes as well as a stable decline in agricultural productivity in the study area. Population increase and high fragmentation of agricultural lands over the years were found to be the main reasons behind the reduction of farm sizes and consequently diminishing agricultural productivity in the area council. Some of the problems identified and threatening the existence of the area include; loss of agricultural land which led to decrease in food supply, hunger and poverty. Recommendations were proffered which include; strict implementation of Kuje Area Council regional master plan and enforcing sanctions on land use abusers.

**General Terms:** Urbanization, Farm sizes, Agricultural productivity

**Keywords:** Urbanization, Farm sizes, Agricultural productivity, Farm yields, Population Growth, Land fragmentation, Food supply, Hunger and Poverty, Land use abusers, Kuje Area Council.

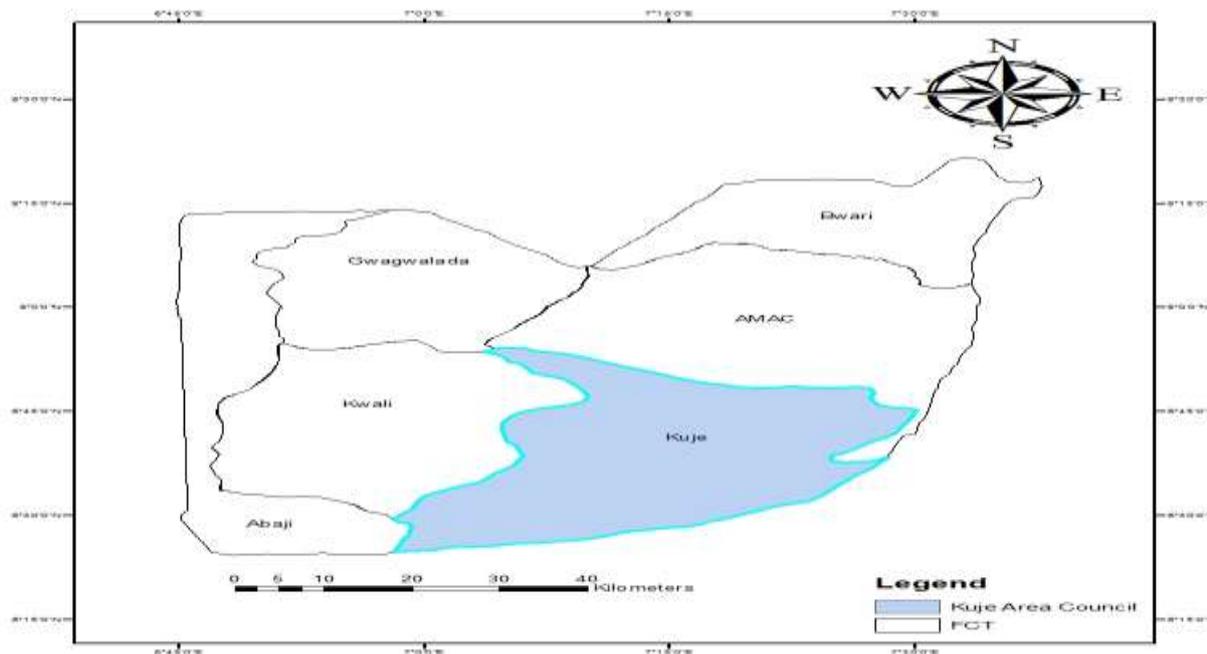
## 1. INTRODUCTION

Growth or physical expansion has been identified in recent time to have taken on more dramatic momentum in those areas that have come to be regarded as the developing world. In these regions contemporary urbanization has not only been extremely rapid in nature but also devastating in impact (Aina, 2012). Since the Second World War, the world has become an increasing urbanized and urban oriented society, because of the great influx of people into urban areas. These have created large scale reduction of farm sizes globally (David, 2014). The changes in farm sizes are as a result of the interplay of both natural and socio-economic factors. Reduction in farm sizes and its effects on environmental sustainability and human welfare has become of great concern all over the world (Turner, Stephen and David, 2010). Change in land use patterns impact significantly on local and global environmental condition as well as economic and social welfare. An understanding of these factors which influences farm size reduction would provide new dimensions to policy making and public evaluation (Chakir, 2010).

In Nigeria Urbanization has created both positive and negative impact on the socio-economic as well as the welfare of the people. Influx of people into towns and cities has led to Urbanization of towns and nearby rural settlements, land use conversion as well as land use conflict. Most agricultural lands within the Nigeria territory is constantly being converted to other land use such as residential, commercial industrial, recreational use amongst others, so as to support the ever increasing population. Agricultural land have been lost majorly in most cities as Lagos, Abuja, Kano, Port Harcourt and others, as population continues to increase in these places (Ejaro, 2013). In some developing countries like Nigeria, decentralized tendencies are stimulating urban sprawl and conversion of agricultural lands and open space to urban land uses (Wassmer, 2012). The loss of valuable agricultural land in Nigeria is not only a response to urban expansion, but also reflects a decline in small scale agricultural activities. In addition, the decline in agriculture job is furthered by the increase of employment opportunities in manufacturing, trade, tourism and other service sectors, which attract more people, particularly the young and educated to urban areas, hence a huge reduction in farm sizes can never be averted (Lungo, 2011). Urbanization as well as changes in land use over the years in the federal capital territory (FCT) Abuja causing large scale reduction of farm sizes is largely due to the movement of the federal seat of power from Lagos to Abuja in 1991. Many government functions as well as the federal government offices with its various parastatals were relocated to Abuja, this brought about the high influx of people into Abuja. The high influx caused whole lots of changes. Most of the land initially stipulated to be serving agricultural functions were later converted to other land use such as residential, commercial and industrial so as to meet the demand of the ever increasing population (Ejaro, 2013). Kuje Area Council is one of the six Area Councils of the FCT, population explosion and Urbanization has resulted to pressure on land resources. The land is now being converted to other uses such as residential to meet the housing demand of the increasing population as well as commercial and industrial functions. The 2005-2006 demolition exercise carried out by Mallam Nasir El-rufai, the then minister of the FCT forced lots of people to relocate from the city centers to its suburban in which Kuje was not left out. This created pressure on available resources in Kuje Area Council and led to reduction of farm sizes (Ejaro, 2013).

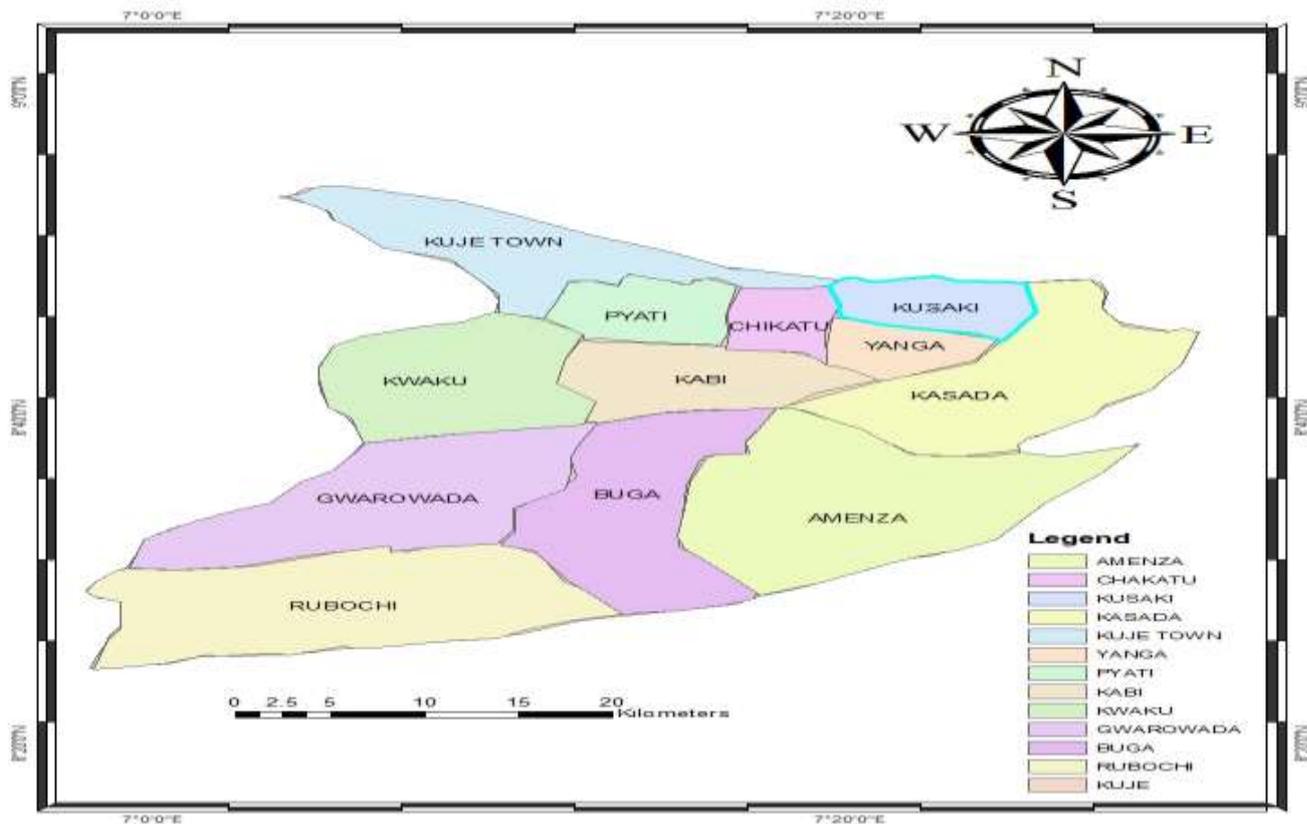
## 2. THE STUDY AREA

Kuje Area Council is one of the six area councils that make up the FCT. It could be recalled that the new, Federal Capital Territory Abuja came into being with the promulgation of Decree No 6 of 1976. The creation of the FCT came with four Area councils namely: Gwagwalada, Abaji, Kuje, Municipal Area Councils respectively (Ejaro, 2013). On October, 1<sup>st</sup> 1996, two more new area councils Kwali and Bwari, were created to bring the total number of area councils in the FCT, to six (Ejaro, 2013). Kuje Area Council is located within latitude 08°53'47" North and longitude 07°14'35" East. It is situated at about 40km drive southward to the Federal City Centre (FCC), with a total land mass of about 1,644 square kilometers (National Population Commission (NPC), 2016). Kuje Area Council is also bounded to the North by Abuja Municipal Area Council (AMAC), South by Yebu; Usman River and west Kwali Area Council; the land area translates to about 635 square kilometers.



**Fig.1: Map of FCT Showing Kuje Area Council.**

**Source: Department of Land use Administration, Kuje Area Council (2018)**



**Fig.2: Map of Kuje Area Council showing the various wards.**  
**Source: Department of Land use Administration, Kuje Area Council (2018)**

### 3. LITERATURE REVIEW

#### 3.1 Urbanization Theories

The urbanization theories may be analyzed along a continuum with two extremes, namely; modernization theory and world system theory—both are subordinate theories within economic development theories. The modernization theory is basically evolution theory which seeks to explore how societies transform from traditional and primitive status to what we call the modern or highly urbanized status (Morgan, 2016).

The world system theory basically tag along conflict theory and following schism approach, states that society is composed of core-periphery, developed underdeveloped or urbanized-traditional structure. The theory specifies that the status of being marginalized, underdeveloped or traditional society is due to exploitative policies of the core, developed and urbanized societies and there is no escape form this vicious state of affair, unless the periphery defeats these exploitative forces. In comparison with the evolutionary theory of urbanization it may be regarded as involution theory of urbanization and resulted in the surfacing of regional development science (John, 2015).

Therefore, the urbanization process is affected by both theories i.e. it is a natural evolutionary process as it has been experienced by other urbanized nations, and yet at the same time the urbanization process is affected by the unequal and exploitative world system—compromising the proclaimed benefits of urbanization in the form of pseudo urbanization—prevalent within most of the developing countries. Therefore, an in depth understanding of the two encasing urbanization theories is necessary to explore the process, tempo, and status of urbanization within any national or sub-national region and more so for developing an equitable, efficient, and ecological urbanization strategy for developing countries (John, 2015).

### 3.1.1 Modernization theory of urbanization

The modernization theory ensuing the functionalist's approach from biological sciences and the laissez-faire approach from economics (Rostov, 2011), claims that the growth and development of towns and cities is a self-regulatory and evolutionary mechanism. The theory believes that just as the size and growth of villages had never been a problem because of distance-decay and threshold demand factors within agricultural era, therefore, agricultural landscape automatically controlled the growth and development of villages. Similarly, following the same trend, within industrial era or even within information age, human settlements will always transform in a befitting way (John, 2015).

Alvin Toffler who synthesized the process of economic change and classified following three periods (Toffler, 2015): The First Wave of Change, the agricultural revolution, took thousands of years to play itself out; The Second Wave, the rise of industrial revolution, took a mere three hundred years; and it is likely that The Third Wave, the tertiary civilization, will sweep across history and complete itself in few decades (Toffler, 2015).

Before Toffler's envision, Fourastie and Gross identified structural transformations in various countries during last three centuries. Fourastie stressed that the industrialization era is in fact a transitory period through which societies transform from traditional status (agricultural based) to the tertiary (service based) civilization (Fourastie, 2015). He classified the economy into three distinct occupations viz. primary, secondary, and tertiary sectors. Based on the job generation capacity, he further divided the transitory period—the industrialization epoch, into three stages, viz. take off, expansion, and achievement. In Fourasties understanding, the industrialization phase should be considered as a means rather than an end, because it acts as bridge between the traditional and the tertiary civilizations (Fourastie, 2015).

#### 3.1.1.1 The world system theory of urbanization

The World System Theory is not so unified as Modernization Theory, rather it is a diverse body of theories which have been labeled as World System Theory, but alternatively known as Conflict Theory, Core-Periphery Theory, Cumulative Causation, Urbanization of Capital and some general theories such as Feed Back System Theory (David, 2014).

### 3.2 Urban Settlements Systems

An urban area cannot sustain in isolation; rather it functions in an orchestration called urban settlements system. This urban settlements system is composed of two elements namely; nodes—cities, towns and all other forms of urban settlements; and networks—the horizontal and vertical linkages between towns and cities—acting as carriageways for flow of people, money, goods and ideas between nodes within an urban system. Thus, an urban system at macro level is an organization of nodes and networks within a given spatial setting i.e. a region, province, country, continent, or the whole planet earth. Yet, the same pattern of nodes and networks also exists within an urban area—taken as micro system of urban settlements, which is out of the scope of this research (Mumford, 2014).

The overall urban system can have two forms—the hierarchical settlement system and the networking settlement system. Although, the hierarchical system of settlements is widely known to planners and the city administrators for some time, but the concept of networking is relatively new to the planning field. The hierarchical system meticulously links up town and cities and ranks them—based on the population sizes and the functions performed (Mumford, 2014). However, the system largely relies on vertical linkages and lacks lateral linkages. On the other hand, the networking system of urban settlements interconnects all cities regardless of their sizes and functions (Mumford, 2014).

This system gives equal importance to vertical and horizontal linkages, and provides relatively more choices to individual settlements to satisfy their deficient needs—the enhanced Right to Choose, (Gross, 2016).

### 3.3 Sustainable Developmental Goal (SDG)

#### 3.3.1 Concept and ideology of the SDG

The Sustainable Development Goal (SDGs), officially known as transforming our world: the 2030 Agenda for Sustainable Development, is a set of 17 “Global Goals” with 169 target among them spearheaded by the United Nations through a deliberative process involving its 193 member states, as well as global civil society. The resolution is a broader intergovernmental agreement that acts as the post 2015 Development Agenda (successor to the Millennium Development Goals). The SDGs build on the principles agreed upon under resolution A/RES/66/288, popularly known as the future we want. Under these the Sustainable Development Goal of 11<sup>th</sup> and 12<sup>th</sup> was adopted, it is use to illustrate the work (United Nations, 2015).

### 3.3.2 Concept of sustainable cities and communities

11<sup>th</sup> goal which is the concept of sustainable cities and communities which makes cities inclusive, safe, resilient sustainable. More than half of the world's population now lives in urban areas. By 2050, that figure will have risen to 6.5 billion people – two-thirds of humanity. Sustainable Development cannot be achieved without significantly transforming the way we build and manage our urban space. The rapid growth of cities in the developing world, coupled with increasing rural to urban migration, has led to a boom in mega cities. In 1990, there were ten mega - cities with 10million inhabitants or more. In 2014, there are 28 mega – cities, home to a total 453 million people extreme poverty is often concentrated in urban spaces, and national and city governments struggle to accommodate the rising population in these areas. Making cities safe and sustainable means ensuring access to safe and affordable housing and upgrading slum settlements, United Nation Sustainable Development Action (UNSDA) 2015.

### 3.3.3 Concept of responsible consumption and production

12<sup>th</sup> goal explains the transition to sustainable consumption and production of goods and services is necessary to reduce the negative impact on the climate and the environment, and on people's health. Developing countries in particular are greatly affected by climate change and other environment impacts, which lead to increased poverty and reduced prosperity. Sustainable Consumption and Production involve using resources efficiently, taking account of ecosystem services that are keys to making a living and reducing the impact of dangerous chemicals. This not only means environmental benefits but also social and economic benefit such as increased competitiveness, business sector development in a global market, increased employment and improved health and consequently reduced poverty. Sustainable Consumption and Production patterns are therefore a pre-requisite for the transition to a green economy and sustainable development.

Sustainable Consumption and Production is a cross-cutting issue that complements other goals. The transition to Sustainable Consumption and production pattern requires a range of tools and measures at various actors. Education is an important cornerstone. Through education, people can acquire the values, knowledge and skills to enable them to contribute to sustainable development, United Nation Sustainable Development Action (UNSDA) 2015.

### 3.3.4 Application of SDG (Sustainable Development Goal)

The Sustainable Development Goals Fund (SDG-F) is a development co-operation mechanism created in 2014 by UNDP, on behalf of the UN System with an initial contribution by the Government of Spain. The SDG-F supports sustainable development activities through integrated the multidimensional joint programs. It builds on the experience, knowledge, lessons learned and best practices of the MDG Achievement Fund (2007 – 2013) which supported 130 joint programs in 50 countries, while expanding its activities towards sustainable development, a greater focus on public-private partnerships and updating its operational framework to incorporate recent advancement in development (Busan Partnership for Effective Development co-operation and the discussion on the post – 2013 Development Agenda).

Sustainable development is development that meets the needs of the present without compromising the ability of future generation to meet their own needs. It contains within it two key concepts.

Living standard that go beyond the basic minimum are sustainable only if consumption standards everywhere have regard for long – term sustainability yet many of us live beyond the world's ecological means, for instance in our patterns of energy use perceived need are socially and culturally determined and sustainable development.

Settled agricultural the diversion of farms, farm land for other purpose due to the increment in population which result in the emission of heat and noxious gases into the atmosphere, commercial forest, and genetic manipulation are all example or human intervention in natural system during the course of development. Until recently, such intervention were small in scale and impact limited. This need not happen. At a minimum, sustainable development must not endanger the natural system that support live on earth. The atmosphere, the soil and living beings.

Growth has no set limits in term of population or resource use beyond which lies ecological disaster. Different limits hold for the use of energy, minerals, water and land. Many of these will manifest themselves in the form of rising costs and diminishing returns. The accumulation of knowledge and the development of technology can enhance the carrying capacity of the resources base. But ultimate limits. There are, and sustainability requires that long before these are reached, the world must ensure equitable access to the constrained resource and reoriented technological efforts to relieve the presume.

Development tend to simplify ecosystem and to reduce their diversity of species. And species, once extinct are not renewable. The loss of plant and animals when lands are been converted can greatly limit the options of future generations; so sustainable development requires conservation of land, plant and animal species.

In essence, sustainable development is a process of change in which the exploitation of resources, the direction of investment, the orientation of technological development; and institutional change are all harmony and enhance both current and future potential to meet human needs and aspirations, United Nation Sustainable Development Action (UNSDA) 2015.

### 3.4 Farm size Fragmentation in Nigeria

In Nigeria, despite the dominance of the oil sector, agriculture still plays significant roles in economic development. It provides food for the growing population and raw materials for industries. It also serves as a source for foreign exchange and capital formation (Awotide, 2015). Nigeria is endowed with enormous arable land. Yet, agriculture is dominated by small holder farmers who operate several small and scattered farms. The small size and scattered nature of the farms is because of land fragmentation which is a logical consequence of inheritance practices. It is through inheritance procedures that land is fragmented in Nigeria. There is controversy over the benefits and costs of land fragmentation. Some researchers have claimed that land fragmentation allows farmers with scattered plots to benefit from risk management through the use of multiple eco-zones and the practice of crop scheduling. It also enables farmers to disperse and reduce risk by a variety of soils and other micro-climatic and micro-environmental variations. Fragmentation also makes it possible for farmers to grow a variety of crops that mature and ripen at different times; so that they can concentrate their labour on different plots at different times thereby avoiding household labour bottlenecks (Bentley, 2015). Despite this position by Bentley, the most popular and widely accepted position by scholars and land tenure researchers is that land fragmentation constrains agricultural development. The costs associated with fragmentation are seen principally in terms of inefficient resource allocation (labour and capital) and the resulting cost increase in agricultural production (Bentley, 2015). According to Bentley (2015) land fragmentation imposes detrimental effects on agriculture in three ways; creating inefficiency, hindering agricultural modernization, and making it costly to modify adverse effects by consolidation schemes. In addition, it causes physical problems, operational difficulties and foregone investment to individual farmer (Bentley, 2015). In Nigeria, small sized farms are characterized by low level of operation, low literacy of operators, and a labour intensive production technology with hired labour cost constituting about 60% of the total cash cost of production (Bentley, 2015). Agricultural development in Nigeria is therefore constrained by a myriad of factors especially land fragmentation. Land fragmentation has severe consequences for agricultural development; it leads to scattering of plots, little incentive for improvements, lack of security of tenure, restricted scale of operations etc., (Fabiya, 2014). In spite of these associated costs, land fragmentation is still persistent and wide spread in Nigeria agriculture.

### 3.5 Impacts and Implication of Farm Size Reduction in Nigeria's Food Production

According to Aderemo (2014), farmers' land holdings in Nigeria are fragmented, small in size, non-contiguous and interspersed over long walking distances. Fragmentation of holdings has negative impact on agricultural development. First, it has encouraged the excessive subdivision of land into plots of small sizes belonging to separate individuals. Since the sizes of farms are not large enough, they neither provide farmers with enough sustenance nor do they enable farmers to achieve a surplus. In fact, the small size of farms does not provide farmers with enough income to satisfy their basic needs. Also the small sized holdings do not permit farmers to be engaged in farming activity throughout the year since they (farmers) always abandon farming activity for leisure once their small plots of land are cultivated.

Secondly, reduction and consequently fragmentation of land has encouraged the scattering of holdings into different locations. Though the fragmentation of land is seen by farmers as essential for meeting their land needs, the study observes that it is inhibiting the optimal use of land resources. For instance, the dispersal of holdings which fragmentation entails makes many farmers to plant different crops on several distant plots. And since planting is not staggered, it is preventing land from being productively used as it creates bottlenecks such as non-flexibility in the use of labour time (Aderemo, 2014). Moreover, efficient use of the land is compounded, as the shifting system of cultivation encourages extensive use of land which is abandoned only after few cropping. Particularly, the scattered nature of the plots makes farmers to waste precious hours that would have been otherwise put to a agricultural activity traveling between distant plots. Moreover, the scattered nature of the plots equally makes the transportation of inputs and crops to and from the farm a serious problem to the farmers (Aderemo, 2014).

## 4. MATERIALS AND METHODS

Data for this study was collected from both Primary and Secondary sources. The primary sources of data include, Reconnaissance Survey, Questionnaire and Field interview. Questionnaires were gotten directly from Kuje Area Council via questionnaire administration. These include data on demographic characteristic of respondents, the causes of Urbanization in the study area, data on effects of farm size reduction on farm yield gotten by administering questionnaires. Reconnaissance Survey provided first-hand information on Kuje Area Council, allowing field inspection as well as familiarization of one on the area.

Interview was conducted alongside Questionnaire administration. This was done to enhance the primary data generated in the field. Questions not captured were elicited during interview. This research also sought information from Ministry of Agriculture and Rural Development, on farm sizes and Farm yield in Kuje Area Council from 2010 to 2017. These data were correlated together to

show the impact of Farm size reduction on farm yield over the period under review. The data are integrated with primary data realised from the field to give a detailed analysis.

The research adopts open and close ended question types, where the respondents are meant to choose from a series of options. The questionnaire was prepared in accordance to likert – Scale, from which the mode was used to determine the most frequent outcome base on the respondent view to the administered questionnaire. Open ended were included to enable respondents’ state their views on certain issues. The questionnaire had two sections. Section “A” sought information on the demographic characteristics of respondents. While, Section “B” elicit information on the causes of Urbanization in Kuje Area Council and the effects of farm size reduction on farm yield in the study area between 2010 to 2017.

### 4.1 Sampling Technique and Frame

To determine the sample size for this research, the Krejcie model for Sample size determination was adopted and postulated below for the study

$$S = \frac{X^2 NP}{d^2 (N-1) + X^2 P(1-P)}$$

where,

S = required sample size

X<sup>2</sup> = the table of value for 1 degree of freedom at the desired confidence level (3.841)

N = the population size

P = the population proportion (assumed to be 0.50) since this would provide the maximum sample size)

d = the degree of accuracy expressed as a proportion (0.05)

Hence, at 41,066 household mean the sample size is 377 questionnaires.

The research adopts a systematic sampling technique of questionnaire administration. The sample frame was used as a tool in determining the number of questionnaires to be administered in each of the locations in Kuje Area Council. Consider the projected population of 246,400 for 2016 with a household mean value of 41,066, a total number of 377 questionnaires was administered using the Krejcie model.

**Table 1; Summary of sample frame, size and questionnaire distribution**

S / N	LOCATION	POPULATION 2006 (NPC)	POPULATION PROJECTED (2016)	HOUSE HOLD MEAN	SAMPLE SIZE
1	Kuje	36,788	93,225	15,537	143
2	Chibiri	12,765	32,348	5,391	50
3	Gaube	4,508	11,424	1,904	17
4	Kwaku	7,413	18,785	3,131	29
5	Kabi	9,241	23,417	3,902	36
6	Rubochi	11,653	29,530	4,921	45
7	Gwargwada	5,564	14,099	2,350	22
8	Gudun-Karya	3,121	7,909	1,318	12
9	Kujekwa	3,798	9,625	1,604	15
10	Yenche	2,382	6,038	1,008	8
	<b>Total</b>	<b>97,233</b>	<b>246,400</b>	<b>41,066</b>	<b>377</b>

Source: Author Survey, 2017

### 4.2 Data Presentation and Analysis

The research adopted descriptive statistics in presenting information such as; Line graphs, Simple bar graphs and table were employed to address the socio-economic characteristics of the respondents in Kuje Area Council. These include data gathered on age distribution, sex composition, income of respondent, marital status and occupation of respondents among others.

### 4.3 Hypothesis Verification

In verifying the hypothesis stated earlier, the research employed the student T- test, as inferential statistics.

$$\text{Chi-square } \chi^2 = \sum_{i=1}^k \frac{(O - E)^2}{E_i}$$

Where;  $O_i$  = observed values,  $E_i$  = Expected values

## 5. RESULTS AND DISCUSSION

### 5.1 Causes of Urbanization in Kuje Area Council

This section analyses the factors causing Urbanization and its resultant effect to farm size reduction.

**Table 2; shows the factors responsible for Urbanization in Kuje Area Council**

Causes of Urbanization in Kuje in Kuje Area Council	(%) SA	(%) A	(%) D	(%) SD
Population explosion	72	18	8	2
Improvements on basic amenities	56	22	18	4
Establishment of industries (small, medium and large)	90	9	1	0
Demolition exercise in other parts of the FCT	68	21	8	3
Advancement in Science and Technology	45	21	18	16
Good security network in Kuje	72	13	14	1
Improved health facilities	37	36	15	12
Presence of Job Opportunities	84	11	4	1
Improvement in the standard of living and housing quality	95	4	1	0

Source: Field survey, 2018.

Analysis of tables 2 shows that 90% of the respondents are of the opinion that population explosion is a factor responsible for the urbanization of Kuje leading to a reduction in farm sizes. Population explosion over the years has strongly contributed to high rate employment in the area. As resettlement of towns within the Federal Capital Territory, Immigrants from rural areas as well as those affected by the Mallam Nasir El-Rufia demolition exercise of 2004-2006 in the Federal Capital territory of illegal structures for development, Abaji area Council have gained massive population. 78% of the respondents are of the view that improvements on basic amenities and infrastructures are largely responsible for the urbanization of Kuje leading to a reduction in farm sizes. The table reveal that 99% of the respondents attest to the establishment of industries (small, medium and large), as a factor chiefly responsible for the urbanization of Kuje leading to a reduction in farm sizes. Where there are industries, factories or firms to employ the people there will be increased level of urbanization. 89% of the respondents attest that demolition exercise in other parts of the FCT has brought about urbanization of Kuje. 66% of the respondents are of the opinion that the advancement in Science and technology has led to the urbanization of Kuje, 34% of the respondent refuted this assertion. 85% of the respondents are of the opinion that the presence of good security network in Kuje such as the Prison, and military base has contributed to the urbanization of Kuje as people are drawn to more secured regions. 73% of the respondents are of the opinion that the improvement in medical facilities such as the building of more hospitals, clinics and other medical centres has attracted more people into Kuje, leading to urbanization and pressure on available farm lands. 95% of the respondents attributed the urbanization of Kuje to the presence and availability of job opportunities, while 99% opines that improvement on standard of living and housing quality is largely responsible for the urbanization in Kuje and subsequent pressure on available farm lands.

### 5.2 Implications of Farm size Reduction on farm Yields

**Table 3 shows the implication of farm size reduction on farm yield.**

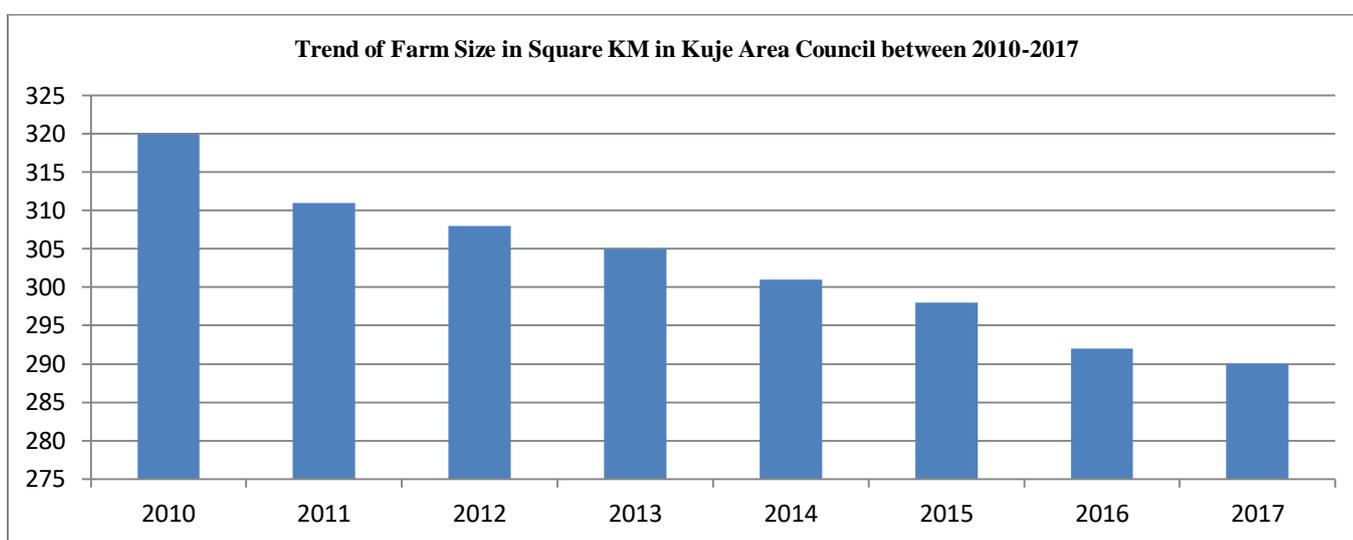
Implication of Farm size reduction on farm yields in Kuje Area Council	(%) SA	(%) A	(%) D	(%) SD
Decrease in food supply in Kuje Area Council	42	40	15	3
Soil impoverishment due to continuous cropping in Kuje Area Council	66	20	14	0
Decrease crop yield/output due to pressure on farm land in Kuje Area Council	38	51	7	4
Hunger and Poverty due to reduction in yields in Kuje Area Council	56	38	6	0
Loss of Agricultural land to other land uses in Kuje Area Council	28	43	20	9
High cost of Agricultural produce in Kuje Area Council	40	52	6	2
Excessive fragmentation of Agricultural lands in Kuje Area Council	55	36	8	1
Loss of occupation by farmers due to lack of agricultural land to cultivate crops in Kuje Area Council	81	16	2	1

Source: Field survey, 2018

Table 3 shows that 82% of the respondents attest that a reduction in farm size has led to a decrease in food supply in Kuje. As more people continue to migrate into Kuje, there is constant pressure on farms to meet the demand of this population; consequently a decrease in the supply of food in Kuje becomes inevitable. 86% of the respondent agreed that a reduction in farm land has led to soil impoverishment due to consistent cropping on available lands, whereas 14% of the respondent refuted this claim but opines to the use of farm supplements such as manure and fertilizers to improve crop yields and farm performance. 89% of the respondents are of the view that decrease in crop yield/output are due to pressure on farm land. 94% attest that reduction of farm sizes in Kuje has led to hunger and poverty. Without lands to cultivate, hunger and poverty becomes eminent; hence poverty creeps in with time. 71% of the respondent believes that loss of Agricultural land to other land uses in Kuje is as a result of high fragmentation of farm lands. 92% of the respondents opine that the reduction in farm size in Kuje has led to high cost of farm produce in the local markets. 91% of the respondent attests that excessive land fragmentation and loss of agricultural land is largely due to urbanization in Kuje. 97% of the respondents reported that farmers are beginning to loss their occupation due to lack of available lands to cultivate their crops.

### 5.3 Trend of Farm size in Kuje between 2010 -2017

This sub-section discusses the trend of farm size in Kuje between 2010- 2017



**Figure 4.6: trend of farm size in Kuje, between 2010-2017**  
 Source: Field Survey 2018.

Figure 3 reported that in 2010, the size of arable land measure about 320 square kilometer, in 2011 the size of arable land dropped to 311 square kilometer in Kuje. The size of arable land continued to drop against all odds to 308 square kilometre in 2012, 305 square kilometres in 2013, 301 square kilometres in 2014, 298 square kilometres in 2015, 292 square kilometres in 2016 and then 290 square kilometres in 2017. This implies that in the coming years, agricultural land might be totally lost and converted to other land uses due to high fragmentation of arable lands as well as population explosion in Kuje Area Council, if measures are not taken.

### 5.4 Relationship between farm size and farm yield in Kuje.

This sub section discusses the relationship between farm size and farm yields

**Table 4 showing the relationship between Arable land and farm yield in Kuje, between 2010-2017**

Year	Arable land (km <sup>2</sup> )	Total agricultural productivity (1,000) (tonnes)
2010	320.17	55.68
2011	311.12	58.97
2012	308.69	60.60
2013	305.89	55.30
2014	301.53	53.18
2015	298.97	46.06
2016	292.06	40.22
2017	290.28	36.54

Source: Federal Ministry of Agriculture and Rural Development, 2018

Table 4 shows that in 2010 while arable land stood at 320 square kilometers in area, the total productivity for that same year was 55 tonnes. In 2011, arable land maintained an area of 311 square kilometers, productivity stood approximately at 59 tonnes. In 2012, arable land had an area of 308 square Kilometers, productivity stood at 60 tonnes. 2013 had arable land maintain an area of 305 square kilometers and productivity measure of 55 tonnes. Arable land had an area measure of 301 square kilometers and productivity of 53 tonnes in 2014 in Kuje. The decline continued in 2015 with an arable land area measure of 298 square kilometer and productivity of 46 tonnes. In 2016, 292 square kilometer of area was allotted for agriculture and a productivity measure of 40 tonnes was recorded. 2017 was not left out as the decline continued, arable land was reduced to 290 square kilometer and productivity measure of 36 tonnes was equally recorded. This shows a positive correlation between farm sizes and agricultural productivity. As farm sizes continue to decline, agricultural productivity diminishes as well, implying that in the coming year Kuje Area Council will experience a severe consequence of hunger resulting from little or no yield to cope with the increasing population.

## 5.5 Hypothesis Verification

(H<sub>0</sub>): There is no significant difference between the farm sizes and farm yield in Kuje Area Council between 2010–2017.

(H<sub>1</sub>): There is a significant difference between the farm sizes and farm yield in Kuje Area Council between 2010–2017.

From the table of percentage values for the Chi-square distribution, the critical value of  $X^2$  at 0.05 for the 7 degrees of freedom is 14.067. The calculated value  $X^2$  of 33.81 is greater than the critical value 14.067, the null hypothesis is (H<sub>0</sub>) is rejected while the alternative hypothesis (H<sub>1</sub>) is accepted. This implies that there is a significant difference between farm sizes and farm yields/output. That is, as farm lands in kuje continue to become fragmented there is constant reduction in farm yields in the area.

## 6. SUMMARY AND CONCLUSION

Findings of the research revealed that; Kuje Area Council is becoming more and more urbanized and is still experiencing rapid population growth leading to fragmentation and loss of agricultural land to other land uses. Findings also revealed that rapid population growth is responsible for the urbanization of the region as people continue to migrate to the area. The demolition exercise in the Federal Capital City (FCC), between 2005 and 2006 by the then Minister of FCT, Mallam Nasir El Rufai, forced many to be expelled from the City core to suburbs region as Kuje Area Council. The improvement in basic amenities and infrastructural development in the study area has also contributed to urbanization in the area which resulted to increased fertility and lower mortality rate. Improvement in health facilities has equally caused the study area to become favourite region to dwell and receive medical attention. Others include; the establishment of industries. These industries and factories have continued to act as pull factors to job seekers. The good security network provided has pulled people to the area for safety leading to expansion of the study area to accommodate the immigrants.

Analysis also revealed that the study area is fraught with a decrease in food supply, hunger, poverty and high cost of farm produce due to reduction in yields. There is also a record of Soil impoverishment due to continuous cropping. The relationship between the farm sizes and farm yields between 2010-2017 as evaluated showed that as farm sizes reduce, the amount of yield over same year also decreases. The continuous reduction in farm sizes as areas mapped out for farming activities are continuously exploited for other uses. Loss of agricultural land has continued to pose a threat to the survival of the people of Kuje Area Council as many farmers have lost their occupation. To reduce these challenges, therefore, it is important to create awareness on the implications of rapid population growth and conversion of agricultural land to other land uses and impose strict requirements such as heavy taxes on new comers, to discourage people from migrating to the area and FCT as a whole.

The research conclude with a call to create awareness on the implications of rapid population growth and conversion of agricultural land use to other uses and discourage migration to the area and by extension the Federal Capital Territory as a whole.

## 7. RECOMMENDATIONS

There should be strict laws passed to tackle agricultural land use conversion, this will ensure that agricultural lands are not tampered with. Awareness should also be created on the implication of agricultural land use conversion to other uses. Laws regarding agricultural land use violation should be made strict with offenders sanctioned. Agricultural land use violators should be made to pay huge fines as penalty for their offence. The youth and graduate should be trained in the use of some agricultural technology and exposed to improve and modern practice. Government should invest in the agricultural sector this will lead to increase in capital formation and Growth of small and medium scale industries that has the potential to employ hundreds of thousand graduates in Kuje Area Council. More lands should be allocated for agricultural practice against other land uses. Heavy taxes should be imposed on new comers who migrate to the area for residential and business purposes. There should be strict requirements to discourage new people from migrating into the area.

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