

**ASSESSMENT OF THE HOUSING QUALITY IN LOKOGOMA DISTRICT,  
ABUJA MUNICIPAL AREA COUNCIL, FEDERAL CAPITAL TERRITORY, ABUJA,  
NIGERIA.**

**By**

**GARBA FADILA IBRAHIM**

**B Tech. URP**

**NSU/MSC/ERM/0001/16/17**

**MASTER OF SCIENCE, GEOGRAPHY. NASARAWA STATE UNIVERSITY, KEFFI,  
NASARAWA STATE, NIGERIA.**

**BEING A DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF MASTER OF SCIENCE IN  
ENVIRONMENTAL RESOURCE MANAGEMENT**

**SUPERVISOR**

**DR A.T. OGAH**

**APRIL, 2019.**

## **DECLARATION**

I hereby declare that this dissertation has been written by me and it is a report of my research work. It has not been presented in any previous application for the award of Postgraduate Master of Science degree. All quotations are indicated and sources of information specifically acknowledged by means of references.

**GARBA FADILA IBRAHIM**

## CERTIFICATION

This dissertation titled Assessment of the Housing Quality in Lokogoma District, AMAC FCT Abuja meets the regulations governing the award of postgraduate Master of Science degree, Faculty of Social Sciences of Nasarawa State University, Keffi.

---

Dr A. T. Ogah  
Supervisor

---

Date

---

Dr A. T. Ogah  
Head of Department

---

Date

---

Dr M. Alkali  
Internal Examiner

---

Date

---

Dr A.W. Butu  
External Examiner

---

Date

---

Prof. S. A. S. Aruwa  
Dean, School of Postgraduate Studies

---

Date

## **DEDICATION**

This Research Dissertation is dedicated to Allah (SWT) for giving me the ability, strength and help to carry it out successfully.

## **ACKNOWLEDGEMENTS**

For this work to succeed to a final level required a lot of guidance and assistance from different people whom I am grateful to because they saw me through the completion of my dissertation.

I will like to extend my sincere gratitude to my supervisor, Dr A. T. Ogah, whose guidance, support, encouragement and constructive criticisms saw me through this entire research dissertation.

I am grateful for the guidance and support of Nasarawa State University, Geography Department that helped me to successfully complete my dissertation. I want to send my sincere gratitude to the entire staff of the Geography Department; both academic and non-academic, in places of Prof. Nasiru, Prof. Sanghari, Dr. Mahmud, Mr Banky, Mrs Salome, Dr Kadafa, Dr Mande, Prof Ezeashi, Prof Marcus, Dr Yahaya Sani, Prof Alhassan, and all other staff for their timeless efforts and dedication to the department which helped me to complete my work successfully.

I wish to extend my thanks to all the Housing Estates in Lokogoma District, for their co-operation and hospitality throughout the data collection process for the research. I also want to thank a staff of the Mass Housing Department of Federal Capital Development Authority in person of Mr Saeed, for his help with materials on Mass Housing.

## ABSTRACT

The ever-rising population in the country leads to increase in housing demand. The need to meet this housing demand lead to increased housing developments. The aim of this study is to Assess the Housing Quality of the Housing Estates in Lokogoma district, Abuja Municipal Area Council, Abuja. Both Primary and Secondary sources of data were used for data collection to determine the Housing Quality of the housing estates in Lokogoma district. Fourty four (44) copies of questionnaires were distributed through systematic random sampling among various estates in Lokogoma District. The study employed descriptive and inferential statistics to analyse the data. The data obtained from the structured questions in the questionnaire was coded, classified under different variables and entries made into Statistical Package for Social Science (SPSS version 22). The analysis indicates that the Environmental Indicators and Housing Quality characteristics shows that the Impact of the houses on Ecosystem does not significantly influence the presence of Environmental Hazard, since the corresponding p-value (0.259) is greater than 0.5. Presence of environmental hazards significantly influence the eco system, use of sustainable building materials and the local built environment. On the other hand, presence of environmental hazards does not significantly influence the eco friendliness of the house with corresponding p-value (0.106) that is greater than 0.05. From Economic Indicators, it shows that Annual Government Revenue/Tax significantly influences Housing Affordability since the p-value (0.000) is less than 0.05 (5%) hence, the null hypothesis is rejected at 5% level of significance. From Social Indicators, it indicates that Safety and Security significantly influence access to both Educational and Health Facilities since the p-value (.000) is less than 5% hence, the null hypothesis is rejected at 5% level of significance. On the basis of the findings, it is recommended that; affordable housing should be made a priority by incorporating holistic and inclusive urban planning, sustainable housing should be incorporated in the housing process by using solar energy as a power source, building more eco-friendly houses, review of Environmental Policies, Building Codes and Bye-Laws to include Sustainable Development goals so as to achieve sustainability in housing, among others.

## TABLE OF CONTENTS

Page											
Cover Page	-	-	-	-	-	-	-	-	-	-	-
Title Page	-	-	-	-	-	-	-	-	-	-	i
Declaration	-	-	-	-	-	-	-	-	-	-	ii
Certification	-	-	-	-	-	-	-	-	-	-	iii
Dedication	-	-	-	-	-	-	-	-	-	-	iv
Acknowledgement	-	-	-	-	-	-	-	-	-	-	v
Abstract	-	-	-	-	-	-	-	-	-	-	vi
Table of Contents	-	-	-	-	-	-	-	-	-	-	vii
List of Tables	-	-	-	-	-	-	-	-	-	-	xi
List of Figures	-	-	-	-	-	-	-	-	-	-	xiv
List of Plates	-	-	-	-	-	-	-	-	-	-	xv
List of Abbreviations	-	-	-	-	-	-	-	-	-	-	xvi

### CHAPTER ONE: INTRODUCTION

1.1	Background to the Study	-	-	-	-	-	-	-	-	-	1
1.2	Statement of the Research Problem	-	-	-	-	-	-	-	-	-	3
1.3	Research Questions	-	-	-	-	-	-	-	-	-	4
1.4	Aim and Objectives of the study	-	-	-	-	-	-	-	-	-	5
1.5	Objectives	-	-	-	-	-	-	-	-	-	5
1.6	Significance of the Study	-	-	-	-	-	-	-	-	-	5

1.7	Scope/Limitation of the Study	-	-	-	-	-	-	-	6
-----	-------------------------------	---	---	---	---	---	---	---	---

## **CHAPTER TWO: CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW**

2.1	Conceptual Framework	-	-	-	-	-	-	-	7
2.1.1	Concept of Housing Quality	-	-	-	-	-	-	-	7
2.1.2	Indicators for Evaluating Housing Quality	-	-	-	-	-	-	-	7
2.2	Literature Review	-	-	-	-	-	-	-	8
2.2.1	Housing	-	-	-	-	-	-	-	8
2.2.2	The Meaning of a House and Qualities of a Home	-	-	-	-	-	-	-	10
2.2.3	Neighbourhood	-	-	-	-	-	-	-	12
2.2.4	Housing Quality	-	-	-	-	-	-	-	14
2.2.5	Sustainable Development and Housing-	-	-	-	-	-	-	-	15
2.2.6	Sustainable Housing Development	-	-	-	-	-	-	-	17

## **CHAPTER THREE: THE STUDY AREA AND RESEARCH METHODOLOGY**

3.1	The study Area	-	-	-	-	-	-	-	19
3.1.1	Location	-	-	-	-	-	-	-	19
3.1.2	Climate	-	-	-	-	-	-	-	20
3.1.3	Geology	-	-	-	-	-	-	-	21
3.1.4	Soil and Vegetation	-	-	-	-	-	-	-	21
3.1.5	Population	-	-	-	-	-	-	-	22
3.1.6	Socio-Economic Activities	-	-	-	-	-	-	-	22
3.2	Research Methodology	-	-	-	-	-	-	-	23
3.2.1	Reconnaissance Survey	-	-	-	-	-	-	-	23

3.2.2	Types and Sources of Data	-	-	-	-	-	-	-	23
3.2.3	Study Population and Sample Size	-	-	-	-	-	-	-	24
3.2.4	Data Collection	-	-	-	-	-	-	-	24
3.2.5	Data Analysis Concept and Technique	-	-	-	-	-	-	-	25
3.2.6	Questionnaire Validity and Reliability	-	-	-	-	-	-	-	25

#### **CHAPTER FOUR: RESULT AND DISCUSSION**

4.1	Characteristics of the Housing Estates	-	-	-	-	-	-	-	27
4.1.1	Operation/Use of Housing Estates	-	-	-	-	-	-	-	28
4.1.2	Building Design	-	-	-	-	-	-	-	31
4.2	Sustainability of the Housing Estates	-	-	-	-	-	-	-	32
4.2.1	Environmental Effects	-	-	-	-	-	-	-	33
4.2.2	Economic Effects	-	-	-	-	-	-	-	36
4.2.3	Social Information	-	-	-	-	-	-	-	38
4.3	Compatibility of the Housing Estates with the Master Plan	-	-	-	-	-	-	-	43
4.4	Stakeholder Involvement	-	-	-	-	-	-	-	46
4.5	Correlation	-	-	-	-	-	-	-	48
4.5.1	Test of Hypothesis	-	-	-	-	-	-	-	48

#### **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

5.1	Summary	-	-	-	-	-	-	-	52
5.2	Conclusion	-	-	-	-	-	-	-	53
5.3	Recommendations	-	-	-	-	-	-	-	54
	Reference	-	-	-	-	-	-	-	56

## LIST OF TABLES

### Table

3.1	Case Processing Summary	-	-	-	-	-	-	-	25
3.2	Reliability Statistics	-	-	-	-	-	-	-	26
4.1	Ownership of houses within the Estates	-	-	-	-	-	-	-	27
4.2	Years the Estates have been occupied	-	-	-	-	-	-	-	27
4.3	Energy Performance/Use	-	-	-	-	-	-	-	29
4.4	Air quality/Ventilation	-	-	-	-	-	-	-	29
4.5	Water Use and Management	-	-	-	-	-	-	-	30
4.6	Waste Management	-	-	-	-	-	-	-	30
4.7	Property Maintenance and Management	-	-	-	-	-	-	-	31
4.8	Enabling Energy and Water Efficiency by Design	-	-	-	-	-	-	-	31
4.9	Possibility of Upgrading	-	-	-	-	-	-	-	32
4.10	Impact on Ecosystem from Planning stage	-	-	-	-	-	-	-	33
4.11	Presence of Environmental Hazards	-	-	-	-	-	-	-	33
4.12	Eco-friendly/Greening of Estate	-	-	-	-	-	-	-	34
4.13	Impact on Quality of Local Built Environment	-	-	-	-	-	-	-	35
4.14	Construction stage; Use of Sustainable Building Materials	-	-	-	-	-	-	-	35
4.15	Minimization of Environmental Impact from Building Activity	-	-	-	-	-	-	-	36
4.16	Annual Government Revenue/Tax	-	-	-	-	-	-	-	36
4.17	Access to Housing Credit/Mortgage	-	-	-	-	-	-	-	37
4.18	Affordability of Houses	-	-	-	-	-	-	-	37
4.19	Business Opportunity	-	-	-	-	-	-	-	38

4.20	Safety and Security	-	-	-	-	-	-	-	-	38
4.21	Family-friendly	-	-	-	-	-	-	-	-	39
4.22	Access to Health Facilities	-	-	-	-	-	-	-	-	40
4.23	Access to Educational Facilities	-	-	-	-	-	-	-	-	41
4.24	Aesthetics and Landscaping	-	-	-	-	-	-	-	-	42
4.25	Conformity of Layout of Estates with Master Plan	-	-	-	-	-	-	-	-	44
4.26	Infrastructure Provision; Primary and Secondary	-	-	-	-	-	-	-	-	45
4.27	Availability of Green Areas	-	-	-	-	-	-	-	-	45
4.28	Participation in Planning	-	-	-	-	-	-	-	-	46
4.29	Participation in Execution	-	-	-	-	-	-	-	-	47
4.30	Participation in Monitoring and Control	-	-	-	-	-	-	-	-	47
4.31	Environmental Indicators Correlations below;	-	-	-	-	-	-	-	-	48
4.32	Economic Indicators Correlations	-	-	-	-	-	-	-	-	50
4.33	Social Indicators Correlation	-	-	-	-	-	-	-	-	51

## **LIST OF FIGURES**

### **Figure**

2.1	Conceptual Framework for the Proposed Definition of Housing Quality	-								8
3.1	Abuja Master Plan showing Lokogoma District	-	-	-	-	-	-	-	-	20
3.2	Map of Abuja	-	-	-	-	-	-	-	-	23
4.1	Lokogoma District, FCT – Abuja	-	-	-	-	-	-	-	-	44

## LIST OF PLATES

### Plate

<b>I</b> showing Efab Housing Estate located at Lokogoma	-	-	-	-	28
<b>II</b> showing a river/swampy area located in a close vicinity to some structures	-				34
<b>III</b> showing a children’s playground/park which implies that Lokogoma is family-friendly					40
<b>IV</b> showing a hospital located at Suncity Estate in Lokogoma	-	-	-		41
<b>V</b> School at Suncity Estate in Lokogoma	-	-	-	-	42
<b>VI</b> Relaxation Centre built aesthetically and well-landscaped	-	-	-		43
<b>VII</b> showing a house in Lokogoma with plants/trees	-	-	-	-	46

## LIST OF ABBREVIATIONS

AGIS	-	Abuja Geographic Information System
AHURI	-	Australian Housing and Urban Research Institute
AMAC	-	Abuja Municipal Area Council
FCC	-	Federal Capital City
FCDA	-	Federal Capital Development Authority
FCT	-	Federal Capital Territory
GDP	-	Gross Domestic Product
GNP	-	Gross National Product
HUD	-	Housing and Urban Development
LDC	-	Less Developed Countries
NEA	-	National Education Association
PV	-	Photovoltaics

SPSS	-	Statistical Package for Social Science
WCED	-	World Commission on Environment and Development
UN	-	United Nations
UN DESA	-	United Nations Department of Economic and Social Affairs

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Housing Quality studies can be justified because it is an indispensable, social and physical infrastructure whose quality and quantity, serves as an instrument for measuring the standard of living, the level of technological advancement, culture and civilization (Mbina, 2007). Shelter is universally acknowledged as one of the most basic human needs alongside food and health, with profound impact on lifestyle, clothing, happiness, as well as the productivity of individual (Akeswusola, 2014). He also opined that “developments have overtaken the idea of shelter by now. What people need now is housing, housing therefore encompasses all ancillary services and community facilities that are necessary to human well-being. It is indeed a package of services, land utilities and access to employment and special amenities as well as the structure of the house itself.” The United Nations Special Rapporteur on adequate housing has defined the human right to adequate housing as: “The right of every woman, man, youth and child to gain and sustain a safe and secure home and community in which to live in peace and dignity” (Leilani Farha, 2014).

The high influx of people into the city of Abuja in search for better opportunities lead rise in housing need. The quest to meet up this housing deficit lead to housing construction day in day out thus, Lokogoma is a district created to meet up a part of these housing need/deficit. To provide affordable and sustainable housing for this population outburst, bypassing the social and economic pressure on housing and urban environment to achieve sustainable development in housing, we have to consider housing affordability, housing quality, and issues of housing equity and justice in terms of accessibility.

The problem of deficiency in housing quality in Nigeria is common both in urban and rural areas hence, this research aims to assess the housing quality of the existing housing estates in Lokogoma district and will, at the end, make recommendations to help government and policy makers on how to improve housing quality. Housing is a very important necessity of modern living, hence governments all over the world have initiated numerous policies and programmes towards the development and sustainability of the housing sector with particular reference to the

issue of climate change and the need to refocus on the type of houses that are built taking into consideration the global attention on environmental protection. Uroko (2014) opined that, “in today’s world of changing climatic conditions and rising household energy cost due to growing sophistication and changing tastes, greening is increasingly becoming a phenomenon and a veritable index in global initiatives for measuring standards of the built environment. This fact was also attested to by Alitheia (2010) who stated that “environmental sustainability, global warming and green have become common terms in discussions on the subject matter about the effects of our economic and social activities on the environment”. Increased housing construction due to urbanization has not kept pace with urban rapidly expanding populations leading to severe overcrowding and congestion in slums. Slums are areas of concentrated disadvantage. Life in slums is characterized by serious problems of environmental pollution, lack of access to the basic social services, poverty, deprivation, crime, violence and general human insecurity and life-threatening risks and diseases. Urbanization increases the demand for affordable housing and urban infrastructure, and the urban poor cannot afford decent housing thus, leading to housing construction that are not environmentally sustainable, which in turn increases the risk of climate change and global warming.

Interregional and international training of professionals in foreign countries brought change in our housing and built environment in Nigeria, which rendered our local building materials inadequate, because emphasis is now on sophisticated building materials which are expensive and energy consuming. Land plays a prominent role in the global economy due to its historical significance in delivering food and fibre, as well as its role as a source of social prestige. It is a resource integral to survival, livelihood, adequate housing and sustainable spatial development in a city. Man-land relationship is an indispensable affair, mutually symbolic and vital in meeting man’s needs (Omole,1999). Access to land has become a vigorous issue in the city of Abuja due to unprecedented quest for land use occasioned by migrant population, seeking to benefit from the wide range of economic and social opportunities offered by the city and the need to satisfy the ever expanding human activities. This has led to some challenges leading to the disappearance of green areas meant for recreation and buffer to the city, which has led to the development of squatter settlements.

## **1.2 Statement of the Research Problem**

In recent decades, it has been observed that the phenomenal rise in population, spontaneous increases in size of cities have led to acute shortage of habitable dwelling units in Nigeria. The built environment in many developing countries particularly Nigeria is fast degenerating. The factors responsible for this can be attributed to rapid urbanization, rural-urban migration, and decades of steady economic downturn, decay of urban infrastructure and poor housing quality (World Bank, 2005). Osuide and Dimuna (2005) noted that the urbanization process in many developing countries particularly Nigeria, has not been accompanied with a corresponding supply of adequate houses, basic amenities and infrastructures. These have created demand on housing stocks leading to high rents, overcrowding and development of slums settlements (Onibokun, 1972; Olotuah, 2005) and also have serious impact on the built environment and serious consequences on health of city residents. Another problem of the Nigerian urban built environment is noncompliance with building bye-laws and regulations. The major areas of default are in the area of zoning, setbacks, building along utility lines and non-adherence to provision of adequate ventilation (Osuide and Dimuna, 2005). This scenario has resulted to diverse urban problems like overcrowding, deplorable environment, poor living conditions, inadequate and poor infrastructure, homelessness, increased rate of poverty and social vices among several others. The problem of deficiency in housing quality in Nigeria is common both in urban and rural areas. The situation is very severe in urban areas due to the fact that most people live in houses that are poor in terms of quality with unsatisfactory environments. The population growth resulting from rural–urban migration and rapid urbanization is the cause which leads to homelessness, the growth of slums and overcrowding (Mabogunje, 1975; Olotuah and Adesiji, 2005; Lawanson, 2006; Adeleye and Anofojie, 2011). Quite a lot of studies have been conducted in Nigeria on housing condition and quality with only few undertaken at the national scale. Comprehensive surveys both at local and national scales have also not been attempted as what exist are purely sample surveys which, of course, are subject to sampling errors. Furthermore, the majority of these studies are centred on urban area where interests in identifying slum areas within the cities have taken the centre stage. Some of the recent studies include correlates of housing problems in slum areas (Ekop, 2012; Ogunleye, 2013; Uwadiogwu, 2013), spatial structure of housing quality (Aderamo and Ayobolu, 2010) and perception of housing quality (Adeleye et al., 2014). Although studies have shown that the problem of housing

is universal (Olotuah A. et al, 2009), it is however more critical in less developed countries (LDCs), including Nigeria. The challenge of housing the increasing urban population, particularly the poor is becoming more critical in the urban areas of LDCs where an explosive expansion of the urban population due to a high population growth rate and massive rural-urban drift has compounded the housing situation. Nigeria has been no exception to this trend as it has one of the highest urban growth rates in the world (Oladunjoye A. et al, 2005). Not only is the country experiencing one of the fastest rates of urbanization in the world, its experience has also been unique in scale, pervasiveness and historical antecedents. This process has resulted in a very dense network of unsustainable urban centres. In terms of quality of total housing stock in the country, NISER (2005) estimated that as at 2000, the proportion of housing units with sound structure (44.5%) was less than half of the total stock in the country. These findings have been corroborated by a micro study at Yenagoa by Ede et al. (2007) who concluded that only 9% of the houses surveyed are older than 21 years yet only 14% are well maintained and need no repairs.

Previous studies conducted on Abuja housing has been mainly focused on examining and analyzing housing, not considering housing quality. Like in the study of Alao (2009), in which he reviewed Mass Housing in Abuja, and recommended sustainable housing as a solution to the housing problems and challenges facing housing in Abuja. Lokogoma is an upcoming residential area of Abuja, still undergoing developments in form of building structures and other ancillary services based on preliminary observation. The quest to meet up the housing need of the ever-growing population increase in the city of Abuja has led to increased housing construction in the area in the recent years. These houses are constructed mostly with regard to modern standards, to meet up the ever-increasing housing demand in Abuja. Therefore, there is a need to assess the housing quality of the housing estates in Lokogoma district.

### **1.3 Research Questions**

The Study tried to seek answers to the following questions.

- i. What are the characteristics of the Housing Estates in Lokogoma?
- ii. To what extent does these characteristics align with sustainable housing?

- iii. To what extent is the compatibility of Lokogoma Housing Estates with the masterplan?
- iv. What are the environmental effects of these Housing Estates?

#### **1.4 Aim and Objectives of the study**

The aim of this research is to assess the housing quality of the housing estates in Lokogoma district of Abuja Municipal Area Council (AMAC) of the Federal Capital Territory (FCT) Abuja, and make recommendations for future sustainable housing to achieve sustainable development.

In order to achieve this aim, these set of objectives will be achieved;

#### **1.5 Objectives**

- i. To assess the Housing Quality of the Housing Estates in Lokogoma district.
- ii. To assess the impact of sustainability on housing developments in Lokogoma district.
- iii. To examine the compatibility of the Housing Estates in Lokogoma district with the Abuja Masterplan.
- iv. To examine the environmental effects of the Housing Estates in Lokogoma district.

#### **1.6 Significance of the Study**

The study would be useful to different government agencies especially the Ministry of Housing as it will help it in coming up with policies and guidelines related to housing. As a result, the stakeholders and community plus researchers would come up with policies and guidelines aimed at promoting proper management and maintenance of housing estates to avoid reducing on the quality. The study would give a framework which would guide different communities to acquire skills and knowledge on their role in management and housing quality maintenance.

The study would also be important to the town planners in that it points on the gap in co-operation between the different stakeholders and the beneficiary community because both stakeholders and the beneficiary community need to work hand-in-hand to improve housing quality. This study brought out what best practices are in place, the gaps being experienced and the stakeholders expected roles.

This study will, at the end of the research, determine the Housing Quality of Lokogoma District, point out areas that need to be improved and give information about the present housing situation in the district and make recommendations for future Housing Quality Research.

### **1.7 Scope/Limitation of the Study**

This context of the study was built around Housing Quality, Sustainable Housing Concepts and how Sustainable Housing can be incorporated to Housing Process to improve Housing Quality.

Spatially, the study was done on the Housing Quality of the Housing Estates in Lokogoma District, Abuja Municipal Area Council, FCT Abuja.

Temporally, the study lasts for a period of one year to enable the needful information to be gathered.

The study is however limited to the built environment in form of housing in Lokogoma District, sustainable housing development serve as an area of further research.

## **CHAPTER TWO**

### **CONCEPTUAL FRAMEWORK AND LITERATURE REVIEW**

#### **2.1 CONCEPTUAL FRAMEWORK**

##### **2.1.1 Concept of Housing Quality**

Housing quality has many elements, and can be defined in many ways. A targeted definition of housing quality concerns simply the quality of the internal and external structure of a dwelling and aspects of the internal environment. A wider definition may include features of the neighborhood and concepts such as environmental sustainability. Housing quality is also referred to as housing condition or housing habitability.

##### **2.1.2 Indicators for Evaluating Housing Quality**

In assessing the quality or suitability of housing, qualitative studies have identified some criteria as relevant indicators for quality evaluation in residential development. Among such is Ebong M.O (1983) who acknowledged aesthetics, ornamentation, sanitation, drainage, age of building, access to basic housing facilities, burglary, spatial adequacy, noise level within neighbourhood, sewage and waste disposal, air pollution and ease of movement among others, as relevant quality determinants in housing. However, Hammer et al., (2000) conclude that qualitative housing involves the provision of infrastructural services which could bring about sustainable growth and development through improved environmental conditions and improved livelihood. In determining the quality of residential development, Neilson M, (2004) stipulates five basic criteria which provide that housing must be in compliance with tolerable standard, free from serious disrepair, energy efficient, provided with modern facilities and services, and that it must be healthy, safe and secure. These indicators consist of variables such as; access to basic housing and community facilities, the quality of infrastructural amenities, spatial adequacy and quality of design, fixtures and fittings, building layout and landscaping, noise and pollution control as well as security. There are however indications from these various studies that a single variable may not be sufficient to assess the qualitative nature of residential development; as noted by Jiboye A, (2004) Therefore, housing acceptability and qualitative assessment should also take into account type of constructions, materials used, services, spatial arrangement and facilities within dwellings, function and aesthetics, among others.

These variables below will help the research to underpin the various Housing Quality indicators in the figure below;

**Independent Variables**

**Dependent Variable**

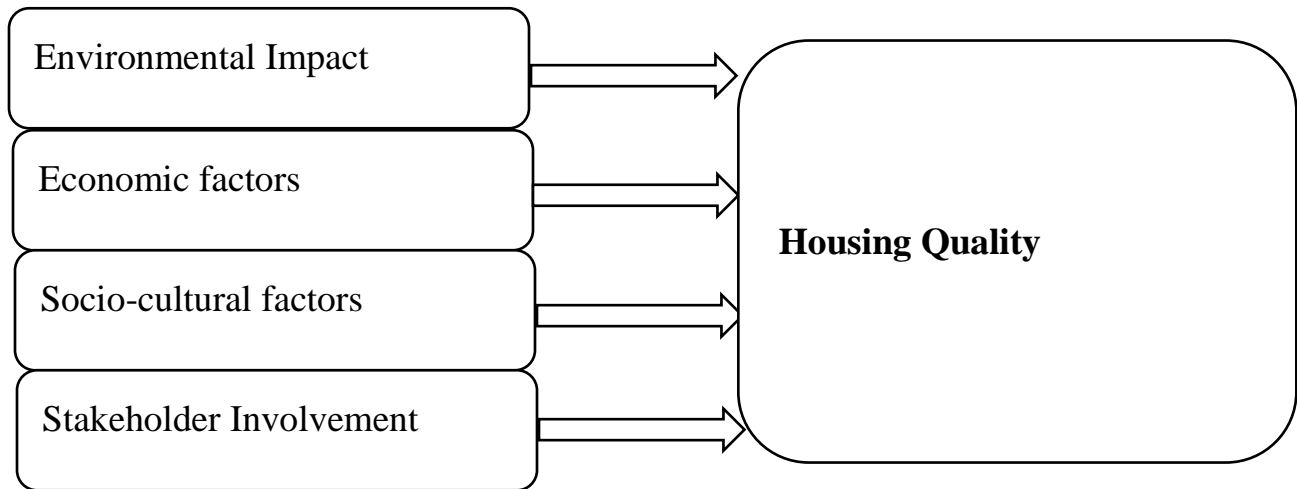


Fig. 2.1 Conceptual Framework for the Proposed Definition of Housing Quality

**2.2 LITERATURE REVIEW**

The study reviewed various literature on Housing, Housing Quality and Sustainable Housing as seen below;

**2.2.1 Housing**

Housing is defined as the total residential neighbourhood/environment or micro district including the physical structure, all necessary services, facilities and apparatus for the total health and social well-being of the individual and family (Salau, 1992). It is seen as the physical environment in which the family and society’s basic units must develop. Housing structures are enclosures in which people are housed for lodging, living accommodation or even work places. According to Abram (1964), “housing is not only a shelter but also part of the fabric of the neighborhood life and of the whole social milieu”. It touches upon many facets of economic activity and development. Thus, housing provides social contacts, good image, a sense of belonging and an indicator of social status. Economically, housing represents a major portion of the family budget or that of an establishment, yet in the realm of private and public investment, the built environment represents a man’s most tangible material asset (Kinyungu, 2004). The

1992 National Housing Policy for Nigeria identified shelter as the most essential human need after food. While adequate housing is crucial for effective performance of man, a considerable proportion of Nigerians live in sub-standard and poor housing as well as deplorable unsanitary residential environments (Onibokun, 1985). To this end, one can deduce that housing is the process of providing a large number of residential buildings on a permanent basis with adequate physical infrastructure and social services in planned, decent, safe and sanitary neighborhoods to meet the basic and social needs of the population and is intended to provide security, comfort and convenience for the users (National Housing Policy, 2004; Osuide, 2004). The general definition of housing as the continuing activity of providing shelter within a defined geographical area to people who being productive are able and willing to pay for and use a defined quality of shelter, needs to be revisited because housing in its true sense goes beyond shelter. It includes all the services and community facilities significant to human comfort (Onibokun, 1982). The Nigerian Fourth National Development Plan (1981-1985) believes that with the exception of food, shelter ranks highest among man's basic needs. It is, however, important to note that housing goes beyond simple shelter; it includes services, facilities, utilities within and without, on-site and off-site. According to Onibokun (1982) housing is not only a basic human need; it constitutes a vital component of man's welfare, life sustenance and survival. In the hierarchy of man's needs, housing has been ranked second to food. It has a profound influence on the health, efficiency, social behavior satisfaction and general welfare of the community. Housing is universally acknowledged as one of the most basic human needs, with a profound impact on the life-style, health, happiness as well as productivity of the individual (Dunn, 2000). According to Stafford (1978), the concept of housing is generally defined for statistical purposes as dwelling units (Housing unit occupied separately by households) comprising a great variety of quantities and qualities. Aroni (1982) and Achuenu (2002), point out that housing should be a home, a resting place with fundamental purpose of a secured, rewarding, happy or at least a liveable space. In the context of socio-cultural functionality, housing is viewed as „an area for recreation and identification (Gallent et al, 2004) and can be regarded as psychological identity, a foundation for security and self-respect (Aroni, 1982) societal support (Johnson, 2006), and the setting for the formation of social relationships (Amole, 1997). One of the most intractable socio-economic problems facing the Nigeria nation today, is acute shortage of comfortable and affordable housing for the people. The major causes

of the problem have been identified and frantic efforts have been made and huge financial resources have been expended, but strangely, enough, it has defied sustainable solution (Adedipe, 2009). Housing as an investment has a significant role to play in the individual, local and national economy. In most cases, it constitutes the first major capital investment and life ambition of individuals (Bello, 2003). The desire to own a house constitutes one of the strongest incentives for savings and capital formation (Ozo, 1990).

In more complex centers today with a maze of activities sometimes defying geography, housing needs should desire quality and quantity from the quality and quantity of urban activities. It is for this reason that housing is a subsystem of activities whose nature is clearly defined in a proper planning framework which comprises a complex bundle of considerations, including privacy, location, environmental amenities, symbolic characteristic and investment (Milanovich, 1994) Housing is considered a consumable item by Lawrence (1995), because he believes that when households dwell in a house, they interact even with the surrounding, therefore consumption takes place. When they consume housing, they purchase or rent more than the dwelling units and its characteristics; they are also concerned with such diverse factors as health, security, privacy, neighborhood and social relations, status, community facilities and services, access to job, and control over the environment. Thus, to be ill-housed, can mean a deprivation along any of these dimensions. Characteristically, housing is unique among consumer goods. It is potentially very durable, with a useful life span of around 70 years.

### **2.2.2 The Meaning of a House and Qualities of a Home**

A house is an evolutionary product of man's civilization and a perfect reflection of the social system that creates it. Succinctly put, it is an externally expressed three-dimensional geometric structure, physically projected on the geographic space, internally organized and subdivided into differentiated but highly inter-related and communicating functional space (Ogunshakin, 1988). A house as explained can also be seen as a dwelling place for human habitation whether a crude hut or an elaborate mansion, and whatsoever its degree of intrinsic architectural interest, a house as a matter of fact, provides shelter and acts as a focal point for day-to-day living (Ahsen and Gulcin, 2005). The physical characteristics of a house depend on the climate and terrain available, building materials, technological skills and such cultural determinants as social status and economic resources of the owners or owner. A house is more than just a dwelling. It is a

source of identity and status as well as a demonstrator or both to the outside world. It may become identified with and a place of assembly for a wider family or lineage that occupies it from day to day. It may also be a location for business which provides the basic necessities of life or for one that augments a main income (Ahsen and Gulcin, 2005). Housing on the other hand, as explained earlier, is a decisive integral of spatial formation, balanced development and ecological unit. It is one of the most important needs in man's life. In fact, housing which used to be regarded as mere shelter is now much more than that, thus in today's parlance, housing is the totality of the house and the environment in which it is situated and those infrastructural facilities which make living in them convenient and safe (Ajanlekoko, 2001). Okupe (2002) sees housing as a strategic asset to man, irrespective of his/her socio-economic status, colour or creed and as such there lies a passion and emotional attachment to housing in African traditional setting. Nevertheless, the level of housing production in Nigeria despite the number of housing programmes and policies is still at its lowest ebb. Housing, therefore, is a fundamental product of every human effort irrespective of his or her financial standing. Provision of shelter is that passive and primary function of housing while its secondary function is the creation of an environment that is best suited to the way of life of a people - in other words a social unit of space. Housing symbolizes the social status of the family to both the wider community and in the nuclear family setting itself. While the quality and quantity of housing stock is a reliable barometer of measuring the technology, culture and above all, civilization level of any nation. It contributes to the general wellbeing of a people, race or community (Burnette 1986). When we use the word **Quality** in this study, its usage is on a broad base, and encompassing a variety of meanings defined by researchers in almost all fields. The **Quality of a House** determines the reference as home if it performs some fundamental function for the residents. A house with all its necessary physical attributes must have a rich set of evolving cultural, demographic and psychological meanings attached to it to be called a home. The following attributes (Gracia , Uzzel, Real and Romay, 2005) have been identified as relevant dimensions of a house for it to transform into a home-: order, haven, identity, warmth, connectedness, and physical suitability as further expatiated below.

- i. A home helps to know our place in the world. It is a centre from which we venture and return; it is one way that we order our existence in the world. This ordering is not only spatial but temporal. Home is strongly related to our sense of continuity.

- ii. A home is a haven that surrounds us with privacy, security, refuge, and protection from the slings and arrows of life outside it.
- iii. A home is central to our identity. As social creatures, home includes for us a sense of family or kinship, ethnic belonging and socioeconomic status. Home is thus an important part of who we are. Through self-expression and personalization, the home comes to resemble or represent ourselves. We give the physical structure as we transform it from a mere residence into a home.
- iv. There is warmth in a home. It grows out of the preceding qualities, but goes beyond them. The warmth is like that of a hearth but is symbolic and interpersonal.
- v. Home means connectivity because the pattern of spatial and temporal order helps us to feel connected to certain people, to the place, to the past, and to the future. We feel part of a family or group, and part of a culture.
- vi. Home is physically suitable. This means more than the material physical aspects of the house. It means the form and structure of the house matches our social and psychological needs.

The absence of the above components in a house will lead to diverse behavioral responses

### **2.2.3 Neighborhood**

Several convergent definitions have been given to the term Neighbourhood. For example, Kallus (2000) defined it as “a place with physical and symbolic boundaries” while Morris and Hess (1975) labelled it “a place and people with common sense limit as the area one can easily walk over”. On the other hand, Golag (1982) sees it as “a physical or geographical entity with specific boundaries”. Hallman in his approach, attempted to integrate social and ecological perspectives by defining neighbourhood as “a limited territory within a large urban area, where people inhabit dwellings and interact socially (Hallman, 1984). Warren (1981) defines it as a social organization of a population residing in a geographically proximate locale where there exists a common named boundary, more than one institution identified with area, and more than one tie of shared public space or social network. All these definitions presume either a certain degree of spatial extent and or social interrelationship within that space but it must be realized that there exist other features of the local residential environment that clearly affect its quality from the

perspective of the residents, property owners and other observers as expressed by Schwirian (1993), Hallman (1984) and Temkin and Rohe (1996). Another definition of neighbourhood as given by Pitkin (2001) states that “neighbourhood is a multidimensional bundle comprised of spatially based attributes associated with clusters of residences, sometimes in conjunction with other land uses”. Minkler and Wallerstein (1997) contend that neighbourhoods have four basic components; i. Physical and human built environment that supports residents’ needs, ii. Social dynamics and interactions, iii. Group identity and cohesion; and iv. Collectives who act together for political change. A neighbourhood also as defined by Pitkin (2001) is associated with spatially based attributes such as: i. Structural characteristics of residential and non-residential buildings: type, scale, materials, design, state of repair, density, landscaping. ii. Infrastructural characteristics: roads, sidewalks, streetscaping, utility services, etc. iii. Demographic characteristics of the resident population: age distribution, family composition, racial, ethnic, and religious types, etc. iv. Class status characteristics of resident population: income, occupation and educational composition v. Environmental characteristics: degree of land, air, water and noise, population topographical features, views, etc. vi. Political characteristics: the degree to which local political networks are mobilized, residents exert influence in local affairs through spatially rooted channels or elected representatives. vii. Social interactive characteristics: local friend and kin networks, degree of inter-household familiarity, type and quality of interpersonal associations, residents’ perceived commonality, and participation in locally based voluntary associations, strength of socialization and social control forces. All the attributes above may not be present in a particular neighbourhood but Avery (2006) and Hunter (1974) emphasize that while most of them are, the quantity and composition of constituent attributes typically vary across neighbourhoods within a single metropolitan area. This implies that, depending on the attribute package they embody, neighbourhoods can be distinctly categorized by type and or by quality. These details on the dimension over which neighbourhood can be classified is necessary for one to understand neighbourhood change. A neighbourhood can be envisioned as a consumable commodity from which four different types of users potentially reap benefits (Galster, 2001). These users are;

- i. Households: Households consume neighbourhoods through the act of occupying a residential unit and using the surrounding private and public spaces, thereby gaining some degree of satisfaction or quality of residential life.

- ii. **Businesses:** Businesses consume neighbourhood through the act of occupying a non-residential structure (store, office, factory), thereby gaining a certain flow of net revenues or profit associated with that venue.
- iii. **Property owners:** This group of users consume neighbourhood by extracting rents and/or capital gains from the land and buildings owned in that location.
- iv. **Local Government:** To this group of users, consumption is done by extracting tax revenues, typically from owners and tenants based on assessed values of residential and non-residential properties.

Pitkin (2001) and Galster (2003) noted that neighborhoods change by the very act of consuming them and this can occur directly or indirectly. Directly, as households consume neighborhoods by occupying residences in it, they may simultaneously alter demographic and/or social economic status profile of the neighborhood if the in-moving households differ systematically from longer-term residents. Indirectly, changes in the occupancy and /or ownership profiles of a neighborhood not only change its current attributes but may trigger longer-term changes in a wider variety of attributes (Temkin and Rohe 1996).

#### **2.2.4 Housing Quality**

The need to appreciate the relevance of a habitable (qualitative) housing requires an understanding of the concept of „quality “which according to Onion, cited in (Afon, 2000), “is a mental or moral attribute of thing which can be used when describing the nature, condition or property of that particular thing”. McCray, cited in (Jiboye, 2004), noted that getting a definition of quality depends not only on the user and his or her desires, but also on the product being considered. In essence, quality is a product of subjective judgment which arises from the overall perception which the individual holds towards what is seen as the significant elements at a particular point in time (Anantharajan, 1983; Olayiwola et al., 2006). In assessing the quality or suitability of housing, qualitative studies have identified some criteria as relevant indicators for quality evaluation in residential development. Among such is Ebong (1983) who acknowledged aesthetics, ornamentation, sanitation, drainage, age of building, access to basic housing facilities, burglary, spatial adequacy, noise level within neighborhood, sewage and waste disposal, air pollution and ease of movement among others, as relevant quality determinants in housing.

However, Hanmer et al. (2000) conclude that qualitative housing involves the provision of infrastructural services which could bring about sustainable growth and development through improved environmental conditions and improved livelihood. In determining the quality of residential development, Neilson (2004) stipulates five basic criteria which provide that housing must be in compliance with tolerable standard, free from serious disrepair, energy efficient, provided with modern facilities and services, and that it must be healthy, safe and secure. These indicators consist of variables such as; access to basic housing and community facilities, the quality of infrastructural amenities, spatial adequacy and quality of design, fixtures and fittings, building layout and landscaping, noise and pollution control as well as security. There are however indications from these various studies that a single variable may not be sufficient to assess the qualitative nature of residential development; therefore, housing acceptability and qualitative assessment should also take into account type of constructions, materials used, services, spatial arrangement and facilities within dwellings, function and aesthetics, among others (OluSule and Gur, noted in Jiboye, 2004).

### **2.2.5 Sustainable Development and Housing**

According to Social World Report 2012, “one of the pillars of sustainable development is the right to adequate housing and land. However, some 1.6 billion people are currently living in sub-standard housing, 100 million are homeless and around a quarter of the world’s population is estimated to be landless. In developing countries, the number of people living in slums is 828 million; all of them lack access to improved water sources and adequate sanitation and live in distressed housing conditions without sufficient space or secure tenure. More than 60 million new slum dwellers have been added to the global urban population since 2000”.

Newman defines what sustainability for housing to mean:

- 1. Ensuring there is a ‘roof overhead’ for the housing disadvantaged,*
- 2. Ensuring housing is more eco-efficient, and*
- 3. Ensuring housing is well located or is part of a project to improve locational Amenity.* (Newman, 2002)

Sustainable housing means ‘housing which contributes to community building, to social justice and to economic viability at a local level (Morgan and Talbot, 2001). Morgan and Talbot argue

that sustainability should be the main principle to design housing and one of the important dimensions of the housing quality. Development of sustainable housing refers to not only the development of building but also layout of the housing areas. Quality of dwelling life is not 'therefore, simply concerned with having a roof over one's head and a sufficient amount of living space, but also with social and psychological satisfaction. Sustainable physical design can contribute to quality of life' (Hasic, 2001).

In housing provision, Sustainable Development explicitly relates to discussion of Affordability, Housing Quality and issues of Social Equity and Justice in terms of Accessibility. This perspective requires the enumeration of provision over the life cycle of housing. Therefore, to be able to determine the challenges of affordable housing vis-a-vis sustainable urban development, three basic concepts require clarification and elaboration. These are;

- i. Housing Affordability
  - ii. Housing Quality
  - iii. Equity with regards to Accessibility to Housing.
- i. **Housing Affordability**; affordable housing which reflects both public usage and appropriate policy goals is housing which is reasonably adequate in standard and location for a lower- or middle-income household; and does not cost so much that such a household is unlikely to be able to meet other basic living costs on a sustainable basis (Disney,2007). The rationale for housing assistance is to improve housing affordability for those receiving the assistance (AHURI, 2004). Andrews (1998), defined the term "affordable housing" as that which costs no more than 30 percent of the income of the occupant household. This is the generally accepted definition of housing affordability. She also described severe housing burdens as 50 percent or more of household income. Families who pay more than 30 percent of their income on housing are considered cost-burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care (HUD, 2005).

'Affordability' with reference to housing, is concerned with securing some given standards of housing or different standards at a price or rent which does not impose an unreasonable burden on household incomes. In broad terms, affordability is assessed by the ratio of a chosen definition of household costs to a selected measure of household income in a given period' (Maclennan and Williams, 1990). In sum, "housing

affordability” refers to the capacity of households to meet housing costs while maintaining the ability to meet other basic costs of living (AHURI, 2004). According to Malpezzi et al (1985), housing affordability describes the extent to which households are able to pay for housing. In summary, affordable housing generally therefore, means housing priced to cost not more than 30 percent of the income at each income level.

- ii. **Housing Quality;** housing quality is seen to include structural adequacy, neighbourhood quality, residents’ perception of neighbourhood safety, level of public services provided, access to work and other amenities, room density and housing affordability (Okewole and Aribigbola, 2006). In other words, the definition of housing quality embraces many factors which include the physical condition of the building and other facilities and services that make living in a particular area conducive. The quality of housing within any neighborhood should be such that satisfies minimum health standards and good living standard, but should also be affordable to all categories of households.
- iii. **Equity with regards to Accessibility to Housing;** Social equity concerns the social view of housing and relates to a situation in which all citizens have access to housing without limitations as to one’s socio-economic background or status in society. The relevance of this view to housing accessibility is in ensuring that housing provision is not focused on some ‘chosen’ segments of the society but all members of the community have equal opportunity to choose their own accommodation according to their means or affordability level. (Okewole and Aribigbola, 2006).

### **2.2.6 Sustainable Housing Development**

Following the basic concept of sustainable development defined in the 1987 WCED report (The report described Sustainable Development as ‘development that meets the needs of the present generation without compromising the ability of the future generations to meet their own needs’), sustainable housing development should not only cater for the housing needs of this generation but also of those to come. While the primary concern of sustainable housing is to meet the accommodation needs of the citizens, the environment has to be safeguarded from deteriorating to an extent that it diminishes the ability of future generations to meet their housing needs. Further, sustainable housing should not be merely about meeting basic needs, but should also improve livability (Chiu, 1999). Improved livability does not necessarily mean larger space and

more facilities. It may refer to ‘.....a shelter which is healthy, safe, affordable and secure, within a neighborhood with provision for piped water, sanitation, drainage, transport, health care, education and child development. Also, a home.....protected from environmental hazards, including chemical pollution. Also important are [to meet] needs related to people’s choice and control, including homes and neighbors which they value and where their social and cultural priorities are met.....achieving this implies a more equitable distribution of income between nations and, in most, within nations.’ (Mitlin and Satterthwaite, 1996).

The above tenets provide the direction for steering sustainable housing development in general and that for different strands of housing sustainability in particular.

## CHAPTER THREE

### THE STUDY AREA AND RESEARCH METHODOLOGY

#### 3.1 The study Area

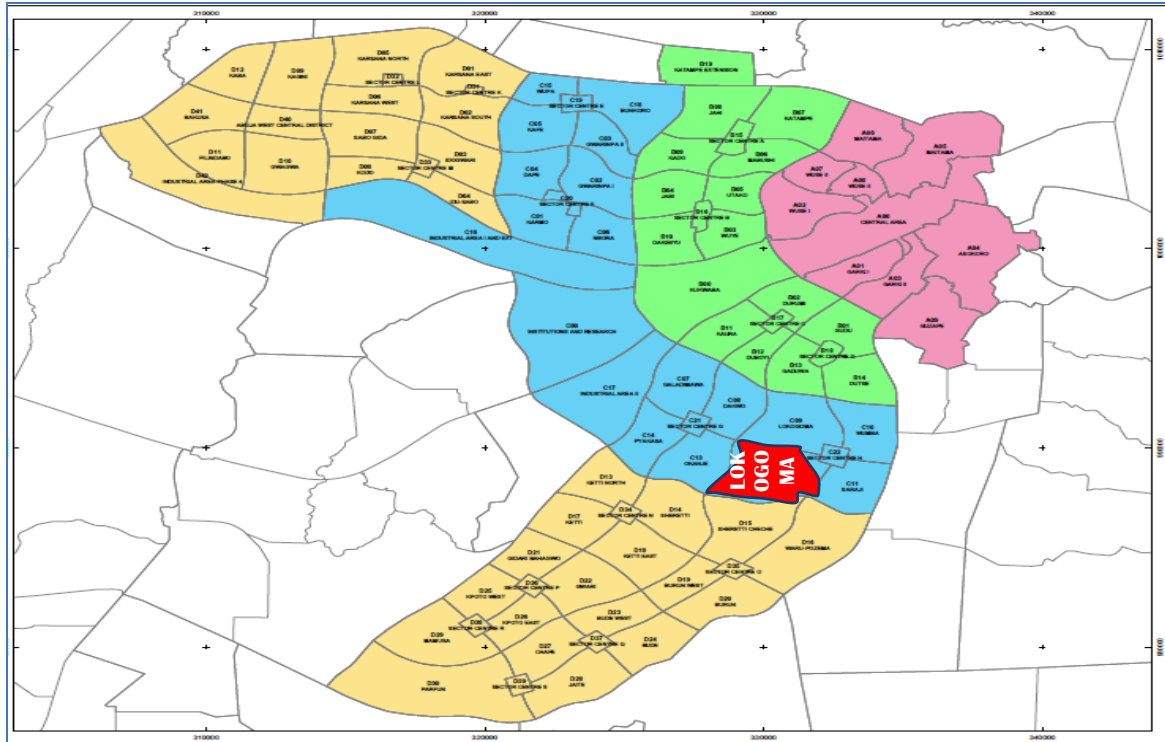
##### Introduction

The FCT of Nigeria was created on 3rd February 1976 through the promulgated Federal Capital Territory Decree No. 6, 1976. The decision was taken due to the growing unsuitability of Lagos as Nigeria's Federal Capital City as result of the problem of peripheral location, dual and conflicting role as both Federal and State Capital, acute shortage of land for further expansion, and inadequacies for further infrastructural development among other reasons, right from the late 1960s (Okechukwu, 1974; Obateru, 1987).

##### 3.1.1 Location

Abuja is the capital city of Nigeria located in the centre of the country within the Federal Capital Territory (FCT). It is a planned city and was built mainly in the 1980s, replacing the country's most populous city of Lagos as the capital on 12 December 1991. Abuja's geography is defined by Aso Rock, a 400-metre (1,300 ft) monolith left by water erosion, with the GPS coordinates of 9° 4' 20.1504" N and 7° 29' 28.6872" E, and the elevation is 491 meters height, that is equal to 1,611 feet. Abuja Municipal Area Council. (AMAC) is located between latitude 7°49' and 8°49' north of the equator and longitude 7°07' and 7°33' east of the Greenwich Meridian, with a land mass of about 2,500sq km (Balogun, 2001).

**Lokogoma** (or 'Lokogoma Cadastral Zone C09') is a residential area located in Abuja, the capital city of Nigeria. It has the geographic location of latitude 7° 59' 00" N and longitude 10° 40' 00" E. It has no sourced population data on record at the time of this research, as it is still in development. This is the Abuja Master Plan showing Lokogoma District below;



**Fig 3.1 Abuja Master Plan showing Lokogoma District**

**Source;** Abuja Geographic Information System (AGIS), FCDA, (2017).

### 3.1.2 Climate

Abuja under Köppen climate classification features a tropical wet and dry climate (Köppen: *Aw*). The FCT experiences three weather conditions annually. This includes a warm, humid rainy season and a blistering dry season. In between the two, there is a brief interlude of harmattan occasioned by the northeast trade wind, with the main feature of dust haze and dryness. The rainy season begins from April and ends in October, when daytime temperatures reach 28 °C (82.4 °F) to 30 °C (86.0 °F) and nighttime lows hover around 22 °C (71.6 °F) to 23 °C (73.4 °F). In the dry season, daytime temperatures can soar as high as 40 °C (104.0 °F) and nighttime temperatures can dip to 12 °C (53.6 °F). The high altitudes and undulating terrain of the FCT act as a moderating influence on the weather of the territory (Abuja Nigeria Tourist Information, 2013).

### **3.1.3 Geology**

The underlying rocks of the FCT consist basically of Basement Complex and sedimentary rocks. The Basement Complex rocks made up of igneous and metamorphic rocks cover about 48 % of the total area and in some places the land is occupied by hills and dissected terrain (Mabogunje, 1977). The rocks consist mainly of schists, gneiss and older granite. The mountain ranges together with some isolated inselbergs are believed to have been poured out of volcanoes within the Tertiary period. The areas underlain by the sedimentary rocks cover about 52 % of the total area of the Federal Capital Territory and largely constitute the undulating plains. Towards the south-west of the Federal Capital Territory, there exist sand ridges with outliers of sandstone capings. Sandstone and clay also occur in significant proportions of parts of Abaji and Kwali Area Councils. These areas are easily dissected and indeed exhibit very glaring evidences of severe gully erosion (Balogun, 2001). Okechukwu (1974) and Kogbe (1978) also described the geology of the Federal Capital Territory as almost predominantly underlain by high grade metamorphic and igneous rocks of Precambrian age. These rocks consist of gneiss, migmatites and granites and schist belt outcrops along the eastern margin of the area. The belt broadens southwards and attains a maximum development to the south-eastern sector of the area where the topography is rugged and the relief is high.

### **3.1.4 Soil and Vegetation**

The predominant rock types are Zonal Tropical Ferruginous soils which have developed through the process of laterisation. The Vegetation in the FCT falls within the Guinean forest-savanna mosaic zone of the West African sub-region. Patches of rain forest, however, occur in the Gwagwa plains, especially in the rugged terrain to the southeastern parts of the territory, where a landscape of gullies and rough terrain is found. These areas of the Federal Capital Territory (FCT) form one of the few surviving occurrences of the mature forest vegetation in Nigeria.

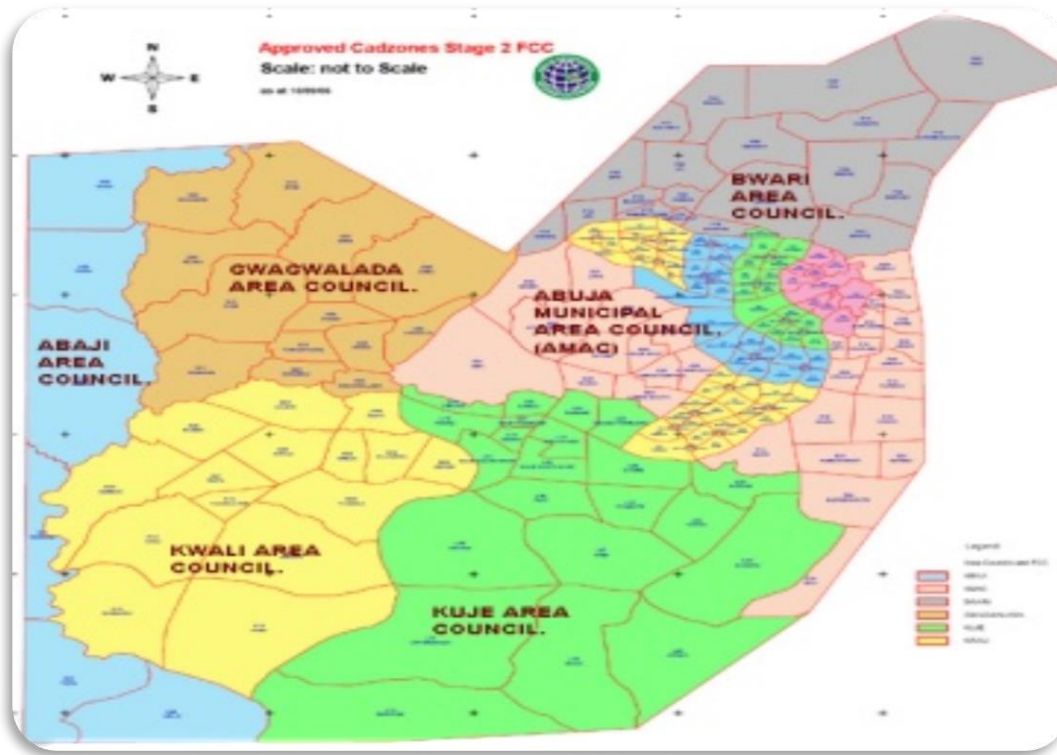
### **3.1.5 Population**

At the 2006 census, the city of Abuja had a population of 776,298 (Legal Notice on Publication of 2006 Census Final Results, 2013), making it then the eighth most populous city in Nigeria. United Nations figures showed that Abuja grew by 139.7% between 2000 and 2010, making it the fastest growing city in the world (World's Fastest Growing Cities are in Asia and Africa, 2010). As of 2015, the city is experiencing an annual growth of at least 35%, retaining its position as the fastest-growing city on the African continent and one of the fastest-growing in the world (Abuja Facts, 2015).

### **3.1.6 Socio-Economic Activities**

Abuja has witnessed a huge influx of people into the city; the growth has led to the emergence of satellite towns, such as Karu Urban Area, Suleja, Gwagwalada, Lugbe, Kuje and smaller settlements towards which the planned city is sprawling. The urban agglomeration centred upon Abuja had a population estimated at 2,440,000 in 2014 (Demographia World Urban Areas, 2015). The metropolitan area of Abuja was estimated in 2016 as six million persons, the country's second most populous metro area (Jaiyeola, A. 2015). The city has a large and growing immigrant community consisting mainly of nationals from the ECOWAS sub-region. The city has been undergoing a rapid pace of physical development over the last fifteen years.

Real estate is a major driver of the Abuja economy. This correlates with the considerable growth and investment the city has seen as it has developed. The sources of this investment have been both foreign and local. The real estate sector continues to have a positive impact on the city, as it is a major avenue for employment (Abuja Real Estate Development & Projects To Watch in 2019).



**Fig. 3.2 Map of Abuja**

**Source;** Abuja Geographic Information System (AGIS), FCDA Abuja (2017).

### **3.2 RESEARCH METHODOLOGY**

The Research Methodology part of the research describes the methodology used in the collection of data, the process of data collection, sampling size and sampling technique, data sources and the technique for data analysis.

#### **3.2.1 Reconnaissance Survey**

A Reconnaissance Survey of the study area was taken in August 2017. Reason for the survey was have a general overview of the study area, seek co-operation of the people in charge of the area and obtain relevant information of the environment of the study area to help achieve the set objectives of the research.

#### **3.2.2 Types and Sources of Data**

The study gathered both primary and secondary data.

- i. **Primary Source;** As regards primary data, the researcher used questionnaires. The questionnaires administered covered demographic information, environmental information, socio-economic information and stakeholder involvement. All this information from the questionnaires, after it is analysed, will help achieve the set objectives of the study.
- ii. **Secondary Source;** As for secondary data, the researcher reviewed previous literature on housing quality from the internet, journals, publications among others to help achieve the set objectives of the study.

### **3.2.3 Study Population and Sample Size**

The study was carried out on the Housing Estates located in Lokogoma district of AMAC FCT Abuja. The target population is 54 Housing Estates, each having many housing units within the estate. 44 questionnaires were administered to various estates. Out of the 44 questionnaires, 39 questionnaires were fully answered by the estates managers and returned to the researcher, resulting to a response rate of 88.6%.

### **3.2.4 Data Collection**

Data was collected for the study, and the technique and instrument used for the data collection are;

#### **i. Sampling Technique**

The sampling technique was selected and used to obtain sample from the population size. The subject of the study involves 54 housing estates. According to Krejcie and Morgan's Small-Sample Technique (*The NEA Research Bulletin*, Vol. 38 (December, 1960), p. 99, a sample size of 50-54 should choose a sample size of 44. The researcher distributed 44 questionnaires.

#### **ii. Instrument of data collection**

Questionnaire was used as the instrument for data collection. The questionnaire employed both open ended and closed questions. The prepared questionnaires were distributed to different estates selected randomly in the district.

### 3.2.5 Data Analysis Concept and Technique

The data obtained from the structured questions in the questionnaire was coded, classified under different variables and entries made into Statistical Package for Social Science (SPSS version 22). Descriptive analysis was used to analyze the primary data of quantitative nature (structured questions). Tables, maps and pictures were used to present data. Also, Descriptive statistics such as frequencies, percentages, valid percentage and cumulative percentage, and inferential statistics was used.

### 3.2.6 Questionnaire Validity and Reliability

Questionnaire reliability was evaluated through Cronbach's Alpha which measures the internal consistency. The Alpha measures internal consistency by establishing if certain items measure the same construct. Nunnally (1978) established the Alpha value threshold at 0.6, but the study benchmarked against it. Cronbach Alpha was established for all variables.

/Variables = Energy Performance Gender

/Scale ('All variables') ALL

/MODEL=ALPHA.

**Table 3.1 Case Processing Summary**

		N	%
Cases	Valid	39	50.0
	Exclude <sup>a</sup>	39	50.0
	Total	78	100.0

a. Listwise deletion based on all variables in the procedure.

**Table 3.2 Reliability Statistics**

Cronbach's Alpha	N of Items
.904	2

**Conclusion:** From table 3.2, the Cronbach's Alpha is 0.904. The table shows that all the scales were significant, having an Alpha above the prescribed threshold of 0.6. The Cronbach's Alpha is high, which implies that all variables are highly correlated hence, having a high consistency.

**CHAPTER FOUR**  
**RESULTS AND DISCUSSION**

**4.1 Characteristics of the Housing Estates**

The study sought to gather general information about the estates, which addresses objective number one; characteristics of the Housing Estates in Lokogoma district.

**Table 4.1 Ownership of houses within the Estates**

Ownership	Frequency	Percent	Valid Percent	Cumulative Percent
Tenancy/Rent	6	15.4	15.4	15.4
Owner-occupied/Rent	33	84.6	84.6	100.0
Total	39	100.0	100.0	

The results on table 4.1 shows that 15.4% of the houses within the estates are occupied under tenancy/rent, while 84.6% of the houses within the estates are both owner-occupied and rented. This shows that most of the estates include houses occupied both by individual owners and houses given out on rent. This implies that many of the housing estates are commercial properties built by private individuals and renting it out to tenants. This relates to the issue of Housing Affordability as many citizens cannot own houses thus, opt for rented properties therefore giving estate developers business opportunities to venture into real estate thus improving the economy.

**Table 4.2 Years the Estates have been occupied**

Years occupied	Frequency	Percent	Valid Percent	Cumulative Percent
0 - 5 years	9	23.1	23.1	23.1
5 - 10 years	18	46.2	46.2	69.2
10 - 15 years	10	25.6	25.6	94.9
15 years and above	2	5.1	5.1	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.2 shows that 23.1% of the estates have been occupied for 0-5 years, 46.2% have been occupied for 5-10 years, 25.6% have been occupied for 10-15 years, and 5.1% have been occupied for 15 years and above. This shows that most of the estates have been occupied for 5-10 years. This implies that most of the houses are built with consideration for modern standards thus, improving housing quality of Lokogoma District, as they were built within the last 10 years as shown in **Plate 1** below.



**Plate 1** showing Efab Housing Estate located at Lokogoma.

#### **4.1.1 Operation/Use of Housing Estates**

The study sought to find information on the use/operation performance of the estate. The study found the following information;

**Table 4.3 Energy Performance/Use**

Energy performance	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	27	69.2	69.2	69.2
Good	10	25.6	25.6	94.9
Fair	2	5.1	5.1	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.3 shows that 69.2% rated the energy performance as very good, 25.6% rated it good, and 5.1% rated it fair. This indicates that the energy use and performance of the estates in Lokogoma is very good. This implies that there is good energy performance with regard to energy conservation, use of energy-saving equipment, use of good standard cable wires for wiring of buildings, etc. Energy performance also indicates the availability/supply of power to the estates.

**Table 4.4 Air quality/Ventilation**

Air Quality	Frequency	Percent	Valid Percent	Cumulative Percent
Good	33	84.6	84.6	89.7
Fair	2	5.1	5.1	5.1
poor	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on table 4.4 shows that 84.6% of the air quality within the Estate is good, 5.1% is fair, and 10.3% is poor. This shows that most parts of the estates are properly ventilated as a result of proper Planning and implementation of Building By-Laws. This implies that, though a considerable number of the estates have good ventilation, they cannot be seen as excellent as there is air pollution from moving vehicles. And sometimes, waste being generated by residents is not properly disposed because some residents do not bring out their refuse on time for the refuse collection vehicle to pack and dispose-off properly thus, polluting the environment.

**Table 4.5 Water Use and Management**

Water use/Management	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	31	79.5	79.5	79.5
Good	4	10.3	10.3	89.7
Fair	3	7.7	7.7	97.4
poor	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on table 4.5 shows that 79.5% of water use and management by the estates is very good, 10.3% is good, 7.7% is fair, and 2.6% is poor. This indicates that there is proper water use management culture within the estates in Lokogoma district. This implies that, though the estates for now, are not connected to the city's water-main pipes, all the estates are provided with water by provision of boreholes by private owners (for owner-occupied properties), and by estate owners (for rented properties). A good drainage system is also provided.

**Table 4.6 Waste Management**

Sustainable waste management	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	6	15.4	15.4	15.4
Good	29	74.4	74.4	89.7
Fair	3	7.7	7.7	97.4
poor	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.6 shows that 15.4% was rated very good with reference to waste management, 74.4% was good, 7.7% was fair, and 2.6% was poor. This shows that majority of the housing estates in Lokogoma district have a good waste management practice, because there is presence of waste disposal bins in front of houses within the estates. This implies that the houses in the estates try to manage their waste well by dumping it in the appropriate sites for

dumping refuse provided by the estates, which are later compiled by trucks suitable for waste package and transported to the appropriate waste disposal site by the FCT. But still, some residents bring their dirt out late after the trucks are gone thus, polluting the environment for the day before the trucks come.

**Table 4.7 Property Maintenance and Management**

Property maintenance	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	4	10.3	10.3	10.3
Good	31	79.5	79.5	89.7
Fair	3	7.7	7.7	97.4
poor	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.7 shows that 10.3% of the housing estates have a very good property maintenance and management, 79.5% have good, 7.7% have fair, and 2.6% have a poor property maintenance and management. This shows that majority of the estates in Lokogoma district have good property maintenance and management. This implies that the estates do undertake both major and minor maintenance, like door and window repairs, bulb replacement, re-painting of the building if need be, and other necessary maintenance and management practices to make the estates more habitable.

#### **4.1.2 Building Design**

Information about the building design characteristics was sought, and this information was obtained.

**Table 4.8 Enabling Energy and Water Efficiency by Design**

Energy & water efficiency	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	32	82.1	82.1	82.1
Moderate Extent	7	17.9	17.9	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.8 shows that 82.1% of the estates have enabling energy and water efficiency by design to a great extent, and 17.9% to a moderate extent. This shows that most of the housing estates in Lokogoma district have good enabling energy and water efficiency right from the building design of the houses. This implies that from the design stages of the buildings, proper energy connections/wiring and proper water linkage was included in the design of the buildings. This ensures that the houses are safer and more habitable.

**Table 4.9 Possibility of Upgrading**

Possibility of upgrading	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	27	69.2	69.2	69.2
Moderate Extent	4	10.3	10.3	79.5
Little Extent	5	12.8	12.8	92.3
Not at all	3	7.7	7.7	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.9 shows that 69.2% of the houses in the estates have the possibility of upgrading to a great extent, 10.3% to a moderate extent, 12.8% to a little extent, and 7.7% not at all. This indicates that majority of the houses in the estates within Lokogoma district have the possibility of upgrading to a great extent. This implies that the houses in the estate have can be upgraded if need be.

#### **4.2 Sustainability of the Housing Estates**

The study sought to gather information on sustainability of the Housing Estates in Lokogoma district (which involve Environmental, Economic, and social indicators). This addresses objective number two; impact of sustainability on housing developments. This information from the study shows the information on sustainability of the housing estates.

#### 4.2.1 Environmental Effects

From the theoretical framework of sustainability, environmental indicators are part of the indicators used to measure sustainability in order to achieve sustainable development. This information from the study shows the environmental information.

**Table 4.10 Impact on Ecosystem from Planning stage**

Impact on Ecosystem	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	22	56.4	56.4	56.4
Moderate Extent	12	30.8	30.8	87.2
Little Extent	5	12.8	12.8	100.0
Total	39	100.0	100.0	

The results on Table 4.10 shows that 56.4% of the estates have impacts on the ecosystem from the planning stage, 30.8% to a moderate extent, and 12.8% to a little extent. This shows that over half of the housing estates in Lokogoma district have a large impact on ecosystem from the planning stage due to clearing of existing ecosystem for development. This implies that the houses in the estate have a large impact on the ecosystem because there is clearing of ecosystem in form of trees before the commencement of buildings.

**Table 4.11 Presence of Environmental Hazards**

Presence of environmental hazards	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	2	5.1	5.1	5.1
Little Extent	37	94.9	94.9	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.11 shows that 5.1% of the housing estates are prone to environmental hazards to a moderate extent, and 94.9% to a little extent. This implies that a very little percentage of the housing estates are prone to environmental hazards, which is as a result of a swampy area, and location of a river within some of the estates which can lead to environmental hazards like flood as seen in **Plate II** below.



**Plate II** showing a river/swampy area located in a close vicinity to some structures

**Table 4.12 Eco-friendly/Greening of Estate**

Eco-friendly	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	11	28.2	28.2	28.2
Good	22	56.4	56.4	84.6
Fair	2	5.1	5.1	89.7
poor	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.12 shows that 28.2% was rated very good to eco-friendly, 56.4% good, 5.1% fair, and 10.3% poor. This indicates that about half of the housing estates in Lokogoma district are eco-friendly which implies that the estate developments do not have much impact on Global Warming.

**Table 4.13 Impact on Quality of Local Built Environment**

Impact on local built environment	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	34	87.2	87.2	87.2
Little Extent	5	12.8	12.8	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.13 shows that 87.2% of the housing estates have an impact on local built environment, and 12.8% to a little extent. This shows that majority of the Housing Estates in Lokogoma District have impact on the housing demand of FCC to a moderate extent, but still meet up a percentage of the entire housing need. This implies that the houses in the estate contribute to the entire housing stock and has covered a part of the total housing deficit in the country.

**Table 4.14 Construction stage; Use of Sustainable Building Materials**

Use of sustainable building materials	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	2	5.1	5.1	5.1
Moderate Extent	32	82.1	82.1	87.2
Little Extent	3	7.7	7.7	94.9
Not at all	2	5.1	5.1	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.14 shows that 5.1% of the housing estates used sustainable building materials for building the estate to a great extent, 82.1% to a moderate extent, 7.7% to a little extent, and 5.1% not at all. This implies that most of the housing estates used sustainable building materials to a moderate extent i.e materials that are not harmful to the environment, for construction of houses in the estates, which helps in achieving sustainable housing.

**Table 4.15 Minimization of Environmental Impact from Building Activity**

Environmental impact minimization	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	5	12.8	12.8	12.8
Moderate Extent	28	71.8	71.8	82.1
Little Extent	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.15 shows that 12.8% of the housing estates minimized environmental impact from building activity to a great extent, 71.8% to a moderate extent, and 10.3% to a little extent. This indicates that majority of the housing estates minimized environmental impact from building activity by carefully disposing off construction waste through appropriate channels to the refuse disposal sites approved by government.

#### 4.2.2 Economic Effects

From the theoretical framework of sustainability, economic indicators are part of the indicators used to measure sustainability in order to achieve sustainable development. This is the economic information from the study;

**Table 4.16 Annual Government Revenue/Tax**

Annual govt. Revenue	Frequency	Percent	Valid Percent	Cumulative Percent
Moderate Extent	5	12.8	12.8	12.8
Little Extent	10	25.6	25.6	38.5
Not at all	24	61.5	61.5	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.16 shows that 12.8% of the housing estates paid tax to a moderate extent, 25.6% to a little extent, and 61.5% not at all. This indicates that majority of the housing estates do not pay government tax, because the government is yet to fully impose tax on the estates because Lokogoma district is still not fully developed. And most of the property owners claimed they provided themselves with secondary infrastructures like access roads, soak-away systems, water lines (which is mostly borehole), etc. hence, the refusal to pay tax.

**Table 4.17 Access to Housing Credit/Mortgage**

Access to mortgage	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	3	7.7	7.7	7.7
Moderate Extent	25	64.1	64.1	71.8
Little Extent	7	17.9	17.9	89.7
Not at all	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.17 shows that 7.7% of the housing estates have access to mortgage to a great extent, 64.1% to a moderate extent, 17.9% to a little extent, and 10.3 not at all. This shows that majority of the Housing Estates in Lokogoma district have access to mortgage to a moderate extent. This is as a result of the presence of mortgage banks in some of the estates. This implies that access to housing has been eased due to the presence of the mortgage banks thus, more people will have loans for housing.

**Table 4.18 Affordability of Houses**

Affordability	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	2	5.1	5.1	5.1
Moderate Extent	7	17.9	17.9	23.1
Little Extent	30	76.9	76.9	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.18 shows that 5.1% of the houses in the estates are affordable to a great extent, 17.9% to a moderate extent, and 76.9% to a little extent. This shows that majority of the

housing estates in Lokogoma district are not affordable. This is because of the high cost of building materials, cumbersome and bureaucratic processes of land acquisition, and high cost of obtaining approvals for building. This implies that housing affordability is an issue which hinders access to housing thus, increasing housing deficit.

**Table 4.19 Business Opportunity**

Business opportunity	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	7	17.9	17.9	17.9
Moderate Extent	26	66.7	66.7	84.6
Little Extent	5	12.8	12.8	97.4
Not at all	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.19 shows that 17.9% of the housing estates have business opportunity to a great extent, 66.7% to a moderate extent, 12.8% to a little extent, and 2.6% not at all. This shows that majority of the estates in Lokogoma district have business potentials. This is because some of the estates have shopping plazas within them, and some of them have corner shops, giving residents opportunity for business.

#### **4.2.3 Social Information**

From the theoretical framework of sustainability, social indicators are part of the indicators used to measure sustainability in order to achieve sustainable development. The is the social information from the study.

**Table 4.20 Safety and Security**

Safety & security	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	5	12.8	12.8	12.8
Good	28	71.8	71.8	84.6
Fair	4	10.3	10.3	94.9
poor	2	5.1	5.1	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.20 shows that 12.8% of the housing estates rated the safety and security as very good, 71.8% good, 10.3% fair, and 5.1% poor. This shows that the majority of the housing estates in Lokogoma district are safe and secure. This is because of the presence of police posts in some of the estates. This implies that the housing estates are safe and secure thus contributing to the psychological and social state of the residents of the estates.

**Table 4.21 Family-friendly**

Family-friendly	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	4	10.3	10.3	10.3
Good	29	74.4	74.4	84.6
Fair	2	5.1	5.1	89.7
poor	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.21 shows that 10.3% of the housing estates were rated very good in relation to family-friendly, 74.4% rated good, 5.1% rated fair, and 10.3% poor. This shows that majority housing estates in Lokogoma district are family-friendly, because of the presence of children's parks in some estates as seen in **Plate III** below. This implies that families with or without children can stay comfortably in the estates.



**Plate III** showing a children’s playground/park which implies that Lokogoma is family-friendly.

**Table 4.22 Access to Health Facilities**

Access to health facilities	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	4	10.3	10.3	10.3
Good	30	76.9	76.9	87.2
Fair	4	10.3	10.3	97.4
poor	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.22 shows that 10.3% of the Housing Estates have very good access to health services, 76.9% have good, 10.3% have fair, and 2.6% have poor. This shows that majority of the Housing Estates in Lokogoma district have good access to health services. This is due to presence of clinics and hospitals in some of the Estates where they can get treated for both minor ailments or major illnesses. This implies that people in the estates feel more at ease and more comfortable knowing that they have close access to medical facilities in case of emergencies as seen in **Plate IV** below.



**Plate IV** showing a hospital located at Suncity Estate in Lokogoma.

**Table 4.23 Access to Educational Facilities**

Access to educational facilities	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	6	15.4	15.4	15.4
Good	27	69.2	69.2	84.6
Fair	5	12.8	12.8	97.4
Poor	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.23 shows that 15.4% of the housing estates have very good access to educational facilities, 69.2% have good, 12.8% have fair, and 2.6% have poor. This indicates that majority of the housing estates in Lokogoma district have good access to education. This is as a result of the presence of nursery, primary and even secondary schools in some of the housing estates as seen in **Plate V** below. This implies that the residents in the estates do not have to go far looking for schools for their children, which is a criteria parents-to-be consider before buying/renting a house.



**Plate V** School at Suncity Estate in Lokogoma.

**Table 4.24 Aesthetics and Landscaping**

Aesthetics & landscaping	Frequency	Percent	Valid Percent	Cumulative Percent
Very good	4	10.3	10.3	10.3
Good	24	61.5	61.5	71.8
Fair	5	12.8	12.8	84.6
poor	6	15.4	15.4	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.24 shows that 10.3% of the housing estates have very good aesthetics and landscaping, 61.5% have good, 12.8% have fair, and 15.4% have poor. This indicates that majority of the housing estates in Lokogoma district have good aesthetics and landscaping. The layout designs are strictly followed thus, further aesthetic beautification and landscaping of the

houses and other areas within the estates. This implies that the estates are aesthetically beautiful and pleasing to the eye as seen in **Plate VI** below.



**Plate VI** Relaxation Centre built aesthetically and well-landscaped.

#### **4.3 Compatibility of the Housing Estates with the Master Plan**

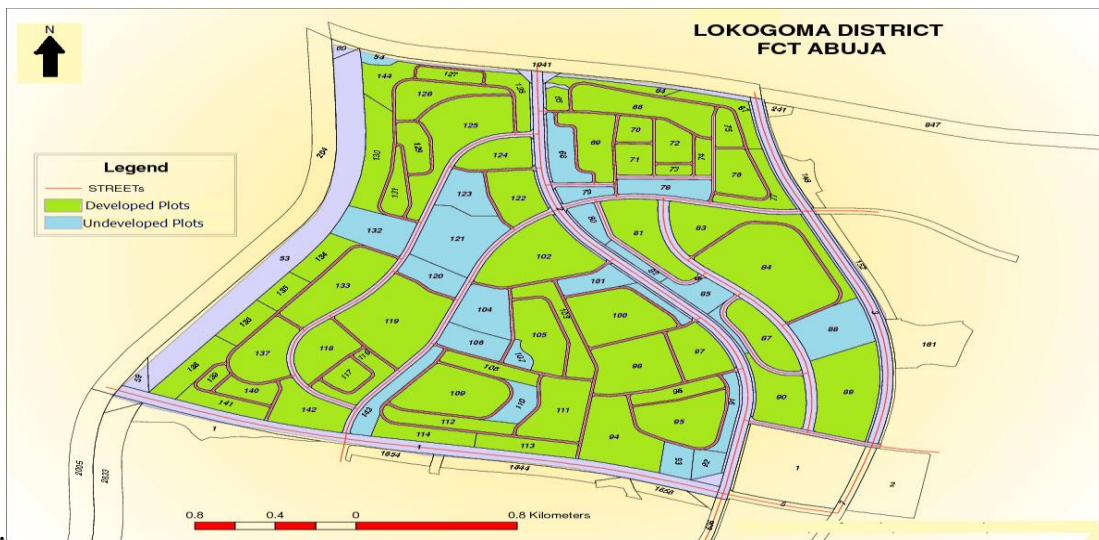
The study sought to gather information on compatibility of the Housing Estates in Lokogoma District with the Master Plan, which addresses objective number three; compatibility of housing estates in Lokogoma district with the Abuja masterplan. The is the information on compatibility of the housing estates with the Master Plan.

**Table 4.25 Conformity of Layout of Estates with Master Plan**

Conformity of layout	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	30	76.9	76.9	76.9
Moderate Extent	7	17.9	17.9	94.9
Little Extent	2	5.1	5.1	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.25 shows that 76.9% of the layouts of the estates are in conformity with the Master Plan to a great extent, 17.9% to a moderate extent, and 5.1% to a little extent. This shows that majority of the layouts of the Estates are in conformity with the Master Plan from the information gotten from the Development Control Department of AGIS, FCDA. This implies that the estates followed the design of the Master Plan in the construction of the estates thus, the Master Plan is being properly implemented as seen in the Lokogoma District map in **Plate 7**



below.

**Fig. 4.1 Lokogoma District, FCT – Abuja**

Source; Abuja Geographic Information System (AGIS), FCDA Abuja (2017).

**Table 4.26 Infrastructure Provision; Primary and Secondary**

Infrastructure provision	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	6	15.4	15.4	15.4
Moderate Extent	29	74.4	74.4	89.7
Little Extent	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.26 shows that 15.4% of the housing estates are serviced with both primary and secondary infrastructure, 74.4% to a moderate extent, and 10.3% to a little extent. This indicates that majority of the housing estates in Lokogoma district are well-serviced with needed primary infrastructure (city main water pipe, sewage pipe and electricity), which is the responsibility of the government. And secondary infrastructure (access roads, linking of water and sewage pipes to the city main pipes), which is the responsibility of the developers and individual owners. This implies that the estates are serviced with the necessary infrastructures, though not fully serviced so there is room for improvement.

**Table 4.27 Availability of Green Areas**

Availability of green areas	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	3	7.7	7.7	7.7
Moderate Extent	27	69.2	69.2	76.9
Little Extent	5	12.8	12.8	89.7
Not at all	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.27 shows that 7.7% of the Housing Estates have green areas to a great extent, 69.2% to a moderate extent, 12.8% to a little extent, and 10.3% not at all. This shows that majority of the houses in the Housing Estates have green areas in form of planting shrubs/flowers/trees. And there is a little percentage that does not have any green area at all because some estates are still under construction, and some are fully constructed but very few

occupants. This implies that the estates have abundant green areas, which improves the ventilation of the estates and also beautifies the estates as seen in **Plate VII** below.



**Plate VII** showing a house in Lokogoma with plants/trees.

#### 4.4 Stakeholder Involvement

The study sought to find information on the level of stakeholder involvement i.e government, in the activities of the housing estates in Lokogoma district. This is the information gotten from the study on Stakeholder Involvement;

**Table 4.28 Participation in Planning**

Participation in planning	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	11	28.2	28.2	28.2
Moderate Extent	24	61.5	61.5	89.7
Little Extent	4	10.3	10.3	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 28 shows that 28.2% of the housing estates rated to a great extent for participation in planning, 61.5% rated moderate, and 10.3% rated little extent. This shows that

there is a high level of Stakeholder involvement in the Planning of the Housing Estates in Lokogoma district. This implies that the various Stakeholders involved in the building process at the planning stage by drawing a well-planned Layout for the Housing Estates, which will make the houses in the estates built as approved in the plans of the building.

**Table 4.29 Participation in Execution**

Participation in execution	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	33	84.6	84.6	84.6
Little Extent	4	10.3	10.3	94.9
Not at all	2	5.1	5.1	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.29 shows that 84.6% rated to a great extent to participation in execution, 10.3% rated little extent, and 5.1% not at all. This shows that there is a high participation of Execution of the Building By-Laws by ensuring that the well-planned Layout is strictly adhered to by the government. This implies that the various government agencies in charge of execution of breaking of the Building Code by issuing building violation notices and carrying out demolition where need be, ensures that the execution process is followed.

**Table 4.30 Participation in Monitoring and Control**

Participation in monitoring & control	Frequency	Percent	Valid Percent	Cumulative Percent
Great Extent	22	56.4	56.4	56.4
Moderate Extent	10	25.6	25.6	82.1
Little Extent	6	15.4	15.4	97.4
Not at all	1	2.6	2.6	100.0
Total	39	100.0	100.0	

Source; Field survey, 2018.

The results on Table 4.30 shows that 56.4% rated to a great extent to Monitoring and Control, 25.6% rated moderate, 15.4% rated little extent, and 2.6% rated not at all. This indicates that around half of the housing estates in Lokogoma believe the government is actively involved in Monitoring and Control of estate developments, and the rest believe to a moderate extent, to a

little extent, and a very small percentage believe not at all. This implies that there is an average participation in Monitoring and Control of building processes thus, there is room for improvement in monitoring.

## 4.5 Correlation

In order to assess the Housing Quality of the Estates in Lokogoma district, Pearson's correlation analysis was used. A correlation is a number between -1 and +1 that measures the degree of association between two variables. A positive value for the correlation implies a positive association while a negative value for the correlation implies a negative or inverse association.

### 4.5.1 Test of Hypothesis

#### Environmental Indicators; Decision criteria

Level of Significance ( $\alpha$ ): 0.05 (5%)

Decision Rule: Reject  $H_0$  if p-value  $\leq 0.05$  and accept  $H_0$  if p-value  $\geq 0.05$ .

**Table 4.31 Environmental Indicators Correlations below;**

		To what extent does these planning stages of the estate impact on the eco-system	To what extent does these planning stages of the estate impact on local built environment	To what extent do these planning stage of the estate impact on the presence of environment hazards?	To what extent do these planning stages of the estate impact on the availability of green areas.	What level of caution was given in the construction stage as regards use of sustainable building materials	To what extent do participation in planning influences sustainability of housing projects in Nigeria	How will you rate the operational/use of this estate on eco-friendly/greening the area
To what extent does these planning stages of the estate impact on the eco-system	Pearson Correlation Sig. (2-tailed) N	1  39	.777** .000 39	.185 .259 39	.798** .000 39	.718** .000 39	.728** .000 39	.821** .000 39
To what extent does these planning stages of the estate impact on local built environment	Pearson Correlation Sig. (2-tailed) N	.777** .000 39	1  39	.089 .589 39	.798** .000 39	.866** .000 39	.633** .000 39	.812** .000 39

To what extent do these planning stages of the estate impact on the presence of environment hazards?	Pearson Correlation Sig. (2-tailed) N	.185 .259 39	.089 .589 39	1  39	.394* .013 39	.466** .003 39	.321* .046 39	.263 .106 39
To what extent do these planning stages of the estate impact on the availability of green areas.	Pearson Correlation Sig. (2-tailed) N	.798** .000 39	.798** .000 39	.394* .013 39	1  39	.843** .000 39	.745** .000 39	.853** .000 39
What level of caution was given in the construction stage as regards use of sustainable building materials	Pearson Correlation Sig. (2-tailed) N	.718** .000 39	.866** .000 39	.466** .003 39	.843** .000 39	1  39	.683** .000 39	.799** .000 39
To what extent do participation in planning influences sustainability of housing projects in Nigeria	Pearson Correlation Sig. (2-tailed) N	.728** .000 39	.633** .000 39	.321* .046 39	.745** .000 39	.683** .000 39	1  39	.943** .000 39
How will you rate the operational/use of this estate on eco-friendly/greening the area	Pearson Correlation Sig. (2-tailed) N	.821** .000 39	.812** .000 39	.263 .106 39	.853** .000 39	.799** .000 39	.943** .000 39	1  39

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\* . Correlation is significant at the 0.05 level (2-tailed).

**Conclusion;** Our main focus is on the Sig. (2-tailed) value, which is the p-value. **Hypothesis I** from Table 4.31 states that:

Impact of the houses on ecosystem does not significantly influence the presence of environmental hazard, since the corresponding p-value (0.259) is greater than 0.5. On the other hand, impact of the houses on ecosystem significantly influence the locally built environment, availability of green areas, sustainability of housing projects, use of sustainable building materials, and the eco-friendliness of the Housing Estates.

The locally built environment significantly influences the ecosystem, availability of green areas, use of sustainable building materials and eco friendliness of the houses since the corresponding p-values (0.000) are less than 0.05. On the other hand, the locally built

environment does not significantly influence the presence of environmental hazards since the p-value is (0.589) which is greater than 0.05.

Presence of environmental hazards significantly influence the eco system, use of sustainable building materials and the local built environment. On the other hand, presence of environmental hazards does not significantly influence the eco friendliness of the house since the corresponding p-value (0.106) is greater than 0.05.

**Hypothesis II** states that from Economic Indicators;

H<sub>0</sub>: The annual government revenue/tax does not influence housing affordability.

H<sub>1</sub>: The annual government revenue/tax influences housing affordability.

**Table 4.32 Economic Indicators Correlations**

		Influence of tax on sustainability of the estates	Influence of housing affordability on sustainability of the estates
Influence of tax on sustainability of the estates	Pearson Correlation	1	.806**
	Sig. (2-tailed)		.000
	N	39	39
Influence of housing affordability on sustainability of the estates	Pearson Correlation	.806**	1
	Sig. (2-tailed)	.000	
	N	39	39

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Conclusion:** Our main focus is on the Sig.(2-tailed) value which is the p-value. From table 4.32, it indicates that government annual revenue/tax influences housing affordability since the p-value (0.000) is less than 0.05 (5%). Hence, we reject the null hypothesis at 5% level of significance and conclude that annual revenue significantly influences Housing Affordability.

**Hypothesis III** states that from Social Indicators;

H<sub>0</sub>: Safety and Security does not influence access to health and educational facilities.

H<sub>1</sub>: Safety and Security influences access to health and educational facilities.

**Table 4.33 Social Indicators Correlation**

		Access to Health Services within the Estate	Access to Educational Services within the Estate	Safety and security
Access to Health Services within the Estate	Pearson Correlation Sig. (2-tailed) N	1  39	.895**  .000 39	.909**  .000 39
Access to Educational Services within the Estate	Pearson Correlation Sig. (2-tailed) N	.895**  .000 39	1  39	.942**  .000 39
Safety and Security	Pearson Correlation Sig. (2-tailed) N	.909**  .000 39	.942**  .000 39	1  39

\*\* . Correlation is significant at the 0.01 level (2-tailed).

**Conclusion:** Our main focus is on the Sig.(2-tailed) value which is the p-value. From table 4.33, it indicates that Safety and Security significantly influence access to both Educational and Health Facilities since the p-value (.000) is less than 5%. Hence, we reject the null hypothesis at 5% level of significance and conclude that Safety and Security significantly influence access to Health and Educational facilities.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.1 Summary

The study assessed the Housing Quality of the Housing Estates in Lokogoma District. The Housing Quality of the housing developments in Lokogoma District was examined based on some Housing Quality factors which all sums up to the Housing Quality of the district. The factors assessed include the general characteristics of the housing estates, environmental impact of the Housing Estates, housing sustainability factors which are; environmental, economic and social factors, and compatibility of the Housing Estates with the Abuja Master Plan.

The findings from the study on Environmental Indicators and Housing Quality characteristics shows that; Impact of the houses on Ecosystem does not significantly influence the presence of Environmental Hazard, since the corresponding p-value (0.259) is greater than 0.5. On the other hand, Impact of the houses on ecosystem significantly influence the locally built environment, availability of green areas, sustainability of housing projects, use of sustainable building materials, and the eco-friendliness of the Housing Estates.

The locally built environment significantly influences the ecosystem, availability of green areas, use of sustainable building materials and eco friendliness of the houses since the corresponding p-values (0.000) are less than 0.05. On the other hand, the locally built environment does not significantly influence the presence of environmental hazards since the p-value is (0.589) which is greater than 0.05. Presence of environmental hazards significantly influence the eco system, use of sustainable building materials and the local built environment. On the other hand, presence of environmental hazards does not significantly influence the eco friendliness of the house since the corresponding p-value (0.106) is greater than 0.05.

From Economic Indicators, it indicates that Annual Government Revenue/Tax significantly influences Housing Affordability since the p-value (0.000) is less than 0.05 (5%) hence, the null hypothesis is rejected at 5% level of significance and conclude that annual revenue significantly influences Housing Affordability.

From Social Indicators, it indicates that Safety and Security significantly influence access to both Educational and Health Facilities since the p-value (.000) is less than 5% hence, the null

hypothesis is rejected at 5% level of significance and conclude that Safety and Security significantly influence access to Health and Educational facilities.

From Compatibility of the Housing Estates with the Master Plan, the study shows that 76.9% of the layouts of the Estates are in conformity with the Master Plan to a great extent, 17.9% to a moderate extent, and 5.1% to a little extent. This shows that majority of the layouts of the Estates are in conformity with the Master Plan from the information gotten from the Development Control Department of AGIS, FCDA. This implies that the estates followed the design of the Master Plan in the construction of the estates thus, the Master Plan is being properly implemented as seen in the Lokogoma District map.

## **5.2 Conclusion**

The study concluded, after assessing the Housing Quality of the Housing Estates in Lokogoma District has helped to identify the various dimensions that account for the Housing Quality using some Housing Quality Indicators. They include the general characteristics of the Housing Estates like Energy performance, air quality, water and waste management, building design, Environmental Effects; impacts on ecosystem, presence of environmental hazards, use of sustainable building materials, Economic Effects; housing affordability, tax, mortgage, Social Effects; safety and security, access to health and educational facilities, Compatibility with Master Plan; conformity of layout with Master Plan, infrastructure provision, and Stakeholder Involvement; government's participation in planning, execution, monitoring and control.

To a very large extent, because of the level of urbanization going on in Abuja, the planning authorities have taken measures to control the housing development which in turn have affected the Housing Quality. More so, the socioeconomic level of the inhabitants of Abuja is higher than that of the other states hence, the study concludes that Lokogoma District have a high Housing Quality from the information gathered.

Nevertheless, few factors like high cost of building materials due to high inflation rate, and poor enforcement of buildings byelaws and regulations could be looked into to improve the Housing Quality of Lokogoma District. Also, incorporating sustainable development goals to housing development and reducing government revenue and having easier access to mortgage/housing

loans to improve housing affordability would be of great importance in the overall improvement of the Housing Quality of Lokogoma District.

### **5.3 Recommendations**

The following recommendations were made based on the study;

- i. Affordable housing should be made a priority by incorporating holistic and inclusive urban planning. Because lack of affordable housing is a major barrier to the improvement of Housing Quality.
- ii. Use of solar-powered energy sources should be encouraged, to reduce fuel use (which is non-renewable) since sun is a renewable form of energy. Also, wind-powered source of energy should be considered, since wind is also a renewable form of energy. This will improve Housing Quality and promote sustainability which will help in achieving sustainable development.
- iii. Building more eco-friendly houses using more wood (which is renewable) and less concrete for construction. While concrete houses have more effect on the environment due to the process of cement production, wood houses are more sustainable in that they have less effect on the environment. And with proper deforestation/afforestation culture, this can be achieved. This will improve the general characteristics of the estates.
- iv. Referring to Compatibility of Estates with the Master Plan, the houses in the Estates have achieved that to an extent due to proper Execution, Monitoring and Control by appropriate government agencies. But there can still be improvement in order to reach higher standards as seen in developed countries thus, the study recommends the Review of Environmental Policies, Building Codes and Bye-Laws to include Sustainable Development goals so as to achieve complete sustainability in housing. By doing so, it will help incorporate Sustainable Development from the onset of buildings where Sustainable Development indicators are considered from the Building Approval, to Building Design, through Operation and Use, and to the End of Life of the buildings.
- v. Afforestation/reforestation/tree-planting should be encouraged to replace lost biodiversity during the clearing stage of construction. This will help replace the tree-felling from building operations, and deforestation for timber purposes and other man-made uses. It

will also improve ventilation, and also provides buffer zones to areas located close to industrial areas. It will also prevent specie extinction of trees/plants. This will improve the sustainability of the housing estates in the district.

- vi. Organizing seminars and audits on sustainable development to create more awareness on sustainable construction, operation/use, maintenance and management of buildings, and to monitor the level of success sustainable development has achieved to improve Housing Quality.

## REFERENCES

- Abrams, C. (1964). *Housing in the Modern World. Man's Struggle for Shelter in an Urbanizing World*. Africa Today, 11(8), 12-14: Indiana University Press.
- Abuja Geographical Information System (AGIS), 2014.
- Abuja Geographical Information System (AGIS), 2017.
- Abuja Nigeria Tourist Information. Touristlink.com. Retrieved 2013-08-30.
- Adedipe, B. (2009): Overview of the Global Economic Crisis. A paper presented at the 14<sup>th</sup> Seminar for Finance Correspondents and Business Editors, Marudi, Nigeria.
- Adeleye, O.A., Anofojie, A.E., 2011. Housing in Festac Town, Lagos State, Nigeria. Ife Research Publication in Geography 10 (1), 154–163.
- Adeleye, O.A., Azeez, T.O., Yusuff, I.O., 2014. Perception of Housing Quality by residents and non-residents of Ibara housing estate, Abeokuta, Ogun State, Nigeria. American Journal of Human Ecology 3 (3), 35–42.
- Ahsen, O. & Gulcin, P.G. (2005). *Space Use, Dwelling Layout and Housing Quality; an example of Low Cost Housing in Istanbul*. England: Ashgate Publishing Limited.
- Ajanlekoko, J. (2001): Sustainable Housing Development in Nigeria- The Financial and Infrastructural Implication. Paper presented at the International Conference on Spatial Information for Sustainable Development, Nairobi, Kenya.
- Akewusola, W. O (2014) "Nigeria Mortgage Refinance Company: Panacea to Housing Problems. Lagos, Daily Newswatch Newspaper, Tuesday, 25th March.
- Akintoye A 2006. Public partnerships for sustainable development of infrastructure in developing countries. In: IA Okewole, A Ajayi, A Daramola, K Odusanmi, O Ogunba (Eds.): *The Built Environment: Innovation Policy and Sustainable Development*. Ota, Ogun State, Nigeria: Covenant University, pp. 433 – 442.
- Alittaia, C. (2010) "Challenges and Benefits of "Going Green" In Nigeria". Lagos, [www/Alitheiacapital.com](http://www/Alitheiacapital.com).
- Amole. O.O. (1997). An Evaluation of Students "Residential Facilities in some Nigerian Universities. Ph.D Thesis , Submitted to the Department of Architecture, Obafemi Awolowo University, Ile-Ife.
- Andrews, O.N. 1998. Trends in the Supply of Affordable Housing. Meeting America's Housing Needs (MAHD): A Habitat 11 Follow-up Project.
- Angel S, Sheppard S, Civco D.L. (2005) World Bank, Transport and Development Department.

- Aribigbola, A. (2001), Conceptual Issues in Housing and Housing Provision in Nigeria, O.B. Akinbamijo, A.S. Fawehinmi, D.R. Ogunsemi and A.O. Olotuah, (Eds.), *Effective Housing in 21st Century Nigeria*, Environmental Forum, 1-8, Federal University of Technology Akure, Nigeria.
- Australian Housing and Research Institute (AHURI): *Measuring Housing Affordability*. AHURI Research and Policy Bulletin. Issue 45 (2004).
- Bello, T. (2003). *Attacking Unemployment Hurdles in the fragile economies of the Sub-Saharan Africa: The Experience of Nigeria*.
- Biswas, W. K. (2014). Carbon Footprint and Embodied Energy Consumption Assessment of Building Construction Works in Western Australia, *International Journal of Sustainable Built Environment*, 3:179 – 186.
- Chiu, R.L.H. (2000) “Environmental sustainability of Hong Kong’s housing system and the housing process model”, *International Planning Studies*, Vol 5, No. 1, pp. 45-64.
- Chiu, R. L. H. (2003). “Social Sustainability, Sustainable Development, and Housing, Development: The Experience of Hong Kong”. In R. Forrest And J. Lee (Eds.), *Housing and Social Change* (Pp.211-238). London: Routledge.
- Demographia (January 2015). *Demographia World Urban Areas (PDF)* (11th ed.). Retrieved 2 March 2015.
- Disney, J. (2007) *Affordable housing in Australia: some key problems and priorities for action*, National Forum on Affordable Housing, Australian Housing and Urban Research Institute: Melbourne.
- Dunn, J. R. (2000). *Housing and health inequalities: Review and prospects for research*. *Housing Studies*, (15)3, pp. 341–366. FRN (2006). *Core welfare indicators questionnaire survey: Final statistical report in collaboration between National Bureau of Statistics/World Bank*.
- Ede, P.N., Andrew, E.E., Eleoke, C.C., 2007. Determinants of Housing and Neighborhood quality for Yenagoa, Balyesa State of Nigeria. *Journal of the Nigerian Institute of Town Planners XX* (1).
- Ekop, G., 2012. An Assessment of the Interrelationships among Housing Quality variable sets in Calabar metropolis. *Journal of Geography and Regional Planning* 5 (14), 375–380.
- Federal Government of Nigeria, FGN (2004): *The National Housing Policy*, Federal Ministry of Works and Housing, Lagos.
- Gallant, A.L., R. Loveland, T.L. Sohl, & D.E. Napton. 2004. *Using an Ecoregion Framework to Analyze Land Cover and Land Use Dynamics*. *Environmental Management*.
- Galster, G.C. (2001). *On the Nature of Neighborhoods*. *Urban Studies*.

- Galster, G. (2003). Investigating Behavioral Impacts of Poor Neighborhoods: Towards New Data & Analytical Strategies. *Housing Studies*.
- Ghani, S (2012). Planning for Sustainable Housing Development. In Ramli, M & Byrd, H. *Towards a Sustainable Built Environment in Malaysia* (107-120). Penang: Universiti Sains Malaysia.
- Gracia, Uzzel, Real and Romay. (2005). *Housing Space & Quality of Life*. Ashgate Publishing Company Limited, England.
- Hallman, H.W. (1984). *Neighborhoods: Their Place in Urban Life*. Beverly Hills, CA: Sage Publications.
- Hammond, G. & Jones, C. (2011). *Inventory of Carbon and Energy (ICE)*, Version 2.0, SERT, Department of Mechanical Engineering, University of Bath, UK.
- Hasic, T. (2001) A Sustainable Urban Matrix: Achieving Sustainable Urban Form in Residential Buildings, IN Williams, K., Burton, E. & Jenks, M. (Eds.) *Achieving Sustainable Urban Form*, New York: SPON Press, pp. 329-336.
- Hunter, A. (1974). *Symbolic Communities*. Chicago, IL: University of Chicago Press.
- Jacobs, M. (1999) "Sustainable development as a contested concept", in Dobson, A. (ed.) (1999) *Fairness and Futurity*, New York, Oxford University Press, pp. 21-45.
- Jaiyeola, Andrews. "FCT Minister Harps on Development of Satellite Towns" (2015).
- Jiboye, (2009) The challenges of sustainable housing and urban development in Nigeria, Being a paper presented at fourth International Conference on Research and Development. International Research and Development Institute, Unilag, Akoka, Nigeria.
- Johnson M.P. (2006). *Decision Models for Affordable Housing and Sustainable Community Development*. Carnegie Mellon University, 5000 Forbes Ave. Pittsburg, PA 15213-3890. Submission to Special Issue of Journal of the American Planning Association.
- Kallus, R. (2000). *What is a Neighborhood? The Structure and Function of an Idea*. UK, Pion.
- Kinyungu, A. N. (2004). *Publicprivate sector partnerships in the servicing of land and provision of housing for lowincome groups in Harare: Experiences and lessons learnt 1990-1996*.
- Lawanson, T.O., 2006. *Challenges of Sustainability and Urban Development in Nigeria: Reviewing the Millennium Development Goals*. Africa Insight (submitted for publication).
- Lawrence, R.J. (1995). *Housing Quality: An Agenda for Research & Practice*. Chichester: John Wiley & Sons.
- Legal Notice on Publication of 2006 Census Final Result. Policy and Legal Advocacy Centre. Archived from the original (PDF) on 19 March 2013. Retrieved 10 June 2012.

Leilani Farha, (2014) United Nations Special Rapporteur. Special Rapporteur on Adequate Housing.

Life of Poverty in Abuja's Wealth. news.bbc.co.uk. BBC News, Tuesday, 13 February 2007.

Megacities, 2010.

Mabogunje, A.L., 1975. Prolegomenon to urban poverty in Nigeria, in *Poverty in Nigeria*. In: Proceedings of the 1975 Annual Conference of the Nigerian Economic Society, 1975, pp. 69–91.

Mbina, A.A., 2007. Assessing the housing delivery services in Nigeria. In: Ekop, O.B. et al. (Eds.), *Physical development of urban settlements in Nigeria*. Development Universal Consortia, Ikot Ekpene, Nigeria, pp. 1–2.

Minkler, M. and Wallerstein, N. (1997). *Improving Health through Community Organization and Community Building*.

Morris, D. and Hess, K. (1975). *Neighborhood Power: the New Localism*. Boston Beacon Press.

Morgan, J. and Talbot, R. (2001) Sustainable Social Housing for No Extra Cost? IN Williams, K., Burton, E. & Jenks, M. (Eds.) *Achieving Sustainable Urban Form*, London and New York: Spon Press, pp. 319-328.

Nazirul Z. A. (2009). Sustainable Construction in Malaysia: Developer's Awareness: *World Academy of Science, Engineering and Technology*, 53, 807-814.

Newman, P. (2002). "Sustainability and housing: More than a roof over head", Paper presented at the 2002 Barnett Oration, Melbourne, 31st October.

NISER, 2005. *Review of Nigerian Development (2003/2004): Public – Private Partnership in Nigerian Development*. NISER, Ibadan.

Ogunleye, M.B., 2013. Analysis of the socio-economic Characteristics and Housing Condition in the Core Neighbourhood of Akure, Nigeria. *J. Geogr. Reg. Plan.* 6 (6), 229–236.

Ogunsakin, L. (1998). *Urbanization and Urban Housing in the Third World*. Unpublished Ph.D Thesis. Submitted to Aristotle University of Thessalonika, Greece.

Olotuah, A.O., Adesiji, O.S., 2005. Housing poverty, slum formation, and deviant behaviour. *Online Proceedings of the Housing Studies Association Conference*, University of Lincoln, Lincoln, UK. 8–9 September 2005.

Olotuah A. and Bobadoye S., (2009) Sustainable Housing Provision for the Urban Poor: A Review of Public Sector Intervention in Nigeria, *The Built and Human Environment Review*, 2, 51-63.

Onibokun, A.G. (1985) "Housing Finance in Nigeria: A Critical Survey of Private and Public Sources." In *Housing in Nigeria*, Onibokun A.G. (Ed) Nigerian Institute of Social and Economic Research (N.I.S.E.R) Ibadan, 199 – 219.

Ozo, A. O. (1990). The private rented housing sector and public policies in developing countries: The example of Nigeria. *Third World Planning Review*.

- Pitkin, B. (2001). *Theories of Neighborhood Change: Implication for Community Development Policy & Practice*. UCLA Advanced Policy Institute.
- Salau, A.T. (1992) “Urbanization, Housing and Services in Nigeria: The Challenge of Meeting Basic Need in the Third World.
- Small-Sample Techniques. *The NEA Research Bulletin*, Vol. 38 (December, 1960), p. 99.
- Social World Report, 2012.
- Stafford, D.C. (1978). *The Economics of Housing Policy*. Groom Helm Ltd. 2-10 St. John Road, London SW11.
- Temkin, K. and Rohe, W. (1996). *Neighborhood Change & Urban Policy*. *Journal of Planning Education and Research*.
- Top 5 Cities To Do Business in Nigeria. Abuja is 2<sup>nd</sup>. *Abuja Facts*. 22 April 2015. Archived from the original on 4 February 2016.
- Ujoh F., Kwabe I.D., Ifatimehin O.O. (2010). *Understanding Urban Sprawl in the Federal Capital City, Abuja. Towards Sustainable Urbanisation in Nigeria*.
- Uroko, C. (2014) “Encouraging Green Building as a Standard for Tomorrow’s Built Environment”. *Lagos, Businessday Newspapers*, Friday, 27th June.
- UN-Habitat. 2015. *Habitat III policy paper framework 10 – Housing policies*. Nairobi: UN-Habitat.
- US Environmental Protection Agency (2010).
- Uwadiogwu, B.O., 2013. *The structural profile of the socio economic and housing problems of the slum areas in Enugu City, Nigeria: An Insider’s Perception*. *Int. J. Eng. Sci.* 2 (3), 08–14.
- Warren, D. (1981). *Helping Networks*. South Bend, IN: Notre Dane University Press.
- Williams, K., Burton, E. & Jenks, M. (Eds.) (2010). *Achieving Sustainable Urban Form*, New York: SPON Press, pp. 329-336.
- World’s Fastest Growing Cities are in Asia and Africa. *Euromonitor*. 2 March, 2010. Archived from the original in October, 2015.
- World Urbanization Prospects by UN DESA (2014).
- WCED, (1987) *Our Common Future*, World Commission on Environment and Development, Oxford, New York: Oxford University Press.

## **APPENDIX A**

### **Introductory Letter**

To Whom It May Concern,

Dear Sir/Madam,

#### **COLLECTION OF DATA FOR RESEARCH THESIS**

I am a student of Nasarawa State University, pursuing a Master of Science (MSc) in Environmental Resource Management. In partial fulfillment of the above course, I am required to undertake a research thesis on “Assessing the Sustainability of Housing Estates in Lokogoma district”.

In view of the above, I am humbly requesting you to cooperate in answering the questionnaire attached herewith. Kindly read the accompanying instructions and respond to the questions appropriately. This will help in collecting the necessary data that will actualize the research thesis.

The information that you will provide will remain confidential and used exclusively for this research and not for any other purpose. Your response and cooperation in this matter will be appreciated.

Thank you in advance.

Yours Faithfully,

**Garba F.I.**

**APPENDIX B**

**RESEARCH QUESTIONNAIRE**

**NAME OF ESTATE:** .....

1. What is the nature of ownership of the houses in this estate?

Owner-occupied	Tenancy	Owner-occupied/Tenancy
----------------	---------	------------------------

2. How long has the estate been occupied in years?

0 - 5	5 - 10	10 - 15	15 & above
-------	--------	---------	------------

**Operation/Use of Housing Estates**

3. How will you rate the operation/use of this estate?

	Very good	Good	Fair	Poor
Energy performance/use				
Air quality/ventilation				
Water use and management				
Waste Management				
Property maintenance and management				

**Building Design**

4. What level of consideration was given to building design of the estate?

	Great extent	Moderate extent	Little extent	Not at all
Enabling energy and water efficiency by design				
Possibility of upgrading				

**ENVIRONMENTAL INFORMATION**

5. To what extent does these planning stages of the estates impacts the environment?

	Great extent	Moderate extent	Little extent	Not at all
Impact on ecosystem				
Presence of Environmental Hazards				
Eco-friendly/Greening of estate				
Impact on Quality of the Local Built Environment				

6. What level of caution was given in the construction stage?

	Great extent	Moderate extent	Little extent	Not at all
Use of sustainable building materials/environmentally-friendly				
Minimization of Environmental Impact from Building Activity				

**ECONOMIC INFORMATION**

7. To what extent do the following influence sustainability in the estate?

	Great extent	Moderate extent	Little extent	Not at all
Annual Govt. Revenue/Tax				
Access to Housing Credit/Mortgage				

Affordability of Houses				
Business Opportunities				

**SOCIAL INFORMATION**

8. What is the level of these social indicators of the estate?

	Great	Very good	Good	Fair	Poor
Safety and Security					
Family-friendly					
Access to Health Facilities					
Access to Educational Facilities					
Aesthetics and Landscaping					

**Compatibility with Masterplan**

9. To what extent is the estate compatible with the Masterplan?

	Great extent	Moderate extent	Little extent	Not at all
Conformity of Layout of the Estates with Master plan				
Infrastructure provision; Primary and Secondary				
Availability of Green Areas				

**Stakeholder Involvement**

10. To what extent do the following Influence sustainability of housing projects in Nigeria?

	Great extent	Moderate extent	Little extent	Not at all
Participation in Planning				
Participation in Execution				
Participation in Monitoring and Control				