ASSESSMENT OF HOUSING AND ENVIRONMENTAL QUALITY IN KUBWA, BWARI AREA COUNCIL OF ABUJA, NIGERIA

BY

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MTECH/SET/2017/6752

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A THESIS SUBMITTED TO THE POSTGRADUATE SCHOOL FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA, NIGERIA IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTER OF TECHNOLOGY IN URBAN AND REGIONAL PLANNING (HOUSING AND URBAN RENEWAL).

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ABSTRACT

This research focuses on assessment of housing and environmental quality in Kubwa, Bwari Area Council of Abuja, with a view to making recommendations for improving the living condition of the area. Using Systematic sampling technique, data were collected with the aid of structured questionnaires, observations, interviews and field photograph. The primary data relating to housing and environmental quality were obtained by means of structured questionnaire. Techniques for data analysis involved descriptive analysis that includes the use of frequency and percentage tables, pie charts and bar charts that were used to analysed socio-economic characteristics of the respondents such as gender, literacy level and income distribution among others. Also, inferential analysis adopted include chi-square (X^2) and multiple regression for testing and analyzing the hypothesis and multiple correlation was also used to established a relationship among housing and environmental quality, income and educational status of the residents. Results of the study showed that the houses were in moderate condition. Analysis of data shows that a large proportion of infrastructure are in deplorable condition with an index of 1.77 and building elements rated to be fair with an index of 3.01, measured on a 5-point scale The test of correlation between housing and environmental quality income and educational status of the people shows that income and education correlates negatively with housing and environmental quality with significance level at ($r = -.676^{**}$ $p < .001$), there exist negative relationship among housing and environmental quality attributes and respondents' socio-economic attributes of the study area. The implication of this is that the less the income, the less the quality and standard of housing quality that can be assessed. Therefore, housing and environmental quality is influenced by respondents' socio-economic attributes in the study area. The study concludes that houses in Kubwa and the general environment are in deplorable and degenerating condition. It is recommended that the Abuja Environmental Protection Board (AEPB) should improve and ensure continuous monitoring of refuse collection in order to reduce indiscriminate disposal of waste in the area for effective and sustainable management of housing environment. The study further suggests that there is need to increase community sensitization and capacity building regarding the construction of houses, quality of construction and building defects to help the dwellers to understand the risks related to building safety and maintenance.

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ABBREVIATIONS AND ACRONYMS

AEPA:	Abuja Environmental Protection Agency
C of O:	Certificate of Occupancy
DF:	Degree of Freedom
FCC:	Federal Capital City
FCDA:	Federal Capital Development Authority
FCT:	Federal Capital Territory
HND:	Higher National Diploma
HQI:	Housing Quality Index
MWV:	Mean Weighted Value
NCE:	Nigeria Certificate in Education
ND:	National Diploma
NPC:	National Population Commission
PHCN:	Power Holding Company of Nigeria
POP:	Plaster of Parish
PVC:	Polyvinyl Chloride
SPSS:	Statistical Package for Social Sciences
SMV:	Summation of Weighted Value
WC:	Water Closet

WHO: World Health Organization

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the Study

Housing play a central role in the living organism and it provides the basic platform for the life supports systems in human settlements (Junaid, 2017). Residential unit is a viable structure needed by an individual just as diet and wear (Aribigbola, 2006). Housing is essential for comfort, existence as well as healthiness of an individual (Fadamiro *et al.*, 2004). However, dwelling property plays a dominant role to man existence that includes access to land, accommodation and essential facilities to make shelter efficient, safe, appealingly attractive and convenient. Thus, insanitary, unsafe and deficiency in qualitative residential structures can hampers man's privacy, security and physical health. Invariably, a nation well-being is scale on indices of the performance of housing segment (Kehinde, 2010).

Ibimilua and Ibimilua (2011) confirmed that poor housing environment in Nigeria is due to high urbanization couple with an increase of social expectations of the urban dwellers. He further outlined the challenges associated with urbanization to include unplanned development, poor maintenance of existing dwelling units, insufficient qualitative housing structure, aging of dwelling units, menace of indiscriminate waste disposal, high crime rate and health challenges. Also, dwelling units in the city centres are associated with insufficient facilities and services, unsatisfactory ventilation and inadequate inbuilt kitchen and public restroom. More so, associated challenges that built-up housing environment faced are absence of operative planning, construction of squalid settlements as well as presence of derelict building structures (Ibimilua and Ibimilua, 2011).

Abumere (1987) stipulated that the deterioration of city centre is caused by poverty. He further argued that high population in residential areas is function of poverty and extreme area compactness leads to over use of facilities and fast decay of existing housing structure. He continued further that poverty is responsible for construction of substandard dwelling units and subsequently result to spread of slum. UN-Habitat (2002) demonstrated that low income earners are presently the dominant producers of residential units and builders of the urban centers today.

In Nigeria, the problem of insufficient housing and poor quality of environment persists both in cities centres and rural parts. The challenge is more terrible in most cites as majority of low-income earners live in deplorable housing and unkept environment due to urban expansion couple with continuous relocation of individuals from countryside to city centres has resulted to unhealthy housing environment, congestion and subsequently offshoot of shantytowns (Adeleye and Anofojie, 2011). The main challenge confronting housing in Nigeria today is inadequate or complete absence of infrastructure and services. Thus, in some parts of the nation especially suburban and rural areas, infrastructure and services are not available and if they exist, the condition is worrisome as a result of poor maintenance (Adeleye, 2011).

The issue of housing and environmental quality in Nigerian urban centers have become very worrisome over the years. The problem of housing has gone beyond the issues of just housing shortage. Governments are also concerned about the low quality of housing and general lack of basic housing facilities and services in housing areas. Houses especially in the core areas

of cities such as Lagos, Kano, Ibadan, Aba, Warri, Onitsha, Port Harcourt, Calabar among others are aging and deteriorating with little or no maintenance (Agbor *et al.*, 2016).

Olotuah and Adesiji (2005) asserted that in Nigeria, deplorable housing environment in most neighourhoods of city centres as manifested in the majority of dwelling units that are not-sound and deficient building structures. In recent times, there has been a growing concern on the deteriorating state of housing in most urban areas of the developing nations. Consequently, the need for a decent and adequate shelter has long been an issue requiring urgent global attention. Since shelter constitutes one of man's basic needs, it does have a profound impact on the health, wellbeing, social attitudes and economic productivity of the individual (Jiboye, 2010).

Housing and environmental quality of urban areas has tremendous impact on the health status of all urban residents. While the entire urban population suffers from poor environmental quality, the urban poor tend to be the most vulnerable as they are often living in marginalized parts of the city (UN-Habitat, 2006). Kubwa is a notable community in Bwari area Council of Abuja and is the largest satellite town in Abuja with influence of urban expansion from the core to the peripheral areas. Generally, influx of population into Kubwa is associated with a variety of problems prominent among these are; high land value, poor planning leading to poor housing conditions and haphazard developments among others. However, the research focuses on housing and environmental quality as they are related to growth process of Kubwa as city center in Bwari region. The thrust therefore is to investigate the quality of housing environment of the town.

1.2 Statement of the Research Problem

Housing and environmental quality in most of the neighbourhood centres of Kubwa are deplorable. Preliminary investigation has revealed that greater percentage of the poor lives in the slum area of Kubwa. Thus qualitative assessment is imperative because substandard accommodations are not expensive and the neighborhoods are in close proximity to their work places. In light of this, the area under investigation is confronted with a bundle of housing and environmental quality problems. Prominent among these are; unkept drainage system, poor building condition, absence/insufficient infrastructural facilities, indiscriminate refuse disposal and outright deficit of qualitative housing in the area.

The above challenges create poor housing environment which creates a platform for diseases, poor health and degraded standard of living. Thus, this research examines the implications of the quality of the housing environment in the study area.

1.3 Aim and Objectives of the Study

The aim of the study is to assess housing and environmental quality in Kubwa with a view to making recommendations for improving the living condition of the area.

The objectives of this research are to:

i. Assess socio-economic characteristics of the residents in the study area
ii. Evaluate housing and environmental quality of the study area
iii. Examine spatial variation of housing and environmental quality in the study area

iv. Examine the relationship among housing and environmental quality, income and educational status of the people in the study area

1.4 Research Questions

The accompanying inquiries will be replied towards the end of the research

1. To what extend do socio-economic characteristics of residents play a role in determining the quality of housing environment in the study area?
2. What are the conditions of housing and infrastructure available in this area?
3. What is the spatial variation of housing and environmental quality in this area?
4. How does income and educational status of the people in this area determine the quality of housing environment?

1.5 Hypothesis

Hypothesis is an anticipated outcome of the relationship(s) between the variables of the phenomena under investigation or idea whose truth and practicability can be tested through scientific method (Uzoaku *et al.,* 2016). The following hypothesis will be tested in the course of this study

H_o: There is no statistically significant relationship between income, education and housing quality in Kubwa

H_1: There is a statistically significant relationship between income, education and housing quality in Kubwa

H_o: There is no statistically significant spatial variation in housing and environmental quality in Kubwa

H_1: There is no statistically significant spatial variation in housing and environmental quality in Kubwa

1.6 Scope of Study

The geographical area will cover Kubwa neighborhoods as Kukwaba, Gbazango, Phase II side I, Phase II side II, Phase IV, P.W and Byazhin.

The subject scope will focus on assessment of housing and environmental quality; looking at types of drainage pattern, condition of drainage, road network, security, water supply, electricity supply, refuse disposal among others.

1.7 Justification of the Study

Previous research by Coker *et al.* (2007) investigated challenges of urban housing quality in relation to their neighbourhood environments in Ibadan city and the outcome of the research revealed that in high density zone, medium density zone and low density zone, majority of the dwelling units in the city of Ibadan are classified as unfit for human habitation, overcrowded, lack basic facilities and generally lacked in good maintenance culture. These they noted are the major causes of the decline in housing quality. Similarly, studies by Wokekoro and Owei (2014) assessed housing problems and planning implications and residential quality of life in Port Harcourt metropolis respectively, as measures of evaluating qualitative dwellings and reported that dwellings lacked basic housing amenities with most of their components worn and torn, while drainages are blocked and waste disposed improperly. Ogonor (2002) also reported absence of cross ventilation and that gutters that provide drainage are being filled up, especially with various forms of waste matter; which makes the blocked drains incubators for mosquitoes and subsequently affect the health of residents.

Previous research by Emenike and Sampson (2017) assessed the types and quality of housing elements and locality environments in Port Harcourt Metropolis, Nigeria. The outcome revealed that overpopulation, deplorable housing environment, absence or insufficient internal facilities as well as neighbourhood amenities remained the key problems that demeaned dwelling quality in Port Harcourt.

A study by Muhammad *et al.* (2014) have evaluated the city growth and housing challenges at Kubwa and the result revealed that overcrowding of the people, increase in house rent and insufficient ventilation are the foremost housing challenges in the region for these has ascribed to the realities that convenience request for accommodation surpasses housing supply in Kubwa. Additionally, other issues are; congestion, poor hygiene, insufficient water supply, sporadic power supply and health risk. It is against this background that this study sought to assess housing and environmental quality in residential neighbourhoods of Kubwa and research is needed to test the hypotheses that housing and environmental quality has a positive effect on the physical, psychological and social benefits to the residents of Kubwa.

The research findings and recommendations will help the government agencies' such as Federal Housing Authority, Development Control, Federal Capital Development Authority among others assigned with responsibilities of regulating housing and environmental development activities from the inception of land acquisition, building construction and infrastructure provision to make sure there is strict adherence to building regulations and standards.

The research findings will be of benefit to government and the residents of Kubwa in the following ways for having a good housing environment will necessitates and enhance better standard of living for the residents, profound impact on the health, minimize the issue of outbreak of diseases and economic productivity of the individual. Also, it will minimize fire hazard, minimize natural hazards like flood and windstorm and finally, it enhances sanitary fittings and other adequate facilities to avoid environmental degradation.

1.8 The Study Area

Abuja the seat of Federal Republic of Nigeria is situated in the middle of Nigeria as shown in (Figure 1.1). On 12 December 1991, Abuja formally became capital of Nigeria, subbing Lagos. The Federal Capital Territory (FCT) covers land area approximately 8,000 km^2 although Federal Capital City (FCC) covers 25,000 hectares. During the initial phase of relocation, the FCT included 845 towns, 150 of these inside the FCC and up to 5km range. Abuja's geographical area is delineated by Aso Rock, approximate 1,298 ft (399 meters) crystalline rocks left by water subdivision and Zuma Rock, approximately 2,589 ft (789 meters) crystalline rocks, positioned toward north along Kaduna expressway.

Abuja city had a population of 776,298 according to National Population Commission (2006), making it one of the ten most densely inhabited city centers in Nigeria. As at 2016, the city of Abuja was estimated at 6,000,000 people, setting it behind just Lagos, as the most crowded metro region in Nigeria. The city center of Abuja is rated as most fastest developing

urban community in the world due to the fact that Abuja is experiencing yearly growth of at least 35% and retaining it place in African as the fasting urban developing center.

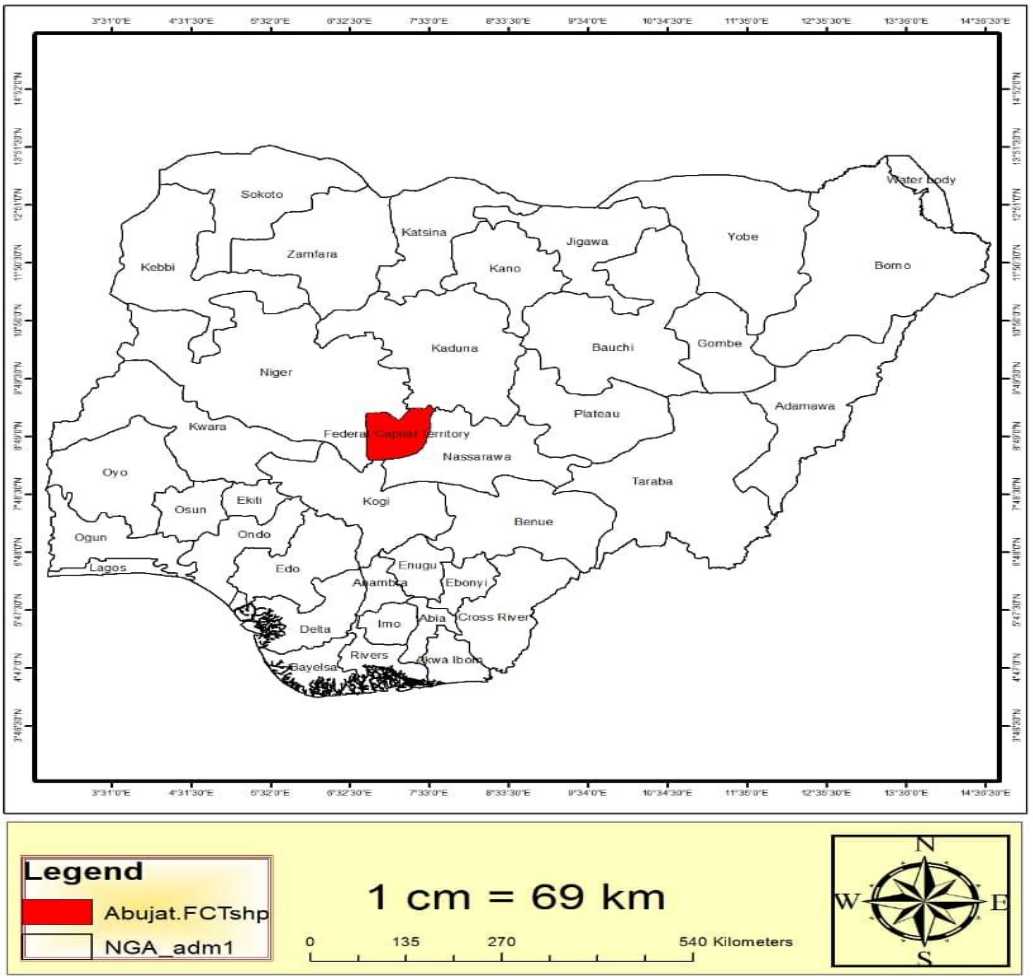

Figure1.1: Federal Capital Territory Abuja, Nigeria
Source: Department of Land and Survey, FCDA, Abuja 2016

The native populaces of Abuja are Gbagyi the dominant tribe, Gwandara, Bassa, Yoruba, Gade, Igbira, Igbo, Hausa among others. The centre and the location of the nation capital was ultimately designated in the early 1970s as its implied impartiality and nationwide accord. Additional stimulus for the city of Abuja emanated due to the fact Lagos' populace affluent that made that city congested and environments dirty for Lagos already was experiencing rapid economic growth. The federal government of Nigeria had concerned for expansion of

the economy hub around the central fragment of the country and hence concluded the movement to Abuja as the capital of the nation in 1976 by General Murtala Mohammed.

In late 1970s, the edifice at Abuja capital was initiated but because of the unsteadiness of democratic government, the construction of the early phases of metropolitan areas were not completed till ending of 1980s and the idea for the structure of Abuja was like the manner in which Brazil planned its capital, Brasília, (FCDA, 2013).

1.8.1 The creation of the Bwari Area Council

The Council came into existence in the year 1996 1st October on the formation of additional local and states Governments by Late Gen. Sani Abacha. It was created alongside Kwali Area Council, which brought to six the number of Area Councils in the Federal Capital Territory (FCT). The council has 10 Wards and 14 Districts.

1.8.2 Location of Bwari Area Council.

Bwari area council is situated in the north-eastern part of Abuja (Figure 1.2). It is about 15 kilometers north of Abuja city and 25 kilometers north-east of Suleja, in Niger state. It's geographical coordinates are latitudes 8^{o} 6’ 29’’N and 9^{o} 09’ 47’’N and longitudes 6^{o} 44’ 47’’E and 7^{o} 20’ 87’’E. Geographically, the zone is encompass by double common districts: the Kau plain and Zuma Bwari Aso Hills in the upper-east (Baba et al., 2017).

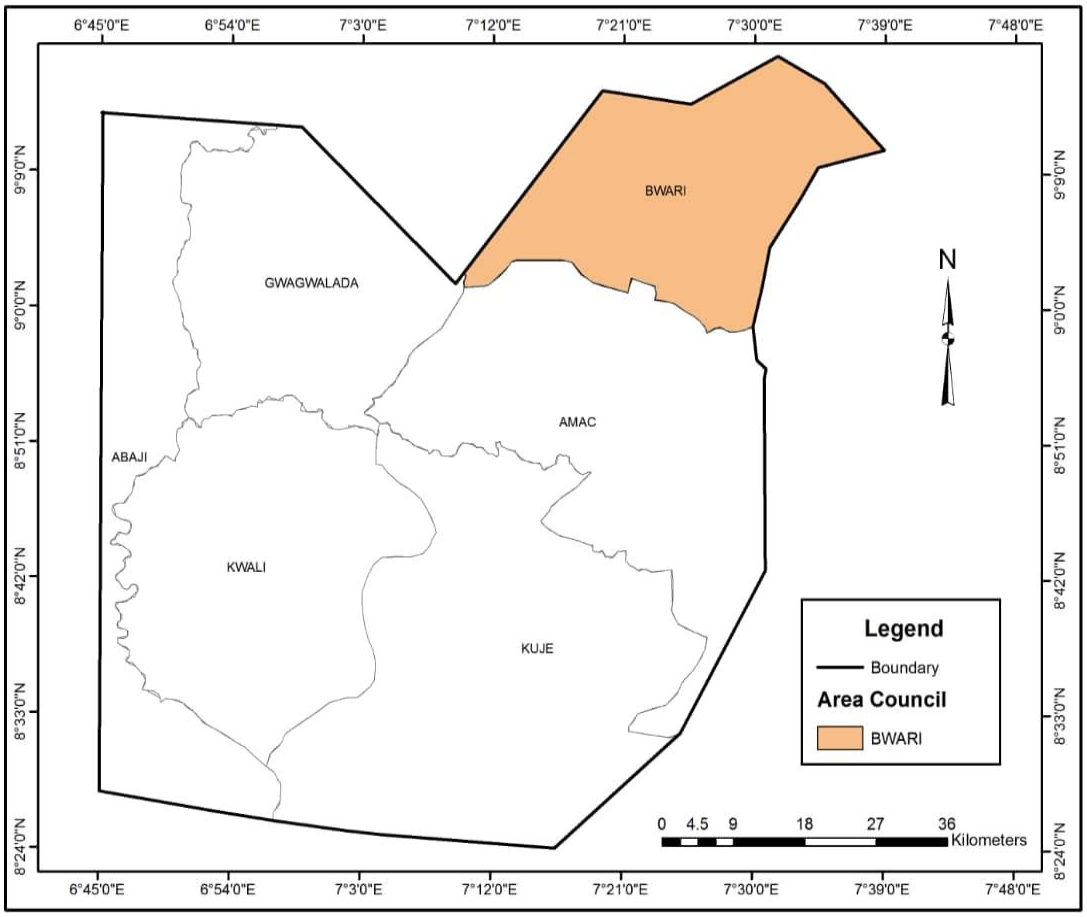

Figure 1.2: Bwari Area Council in FCT.
Source: Digitized from Google Earth, 2018.

1.8.3 Location of Kubwa

Kubwa is a residential settlement in Bwari area of federal capital territory and position amid latitudes 9° 17’37’’N and 7° 31’ 16’’ N and longitudes 9° 14’ 52’’ E and 7° 35’ 29’’ E. (Figure1.3). It is one of the major suburbs within the metropolitan area of Abuja situated along Murtala Mohammed express way.

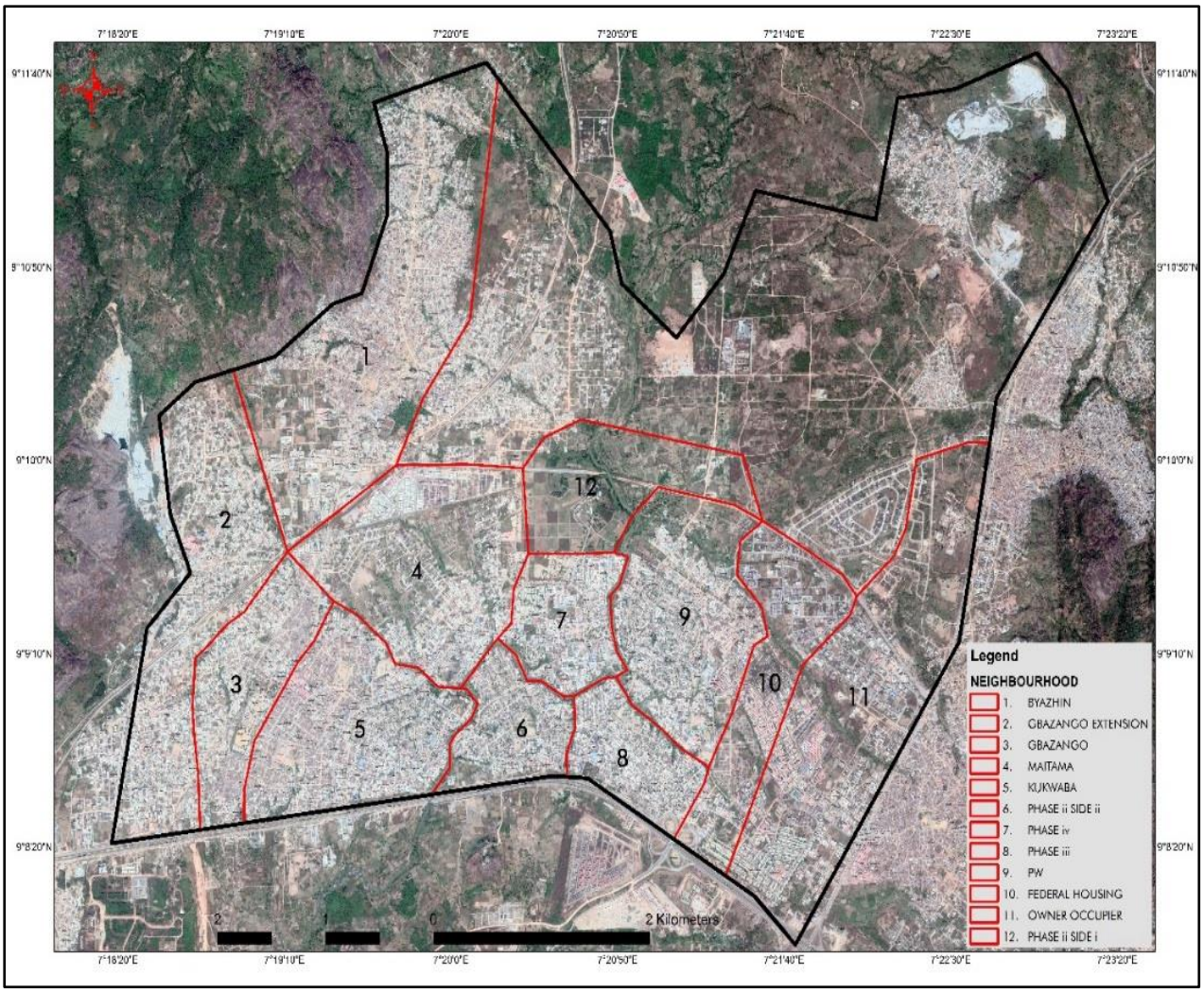

Figure1.3 Kubwa in Bwari Area Council, FCT.
Source: Digitized from Google Earth, 2018.

1.8.4 Climate

As indicated by Köppen climate cataloging, federal capital territory encounters two weather conditions every year and these include a warm, moist blustery period of year and a rankling dry period of year. Thus, the harmattan break exist at the center of the two seasons caused by north-east exchange breeze by means of principle peak of residue dust haze and dryness.

Temperatures during the daytime reach 26 °C (81.3 °F) to 29 °C (85.8 °F) while during the night period low between 21 °C (69.9 °F) to 22 °C (72.7 °F). Thus, during the summer

season, temperatures during the daytime can be as high as 39 °C (112.2 °F) while temperature during the night period can be as low as 11 °C (54.4 °F). Rainfall of Abuja volumes 1,199 mm (46 in) including more than 100 mm (4 in) per month from April to October every year (FCDA, 2008).

1.8.5 Topography

Topography of Abuja consists of high ridges enclosing parcel valleys and narrow reelect plains extending north-west along the western edge of the region. The slopes of the hill are generally steep, with a range of gradient from 15% to greater 25%. In contrary to the steeping hill surrounding the selected site, the site itself located on Bada plain is moderately flat. The slope and terrain analysis for Kubwa town has indicated three types of gradient 0-2%. Slight constrained for construction due to poor drainage, minor works are required to make these areas suitable for construction. 1-4% moderately constrained for construction required. Protection against rainwater, ran off and erosion as well as cut and fill works. Most of the selected site has slopes of less than 6% gradient which are suitable for any kind of land use and construction (FCDA, 2008).

1.8.6 Vegetation

The Abuja territory is between the Savannah zone vegetation of the West African sub-area. Patches of rainforest, thus, happen specifically towards the south of Gwagwa plains and the rocky south-eastern parts of the territory. The first vegetation kinds of Abuja are gathered into three-fold;

i. Park or Grassy Savannah: The zone covers around $(4,229)^2$ km, or 52,7 percent of the entire savannah region of Abuja. Vegetation happens yearly and tree species discovered includes: Albizia, Zygia, Butyranspernum paradioxum, Anniollia, Oliveria and Parkie Clappertoniena.

ii. The Woodland Savannah: This zone covers 11.8 percent or approximately $(1,026)^2$ km of the entire savannah region of Abuja. Ordinarily it occurred on the plains of Rubochi and Gurara and also neighboring slopes. The species includes, Isobelinia duka, ldalzelli, Monnotes kerstingi and Uapaeca togonsis. Open canopy is dominated by grass, shrubs (e.g., Gardernia spp. and Protes elliotti) and woody climbers (e.g. Opielia celtiedifolia and Uvariia chamiae).

iii. The Shrub Savannah: This category of greenery occurs widely in coarse territory near slopes and edges in all parts of Abuja. The land area covered in this region is about 12.8 percent or approximately (1,029)2 km. The basic types of tree species include: antiearis africana, anthiocliesta nobials, ceiba pentandra, cola gigantean, Chorophora (iroko), khiaya grandiafolia (Mahogany) terminalia sublime (afara), triplochiton sclereoxylon and dracamcna arburea.

1.8.7 Demography

The population of Bwari Area Council is 229,274 according to National Population Commsion, 2006). At present, population of Bwari Area Council was projected to 2018 where the population now stood at 334,733. The city of Abuja was planned to accommodate all cultural, religious and tribes that would co-exist in accord. The native peoples of Bwari Area Council are Gbagyi as the dominant ethnic group, Bassa, Gwandara, Gade, Igbira, Koro, Yoruba, Igbo, Hausa among others (FCDA, 2008).

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Housing concept

Housing is viewed as a method for providing a secure, comfortable, attractive, purposeful, affordable and recognizable living quarters in suitable location within a neighbourhood, strengthened by continuous support of the built environment for the day-to-day living activities of individuals/families within the community while reflecting their socio-economic, cultural aspirations and preferences (National Housing Policy, 2012). Housing is seen as a bundle of services or a crate of products which incorporates the physical structure itself, the auxiliary facilities and services inside and around it, just as the general environmental qualities and amenities that encompass the structure (Jinadu, 2007).

Generally, housing is viewed as an essential need that support human existence as well as key for economic asset in every country. Satisfactory housing offers base support in every viable urban areas and societal insertion (Oladapo, 2006). Additionally, Osuide (2004) demonstrated the eminence of a safe apartment to be accommodated remains one of the central rudiments of human self-esteem and this stimulate economic capacity of man.

UN-Habitat (2012) stated that housing is a fundamental element of a set of social conditions that govern the value of life and safety of municipal inhabitants. Hence adequate housing is vital constituent of nationwide production and contributes to gross domestic product and socio-economic growth of every country (Afrane *et al.,* 2014) and show a tremendous part in stimulating economic growth in any nation, with shelter being among the key pillars of urban development (Njiru and Moronge, 2013).

Yormesor (2007) stipulated that quality of housing conditions assume a decisive catalyst in the well-being status of urban residents. However, decency, adequacy and affordability of housing have become a crucial source of worry for most developing nations. Deplorable housing environment has become an important public health risk in developing nations, (Firdaus and Ahmad, 2013). Many of the health challenges are either straightforwardly or in a roundabout way identified with the structure itself due to the development materials that are utilized and the equipment introduced, or the size or plan of the individual homes or identified with the environmental components (Bonnefoy, 2007).

World Health Organization (1961) expressed that a residential apartment ought to have legitimate housetop to keep out the downpour, great dividers and ways to ensure against awful climate and to keep out creatures, sunshades all around the house to shield it from direct daylight in sweltering climate while wire nettings at windows and ways to keep out insect like house flies and mosquitoes.

2.2 Housing Quality

According to Okewole and Aribigbola (2006) demonstrated that the concepts of housing quality is encircled with many features that embodied the physical appearance of the dwelling structure couple with necessary infrastructure that enhance a healthy living in a pleasantry urban environment. Thus, dwelling units' quality in every and within neighbourhoods should placates least health guidelines, conducive living standard and should be within the means to all class of households.

The UN–Habitat (2006) demonstrated that housing quality is not just a rooftop over man's head but embodied with accessibility to residential area, satisfactory confidentiality; tolerable

space within and around the building, connectivity to essential facilities and services such as water, waste management and sanitary items, electricity, aesthetically pleasant couple with environmental friendlily related components and sufficient and accessible zone as to the place of work. These should be available within the range of each density groups for it requires comfortability, convenience and aesthetics of the overall housing environment.

However, the extents of housing quality multifaceted idea with more extensive societal and economic significance. It represents equally quantitative and subjective elements of private dwelling structures, the closest environments and the requirements of the inhabitants. Additionally, the idea of the quality of dwelling structure and the environment is absolute as it identifies with neighborhood gauges and conditions. What is viewed as functional quality in one setting might be viewed as low quality in another unique circumstance and the other way around (Emankhu *et al.*, 2015).

Ibimilua and Ibitoye (2015), contends that housing quality can be decided from the physical appearance of the structures, facilities provided, quality of wall utilized in the structure development, greatness of the roofing materials, state of other auxiliary parts of the house and environmental state of the structure. Consequently, the deficiency of housing regarding quality and quantity brings about poor standard of the environment.

2.3 The Housing Situation in Africa

Uganda is one of the developing nations situated in East Africa with a moderate tropical atmosphere (Byakola, 2015) Thus, because of high increment of housing for low pay group between 38% of the number of inhabitants in Uganda live underneath the worldwide poverty

line (Malik, 2014; Economic Policy Research Center, 2013) and over 60% (UN-Habitat, 2007). The huge extent of the urban poor of Uganda live in slums urban regions with deteriorating housing condition and unsanitary conditions. Access to electricity as a source of power in Uganda is constrained particularly in the remote settlements. In 2011, for example, not as much of 15% (5.3% in rural areas and 55.4% in municipal regions) of the households had access to power supply (Uganda Bureau of Statistics, 2012).

In Uganda, the woeful pace of housing condition is worrisome because of the shortage of proper structure rules and absence of authorization of least housing gauges by the concerned specialists (National Planning Authority, 2010). The most accessible structure materials are mud and shafts in Uganda. In 2010, more noteworthy than 39% of the residential dwellings were produced using shafts and mud in Uganda. Uganda Bureau of Statistics (2009) uncovered that, the provincial regions represent 46% contrasted with 12% in urban territories. Mud and shafts development comprise of wooden structure (posts) and the space/hole between the posts is loaded up with mud. Mud and posts are very economical thereby making it reasonable for minimal effort housing. Basically, the durability of the structure is not strong as it requires continuous maintenance and the structure can easily crack due to shrinking/swelling of the wood (Minke, 2001).

In Uganda, Brick walling is the most widely recognized development type. Consumed block has been taken strong material; be that as it may, it is naturally unsafe because of its low quality, inefficient development strategies and the utilization of nearby wood in block furnaces which add to deforestation and air contamination (Perez, 2009). Blocks (either consumed or adobe/sun-dried blocks) are accessible in provincial and urban territories of

Uganda. Around 60% of all houses in Uganda have brick walls (Uganda Bureau of Statistics, 2009).

2.4 The Housing Situation in Nigeria

Housing supply is inadequate associated with inadequate building materials and cost of structure development surpass limit of the scope of family of low-pay class in Nigeria (Anofojie *et al.,* 2014). The nation had seen explosion of urban development which escalation of housing supply has not adequately served, compared with the overflowing populace of the urban occupants. Adejumo (2008) built up that housing needs in Nigeria has expanded because of populace extension with a normal of 3.0 percent every year, urban development because of a move from rural to urban territories, increment in housing materials, ineffective structure approaches, among others. Consequently, Peterside (2003) stipulated that National Housing Policy of Nigeria's drive towards "housing for all" with the intension of making housing accessible within the economy capacity of each Nigerian has been captured on written document with no mindful endeavors, conscious or in any case and the execution on a fantasy and dissatisfaction for residents of the nation. Additionally, proceeded that past organization of the administrations put forth a vehement attempt towards meeting each set objective have not yield result as housing shortfall despite everything remained at more than 16 million units.

Oladapo (2006) expressed that highlights of housing circumstance in Nigeria is portrayed by certain inadequacies that includes subjective and quantitative in nature. Quantitative structure challenge might be shortened with an expanding of the figure of existing housing stocks while the subjective shortages are monstrous and multifaceted. In this manner, the declining nature of the facilities and services, absence of formal title to land and despicable housing

condition by and large are the regular highlights of the urban zones in developing countries. Furthermore, social and economic capacity difference midst of the urban poor and the monetarily happier classes are reflected in the constrained open doors for lion's share of urban poor classes get housing through casual methods. The limitation has prompts sporadic and keep separated dispersal of housing quality and space across financial gathering (Meng *et al.,* 2006).

UN-Habitat (2003) argued that slum formation at the periphery areas of all Nigerian urban centres had seen the unfriendly impacts of shortage in housing supply. These territories are normally suited by just shown up by just arrived from provincial areas and other urban poor. Population increment, terrible housing condition, deficient facilities and services, indiscriminate refuse disposal and absence of availability jobs, education and health care has contributed to embedding a complex poverty cycle that places great pressures on the health, livelihoods and general welfare for the slum dwellers (Andersen, 2003). Residential dwellings in core areas of urban centres had been described by rare of social and physical framework, poor ventilation, poor drainage framework. In addition, different imperatives which are normal to urban housing are absence of proper planning, development of unsatisfactory structure in the urban region and presence of deteriorated houses.

Apparently, Nigeria is confronted with various housing hitches, for example, urban poor, discrimination against the use of local building materials, ineffective housing finance, lacking financial instrument for organization of assets, increment in cost of building materials, deficiency of social and physical framework and laydown methodology for acquisition of land, laydown techniques for certificate of occupancy (C of O), as well as structure plan

endorsement. More so, housing improvement is associated with other problems as; absence or improper building maintenance, absence of proper planning, unproductive government programmes and policies, absence of adherence to building laws and guidelines (Ibimilua and Ibimilua, 2011).

2.5 Housing and Environmental Quality Assessment Parameters in developed world.

The written document has a similar view with the scholars on several housing and environmental quality indicators in various nations and backgrounds. Thus, in United State of America, there exist several indicators used for housing quality assessment such as accessibility to site, structural stability, adequate sanitary services and space for the readiness of nourishment, indiscriminate waste disposal, security, water source and energy supply. Others are condition of fixes of building structure, materials used in housing development, internal air distinction, water source, nature of paint push off and neighbourhood accompanied with fire prevention and protection facilities (USDHUD, 2011).

2.6 Housing and Environmental Quality Assessment Parameters/indicators in Africa.

With cumulative efforts to visualize a strategy for appraisal of housing and environmental elements, Hassanain *et al.* (2011) recognized that, appraisal of quality of housing and environmental components are drawn from two core apparatuses of parameters: outdoors component and inside component. However, open-air assessment of the quality of housing parameters are used for appraise spatial formation, landscape, parking facilities, neigbourhood park, children playground, sustenance amenities and security while inside

component housing quality parameters center around housing unit format, visual solace, warm solace, quality of interior air and furniture.

Kurian and Thampuran (2011) examined the fundamental housing quality parameters include: closeness to amenities and services of the neighbourhood that involves markets areas, banks, schools, worship centres, health centres; infrastructure (for example drainage, water, waste removal, sewage facilities and others); design (e.g. Lighting in the insides and other approach considerations such as adequacy of distinct rooms for living and dining, reading arena for kids, casual eating space in kitchen, provision to construct more room, garage as well more space for visitors car park); aesthetics (e.g. pleasant outdoor quality, location of structures, definite building wall); materials and construction (e.g. use of indigenous construction of housing materials and methods, preserved wood and mechanical steadiness of housing structures) and lastly sustainability, the spread-out condition worries of environmental change in india.

Statistics New Zealand (2015) pointed out the key parameters used to evaluate quality of housing condition as: prosperity of neighborhood (for example road illumination, paths and streets, community amenities and misconduct); environmental manageability (for example insulation, efficient warmth sources and grey water frameworks); outdoor edifice (e.g. structural integrity, safety of doors and windows, integrity of residential structure components such as walls, doors, windows and insulation from warmth and commotion); interior structure (e.g. dwelling having basic and functional facilities and services such as water supply, sewage removal, power supply and adequacy of other inner segments of the

dwelling unit); and lastly internal environment (e.g. enough lighting; secure floor surfaces; inside air quality; dampness level).

2.7 Housing and Environmental Quality Assessment Parameters/indicators in Nigeria

A research conducted in Nigeria by Bankole and Oke (2016) stipulated that various economic indicators (for example sum spent on rent), physical parameters (for example auxiliary constancy of the structure and accessibility of channels and waste evacuation equipment) and social indicators (for example urban dwellers healthiness) have been utilized in housing quality evaluation. Morenikeji *et al.* (2017) delineated main indicators used to appraise housing quality in Nigeria accordingly; source of energy, water closet toilet, water source, roofing types, wall materials, flooring materials, types of dwelling unit and methods of waste disposal.

Writing concentrated here has given a premise to assessing housing quality. The set principles for assessment parameters are drawn from housing units and neighbourhood environment Thus, due to variances of weather, socio-economic and cultural dimensions, the identified set of standards may not be applicable to all parts across continents. However, some might be reviewed in accordance with the peculiarities of local settings. This view is trustworthy with research investigated by Morenikeji *et al.* (2017) which uncovered that dependent on the socio-cultural circumstances of Nigeria, a portion of the parameters utilized in assessing the quality of housing in this country are unique in relation to those utilized in different regions. In view of this ground some particular housing and environmental quality

parameters were chosen dependent on UN-Habitat (2009) housing indicators to include; durable structures, overcrowding, secure tenure, housing finance**,** land price to income, access to safe water, access to improved sanitation and connection to services. All of these should be available at an affordable cost and should be determined together with the people concerned. Quality housing is essential and basic to physical planning. These, not only ensure the safety and wellbeing of people but also promote beauty, convenience and aesthetics of the overall environment.

2.8 Urbanization and Housing Quality

Due to high rate of urbanization couple with absence of white-collar jobs opportunities in rural communities, majority of the rural dwellers relocated to urban areas that are already stocked with challenges like overpopulation, over utilization of the existing facilities and services as well expensive life style in the city. This has compelled them to live in slum areas and periphery of the urban centres. UN-Habitat (2006) stated that about 90% of slum dwellers are developing nations with stressed financial prudence. Additionally, urban areas that were initially plan to accommodate a precise number of people but not to harbour population of millions. The implication is that descent houses will not be available and affordable for the teeming population there by forcing millions of people to live in low-quality housing structure associated with poor and unkept environment (Amao, 2012b). Thus, the substandard housing in the slum areas are very cheap. Low quality structure is a classification of structure which don't satisfy the standards for living by people. These models are typically terneplate design by governments to guide how secure the structure is for individuals to live (Emankhu *et al.,* 2015).

Ibimilua and Ibimilua (2011) confirmed that poor housing environment in Nigeria is due to high urbanization couple with social expectations of the urban dwellers. He further outlined the challenges associated with urbanization includes unplanned development, poor maintenance of existing dwelling units, insufficient qualitative housing structure, aging of the dwelling units, menace of indiscriminate waste disposal, high crime rate and health challenged. Also, dwelling units in the urban core centres are characterised by insufficient infrastructural facilities, poor ventilation and non-accessibility of inbuilt kitchen. Additional issues that are related with urban housing are development of shanty towns, absence of effective planning and availability of dilapidated houses.

2.8.1 Effects of urbanization on housing quality

The influx of people to urban area is linked to rural-urban shift has paved way for demand of urban housing structures which has prompts ascend in the average cost for basic items in light of the fact that the commodities are getting lesser in stock repeatedly. However, there is a deficiency and significant expense of developed land and substantial cost of descent dwelling structures which are always hard to find and out of the economy capacity that limit the obtaining influence of the low-income class of the urban dwellers. Most of the urban poor lives in the slum area of the city. This is primarily in light of the fact that low quality housing is not costly and neighbourhoods are in nearness to their work places (Amao, 2012).

2.9 Basic infrastructural Provision in Housing

In Nigerian, the condition of infrastructures is degenerating particularly for facilities and services that were procured and made available by government for public consumption in housing scheme. The affliction of such schemes has been that preparation and delivery of infrastructures is relegated to the contextual. Beneath the platform of dwelling guideline that

is not satisfactory; infrastructures couple with other issues are bound to suffer (Morakinyo *et al.*, 2014).

Thus, due to physical growth of the study area, this study considers infrastructure that are important to enhance housing environment development in the neighbourhoods of Kubwa and Bwari Area Council in general. Additionally, it was observed that a wide scope of economic and social facilities are essential to formation of a pleasant surroundings for economic development and improves personal satisfaction which includes availability of electricity, pipe borne water, drainage, waste removal, sewage, security, education, media communications and institutional structures like police outpost, firefighting stations, banks and mail station; it is fundamentally the mechanical assembly required to drive the city (Morakinyo *et al.*, 2014).

2.10 Review of Related Research

Relatively a number of researches has been carried out in Nigeria on housing condition and quality with only few undertaken at the national scale. Amao (2012) examines housing quality in Nigeria cities and the impacts of urbanization on environmental degeneration of urban built setting. The researcher revealed the salient issues that has supported deplorable housing environment as: insufficient elementary infrastructural amenities, substandard accommodation, high population, poor ventilation at place of residence and places of work as well as resistance with building bye-laws and guidelines. To address the challenges raised above, the researcher utilized auxiliary information and the study discovered that the substandard dwelling structure has negative effects on environment and physical health on municipal inhabitants. The study resolved that it is necessary to develop, checked and

maintain a strategic to avoid further decay of housing environment for conducive living of the urban inhabitants and sustainable urban growth.

Owoeye and Ogundiran (2015) viewed housing and environmental quality of Moniya community in Ibadan, Nigeria. The researcher employed primary and secondary sources of data and the questionnaires administered through systematic random sampling technique. The outcome revealed that quality of housing in the investigation region is low because of underprovided basic services, poverty and social exclusion, used of substandard building materials, inadequate building technology, substandard housing and derelict structures and poor planning standard in handling the building components and the condition of infrastructural facilities has dilapidated.

2.11 Theories of Spatial Frameworks and Housing Development

There are a number of theories of spatial frameworks that are relevant to understanding of diverse nature of residence and their occupants in cities. Burgess classical models (1925), Hoyt (1939) and Harris and Ullman (1945), in spite of criticisms levied against them still provide, to a certain extent, a framework for differentiating the residential areas of the city as well as general land use. However, Schoner's (1963) evolutionary model of urban residential patterns and Johnson's (1970) attempt towards a more general model are more relevant to this study. According to Schoner (1963) environment, technology and population affect the internal arrangement of cities by their joint effect upon their organization and that with the onset of modernization, an urban area's residential pattern changes (Aderamo and Ayobolu, 2010).

2.11.1 Housing adjustment theory

The theory seeks to clarify standard of conduct path by which households pursue to sustain equilibrium, the issues responsible for disequilibrium and impacts in a condition of disequilibrium. Thus, equilibrium indicates to a circumstance where by household's dwelling structure is in concordance with the norms of both society and the household itself and fits the necessities of the household. Building customs involves adequate space, security tenure and dwelling type and quality, housing finance and neighbourhood. The moment single or a greater amount of these norms is not met by the family's current dwelling structure, the household encounters accommodation deficit. A shortfall in this context refers to "condition or set of conditions that is emotionally portrayed as undesirable interestingly with a norm" (Morris and Winter, 1996).

Generally, a typical space norm is the hope that housing will have sufficient rooms that contrary sexual orientation children will not need to partition residential apartment once they arrive at a specific age. In any case, if building structure lacked elementary features for this norm to be sustained, the family will witness a housing shortage. Setbacks in accommodation lead to sentiments of disappointment with one's current housing situation just as severely dissatisfaction may make the household part in change conduct as modification, adjustment or rejuvenation. More so, household's preferred change conduct is based on overwhelming any restraints that force the household's capacity to remedy the context. A household may encounter restriction in one or more of the following areas: assets, inclinations, segregation, market, or household association. Additionally, shortage in an area for example as the room above might be balance by a positive deficiency in somewhere else, for instance absolutely incredible courtyard. The theory of housing adjustment has been well-validated through research carry out over two decades ago. Apparently, significance critics to bear in mind

when deliberating the utilization of hypothesis is the menace of reducing the expansion of any field of investigation by keeping to one principal theory. As Pedersen (2007) has concisely specified, "theory is everywhere," yet only one out of every odd hypothesis utilized will be as dominating or very much approved as Morris and Winter's hypothesis of housing adjustment.

2.11.2 John Turner (1976) participatory housing theories

In 1976, John Turner promulgated three theories of housing that partake in several building developments and researches round the globe particularly in emerging nations. The conceived theories fundamentally on matters associated with top-down rank values as well as approaches of delivery of building for the urban poor. The three theories necessitate the matters that concerned the individuals from the initial dwelling in the structure and procedure of their building and organisation of the resultant environment. The theories centred on the need the people may require vis-à-vis the growth principles mandate. Foremost theory by Turner fight for the people's participation and their liberation all through the building erection and management paths. Thus, the consequences of individual's involvements are usually in formalisation in their neighbourhoods trying to ensure that the people are more responsive to their needs. However, evaluations of this theory such as Hamdi (1991) underscore the role of the government in building construction network and the people's needs cannot be unnoticed.

Though, equilibrium amid urban dwellers choices and the government's influence is very significant. However, the second Tuner Housing theory insisted on person's gain of properties belonging to them conditional on the usage and shape them while the third theory advocates parts of concerted forecasting wherever urban dwellers' ethics are fused into

prescribed development procedures and space standards. More so, dwellers may have a feeling of concern and possession of the resultant built environment, whether good or bad. In line with Turner's theories, this study relates very strongly with the views and recommendations of these scholars and in particular the study will examine housing and environmental quality within Kubwa in Bwari Area Council of Abuja, Nigeria and such a study will assist in making recommendations for the upgrading of housing environment of neighobourhoods of the city in particular and Nigeria at large.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

This is the account of the procedures that were utilized during this research. The chapter describes the research design, techniques for information assortment and investigation. It likewise clarifies the sources and the information required for the study.

3.1 Research Design

Research design is the specification of methods and procedures for acquiring the information needed for solving the problem. The study procedure will start with preconceived knowledge which the research has preceding the genuine direct of the phenomenon under investigation. Both subjective and quantitative information were utilized to help produce one of a kind understanding into a multifaceted societal phenomenon. This is on the grounds that the subjective enquiries assisted with investigating the assorted varieties in a circumstance while extent was resolved through the quantitative methods towards confirmation of theory and relationship among the factors for drawing of derivations as showed in Figure 3.1.

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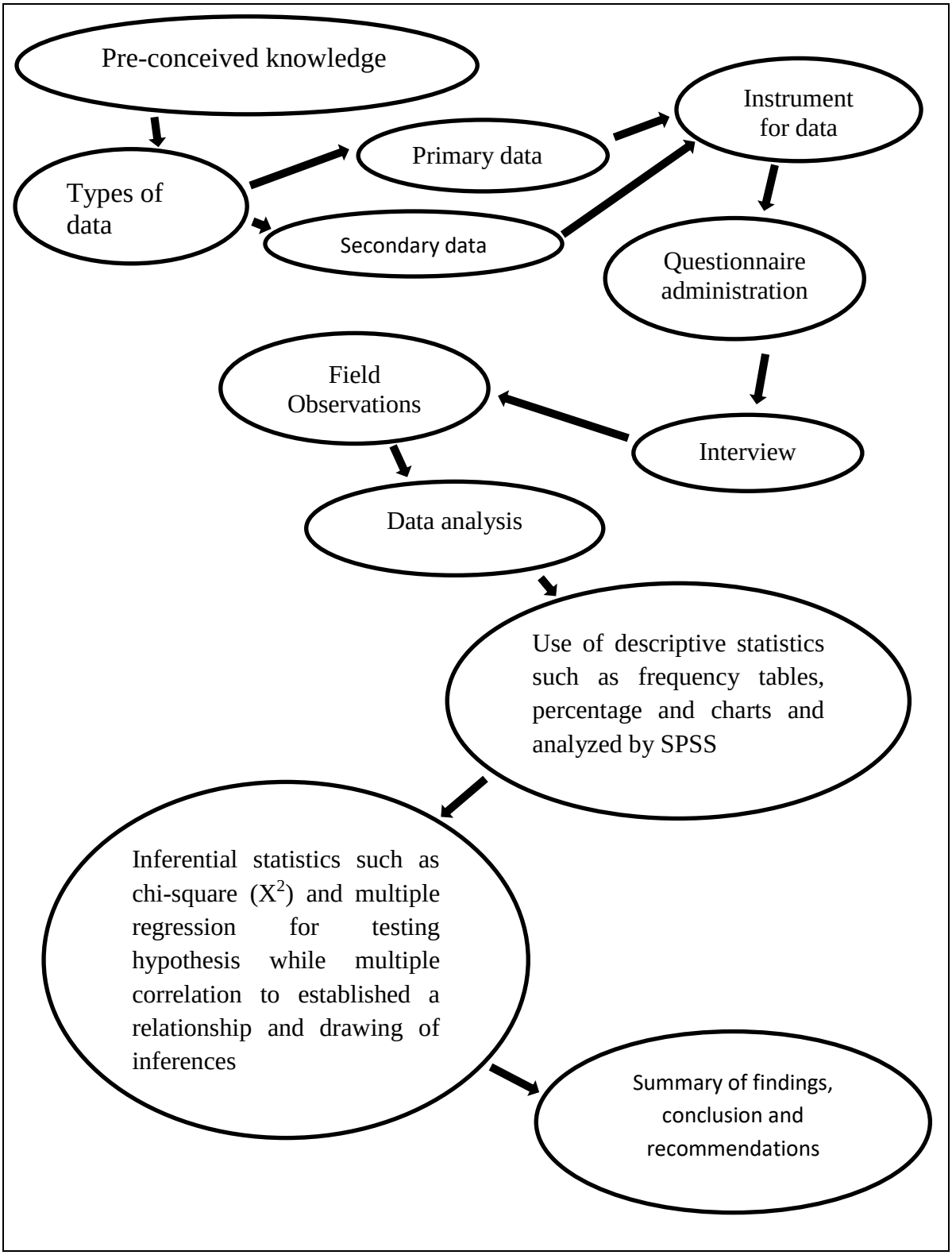

Figure 3.1: Research design flow chart

Source: Author's, 2019

3.2 The Population of the Study

The population of Kubwa community is 12,183 (National Population Council 2006). The population was projected to 2018 using a linear projection model and the current estimated population figure of the study area is 18,409

3.3 Sample Size

In choosing the sampling size and secure representative's responses, the size of the sample was based on statistical estimation theory considering degree of confidence that is expected on the research of this nature. Sample size for this study was determined using (Taro Yamane 1967) formula to determine the sample size as shown:

$n= N / (1+N (e)^2)$

Where:

n = Signifies the sample size

N = Signifies the population under study

e = Signifies the margin error (0.05)

The formula applied and sample size for the study determined as follows;

$n= 18409 / (1+18409(0.05)^2)$

$n= 18409 / (1+18409(0.0025)$

$n= 1840 / (1+46)$

$n= 18409 / 47$

$n= 392$

Therefore, a total of 392 copies of questionnaire were administered to respondents in the study area.

3.4 Sampling Technique

Systematic sampling is a probability sampling method where the elements are chosen from a target population by selecting a random starting point and selecting other members after a fixed 'sampling interval'. Systematic sampling technique was employed and the purpose is the convenience and accessibility within the study area to the researcher. The number of population of households in the area was determined by dividing the total population by 6.0 (national population average house hold size). Therefore, 18409/6 = 3098 households. Thus, the sample interval was determined using the formula:

Total household population / sample size = 3098 / 392 = 8 sample interval

A starting point was determined randomly. Thereafter, specific residential units for collection of data from residents based on predetermined order and every (8^{th}) houses were selected until the desire samples were selected.

3.5 Sources of Data

Both primary and secondary sources of data were utilized in carrying out the research. Below are discussions of the two main sources of data.

3.5.1 Primary sources of data

The primary data are the first-hand information that were collected. It was done using two method- formal method and informal method. The formal method was done through

administration of questionnaire and the informal method includes participant observation/direct observation, interview and discussions. Also, primary data constitute major information required for the empirical analysis of the study. These includes socio-economic characteristics of the residents such as gender, occupation, income, education among others, infrastructural facilities and services.

3.5.2 Secondary sources of data

Secondary data are information that were collected to complement primary information. The secondary sources of data collection include textbooks, lecture notes, journals and data from government agencies. Published data is the most basic secondary source of information for data collection. Published data were obtained from various sources like books, magazines, journals. Government records are available in the form of government surveys, census data, and other statistical reports. They are easily available and widely used in this research. Data extracted from these sources were used to form the major part of introduction, review of literature and the study areas respectively.

Population of the study area, sourced from National Population Commission and map collection of the study area, source from Federal Capital Development Authority and google earth.

3.5.3 Method of data collection

The following are the instruments that were utilized for information gathering in this study which includes;

i. Questionnaires: Designed questionnaires were utilized for information gathering and administered to compliment information obtained from other sources. The questionnaire was broadly alienated into three segments and each segment contained information as socio-economic, condition of houses, facilities and services. The first section of the survey guide seeks acquisition of information from respondents that involves question on gender, household size, educational level and income status. Thus, the second section question on condition of dwelling structure with intention of identifying the type and conditions of material utilized for residential apartment and the last segment of the survey guide question on condition and adequacy of road network, drainage pattern, power supply and water supply.

ii. Interview: The researcher adopted interview as another means of sourcing for relevant information as questions were directed to respondents in the study area in order to compliment other sources of information and responses noted.

iii. Field observation: The researcher also adopted field observations as a research source because it is one of the most reliable methods of gathering information for research. All observations were carefully and thoroughly executed. The use of field observations enables the researcher to gather additional information to compliment the data that were gotten from interview.

3.6 Methods of Data Analysis

Data for this study were analysed through the use descriptive analysis includes the use of frequency and percentage tables, pie charts and bar charts, among others. All these were used to analysed socio-economic characteristics of the respondents such as gender, literacy level, income distribution among others. Also, inferential analysis adopted include chi-square (X^2)

and multiple regression for testing and analyzing the hypothesis and multiple correlation was also used to established a relationship among housing and environmental quality, income and educational status of the residents. The Statistical Package for Social Sciences (SPSS) method was adopted for the processing of data, in which the data were coded into the machine. However, the respondents were directed to rank the condition of the building and infrastructure from selected parameters or variables. Likert scale rating technique was utilized to examine information on the building components and infrastructure. The scale utilized the following attributes: very bad, bad, fair, good and very good. Each attribute was coded very bad=1, bad=2, fair=3, good=4 and very good=5. The Likert Scale was utilized to analysed their responses. Each coded characteristic was multiplied by number of respondents, which give the Weighted Value (WV). The Summation of Weighted Values (ΣWV) was divided by number of respondents (n) to arrive at each component Mean Weighted Value (MWV). The mean of Mean Weighted Value (MWV) was gotten by dividing Summation of Weighted Value (ΣWV) by all out number of infrastructure or building components (y) survey so as to determine the Housing and Environmental Quality Index (HQI), that is, overall condition. Consequently, MWV=∑MV/n, where n=population of respondents. HQI=MWV=∑MWV/y, y=total number of variables.

3.7 Summary of Methodology

The summary of the research methodology is presented in Table 3.1

Table 3.1 Summary of research objectives, data requirement and data sources

S/N	Objectives	Variables	Sources	Methodology
1	Assess socio-economic characteristics of the residents in the study area	Gender, occupation, literacy level, income and household size	Questionnaires	Questionnaire was used to collect information for this objective which was analyzed and presented using charts and tables
2	Evaluate housing and environmental quality of the study area	Access types to houses, water supply source, Power supply source, Waste disposal, types of drainage, housing type, wall material among others	Questionnaires, observations, interaction, and documented records	Questionnaire, personal observations, and interview was used to acquire information; table and charts was used to present the information
3	Examine spatial distribution of housing and environmental quality in the study area	Building elements and infrastructure condition and satellite imagery of kubwa	Questionnaires, observations, interaction, handheld GPS and satellite	Likert scale and rating method was used to assess the building elements and infrastructure to derived

			imagery (Google Earth)		housing and environmental quality index of the neighbourhoods
4	Examine the relationship among housing and environmental quality, income and educational status of the people in the study area.	Accessibility, wall materials, drainage, waste disposal, sewage, income and educational status of the residents	Primary data		Inferential statistics such multiple correlation to established a relationship and drawing of inferences results.

Sources: Author's, 2019

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

This chapter presents the findings of the study which begins with description of the respondents' socio-economic characteristics, housing quality which includes housing types and age of the building, housing materials and condition, provision and quality of infrastructure, quality rating of housing and infrastructure and spatial variation in housing and environmental quality in the study area.

4.1 Socio-economic Characteristics of the Respondents

This subsection analyses socio-economic characteristics of the respondents in the study area these analyses include gender, occupation, literacy status, household size as well as income.

4.1.1 Gender and occupation of the respondents

Findings on gender revealed that 75.8% of the respondents were males and 24.2% of the respondents were females. It was also found that majority of houses were owned by males who were mostly civil servants and self-employed workers. Result of analysis of occupation shows that 38.0% of the respondents were civil servants, 34.9% of the respondents were self-employed, and 17.3% of the respondents were artisans while 4.3% of the respondents were farmers as shown in Table 4.1. This an indication that large population of the target respondents were civil servant and self-employed.

Table 4.1 Socio-economic Characteristics of the Respondents

Gender	Frequency	Percentage
Male	297	75.8
Female	95	24.2
Total	392	100

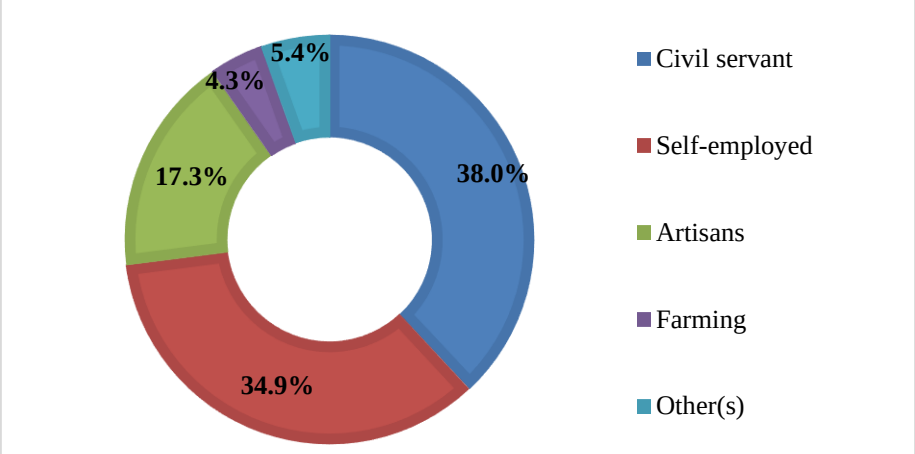

Figure 4.1 Occupational pattern of the residents
Source: Field survey, 2019

4.1.2 Level of education of the respondents

As presented in Figure 4.2, the result revealed that 3.3% of the respondents acquired level of education to postgraduate level, 15.8% of the respondents had first degree/higher national diploma, 47.7% of the respondents indicated that they had college of education/ national diploma certificate, 27.0% of the respondents acquired secondary school education while 6.1% of the respondents had elementary school or lower level of education. The results imply that majority of the respondents had higher education. The results further imply that all the respondents were literate.

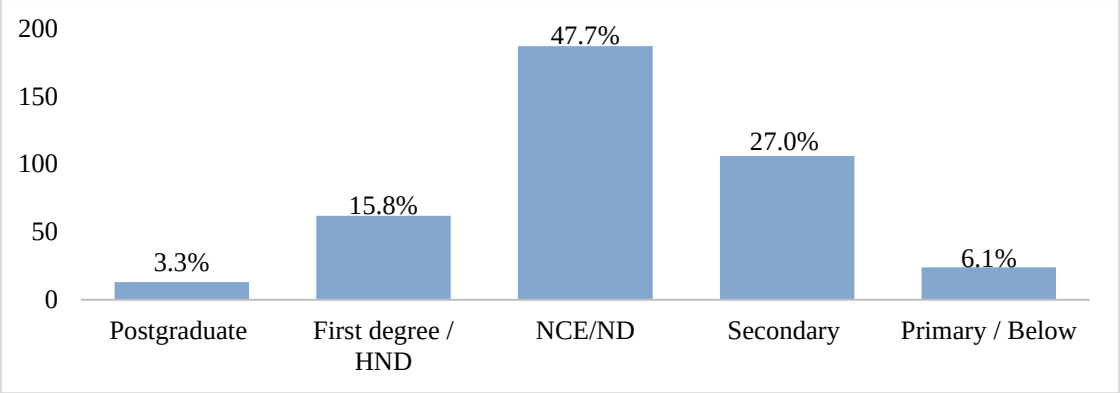

Figure 4.2: Literacy level of the Respondents
Source: Field survey, 2019

4.1.3 Monthly income

The result of the study revealed that 17.3% of the respondents earned monthly income less than ₦30,000 while 26.5% of the respondents earned monthly income between ₦31,000–₦60,000 and category of these respondents are classified as low-income earners. Also, findings revealed that 31.1% of the respondents earned monthly income between ₦61,000 - ₦120,000 while 13.5 of the respondents earned monthly between ₦121,0000 - ₦250,000 as income and these set of respondents are classified as medium-income earners. Finally, 11.5% of the respondents earned ₦251,000 and above monthly and they are classified as high-income earners as shown in Figure 4.3. The implication of the outcome of the result is that almost half of the respondents (44.6%) were in the medium group.

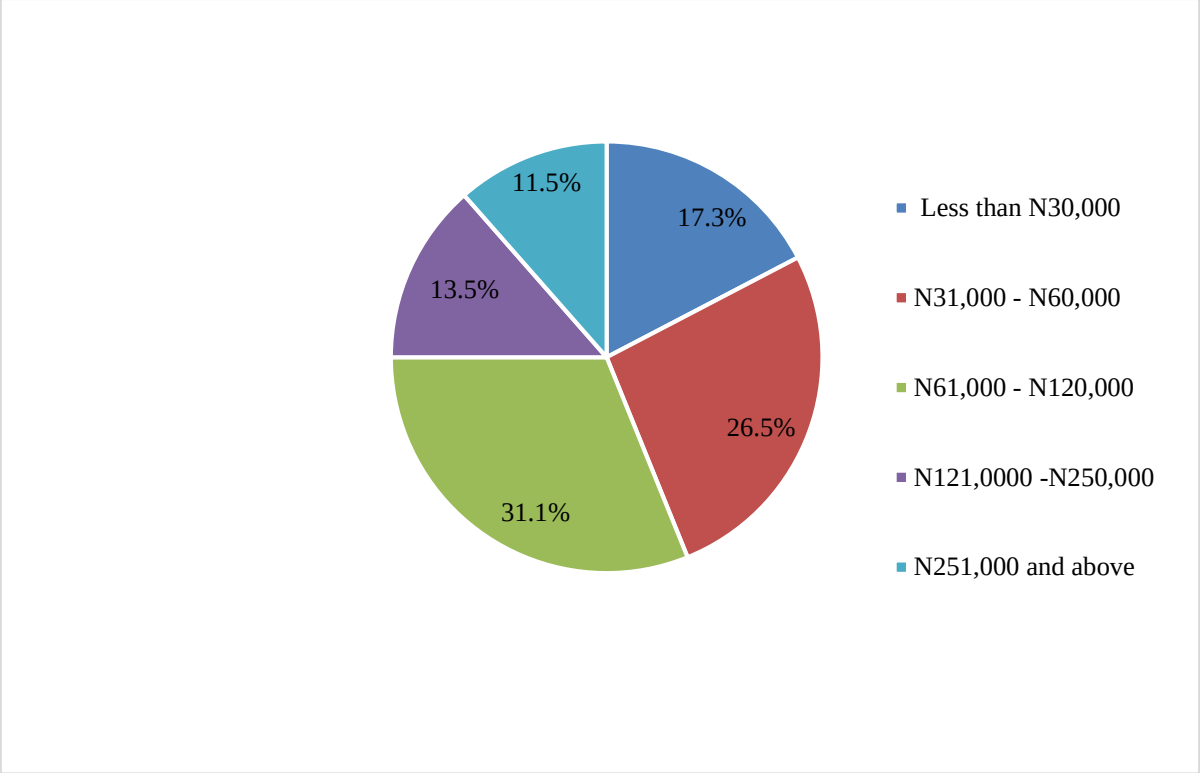

Figure 4.3: Monthly income
Source: Field survey, 2019

4.1.4 Household size

Findings on household sizes revealed that, 7-10 persons with 44.1%, household sizes of over 11 persons with 25.0%, 4-6 persons with 18.4% while the least is 1-3 persons with 12.5% as shown in Figure 4.4. The analysis revealed that there exist high household size and this kind of scenario causes general overcrowding of people and buildings resulting to poor environmental condition in the neighbourhoods of Kubwa. The implication of the outcome of findings is that the existence of high residential occupancy ratio result to overcrowding that subsequently leads to over utilization of facilities and rapid deterioration of the existing housing structure.

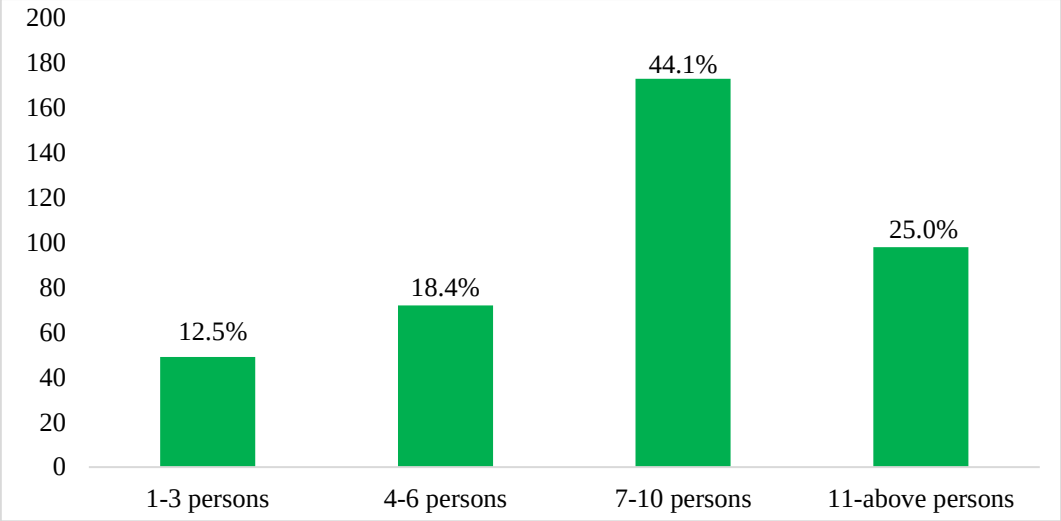

Figure 4.4: House hold size

Source: Field survey, 2019

4.2 Housing Quality in Kubwa

This subsection analyses the quality of housing of the neighbourhoods at Kubwa. These analyses include housing type and age of the building, housing materials and condition.

4.2.1 Housing types and age of building

The available housing types were assessed as shown in Figure 4.5. The result shows that 48.2% of the dwelling units were detached bungalows, 26.3% of the houses were duplex, and 17.6% of the residential apartments were semi-detached bungalows while 7.9% of the dwelling units were rooming houses. Findings on the age of building as shown in Figure 4.6 revealed that 45.4% of the existing houses were built between 11-20 years ago. The result also revealed that; 23.5% of the dwelling units were built about two decades ago, 18.6% of the housing structures were erected between 5-10 years ago while 12.5% of the dwelling units were constructed less than five years.

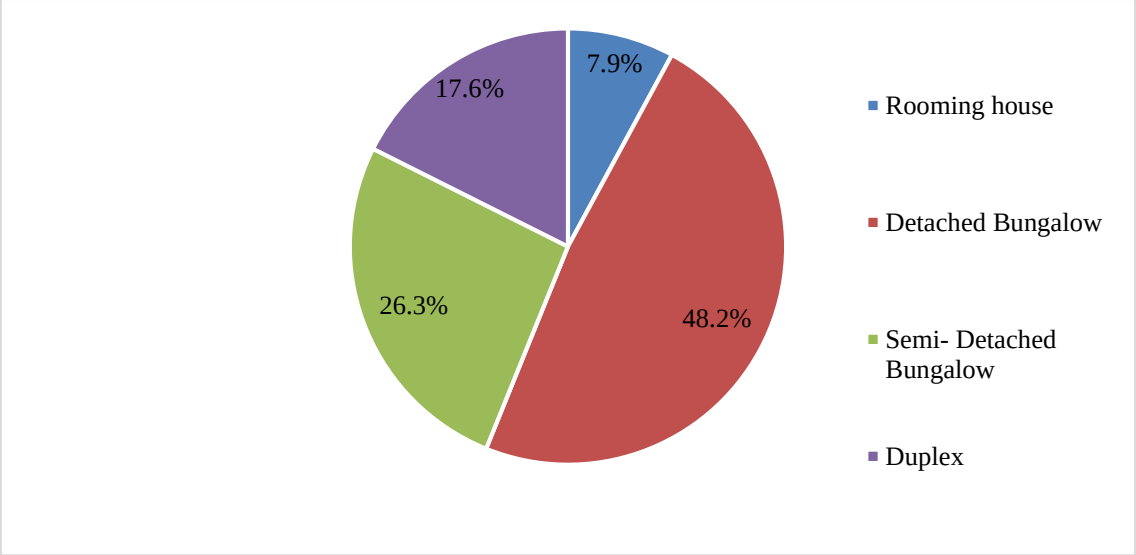

Figure 4.5: Housing types

Source: Field survey, 2019

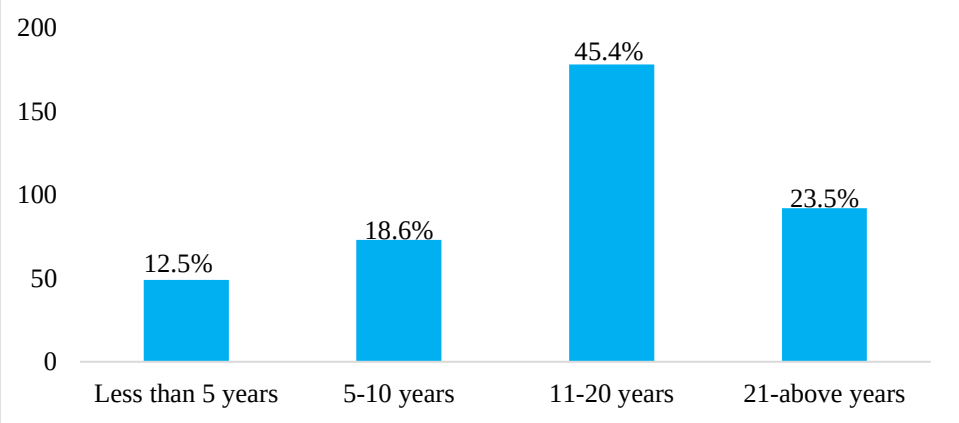

Figure 4.6: Age structure of dwelling units

Source: Field survey, 2019

4.2.2 Housing materials and conditions

This subheading analyses housing materials and condition. These analyses include wall materials and condition, floor materials and condition, roof/ ceiling materials and condition, door/windows materials and condition in the study area.

4.2.2.1 Wall materials and condition

Findings on wall materials revealed that 59.3% of the dwelling units were built with cement blocks, 37.5% of the dwelling units were built with bricks blocks while few of housing structures were built with mud blocks 3.3% as indicated in Figure 4.7. The results of the study on the building condition revealed that 79.8% of the buildings were intact, 15.6% of the dwelling units were cracking while 4.6% of the dwelling units were dilapidating as shown in Table 4.2

Majority of the houses in Kubwa that were cracked or dilapidating were either built with mud or plastered with insufficient cement (see plates I and II).

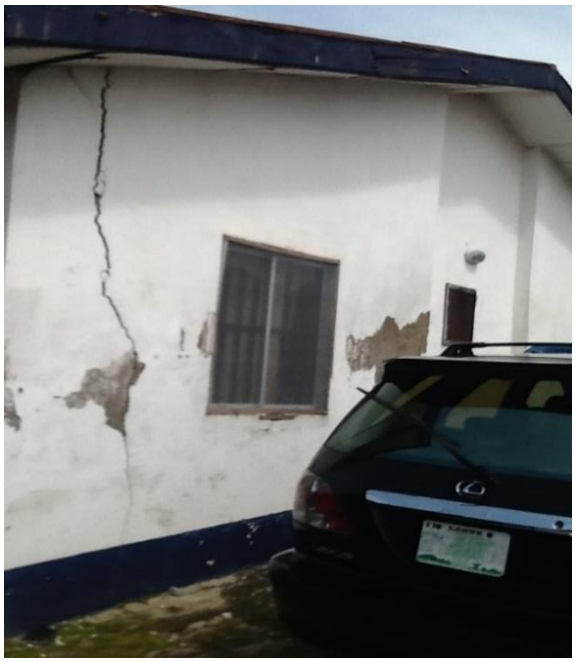

Plate I: Cracked wall at Phase IV
Source: Field survey, 2019

Plate II: Cracked wall at Gbazango
Source: Field survey, 2019

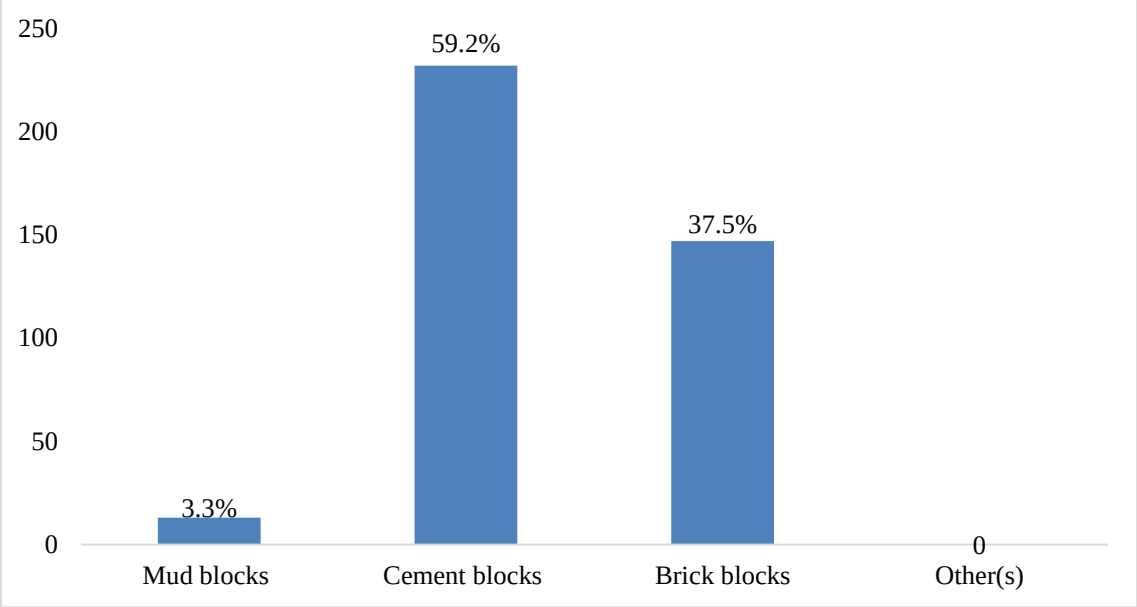

Figure 4.7: Wall material

Source: Field survey, 2019

Table 4.2: Walls Condition

Wall Condition	Frequency	Percentage
Intact	313	79.8
Cracking	61	15.6
Dilapidated	0	0
Dilapidating	18	4.6
Total	392	100

4.2.2.2 Floor materials and condition

Findings on floor materials as shown in Figure 4.8, revealed that 16.8% of the respondents made used of screed floor materials in their residential apartments while 13.0% of the dwelling units had terrazzo floor materials. Result of analysis also revealed that 46.2% of the respondents made used of tiles in their houses while 24.0% of the respondents made used of marble as floor materials in their respective houses.

The result shows that 77.3% of the dwelling units floor condition were intact, 9.4% of the floor condition of the buildings were cracked while 13.3% of the building floor condition shows signs of crack as shown in Table 4.3. The result shows that the floor condition of majority of the houses in the study area were adequate.

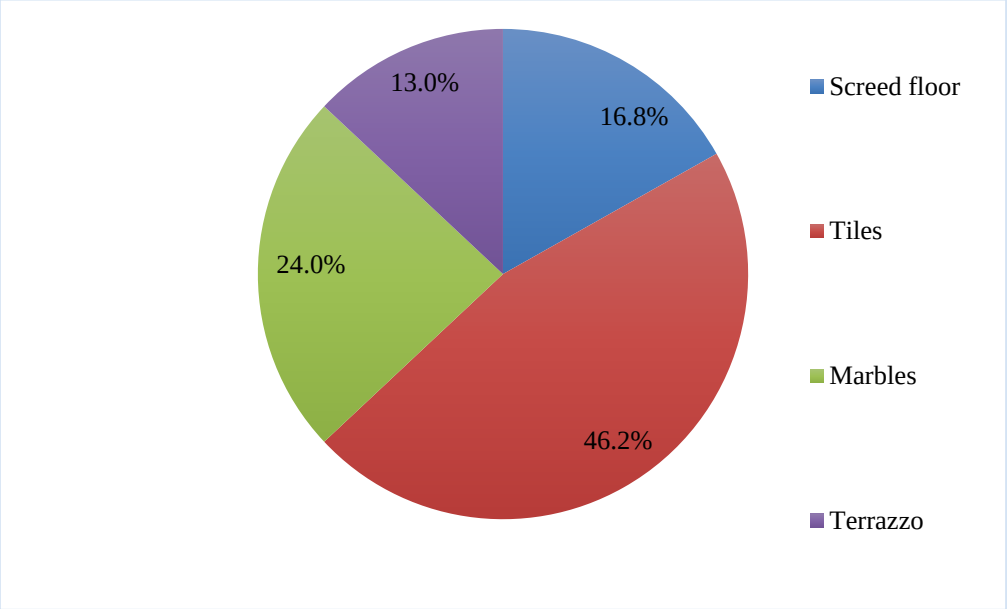

Figure 4.8: Floor materials

Source: Field survey, 2019

Table 4.3: Floor Condition

Floor Condition	Frequency	Percentage
Intact	303	77.3
Broken	37	9.4
Signs of crack	52	13.3
Total	392	100

4.2.2.3 Roof/ceiling materials and condition

The study revealed in Table 4.4 shows that 49.6% of the respondents made used of Zinc / corrugated iron sheet, 31.7% of the respondents made used of long span aluminium while 18.7% of the respondents made used of Asbestos.

Findings on condition of the roof materials shows that 68.2% of building roof of the respondents are intact while 31.8% of building roof of the respondents are leaking as shown in Figure 4.9. As noted during field survey, zinc/corrugated iron sheet was noted with considerable rusting and leaking as shown in plate III.

Table 4.4: Roof Materials

Roofing Materials	Frequency	Percentage
Zinc / corrugated iron sheet	277	49.6
Asbestos's materials	34	18.7
Long span aluminum	81	31.7
Total	392	100

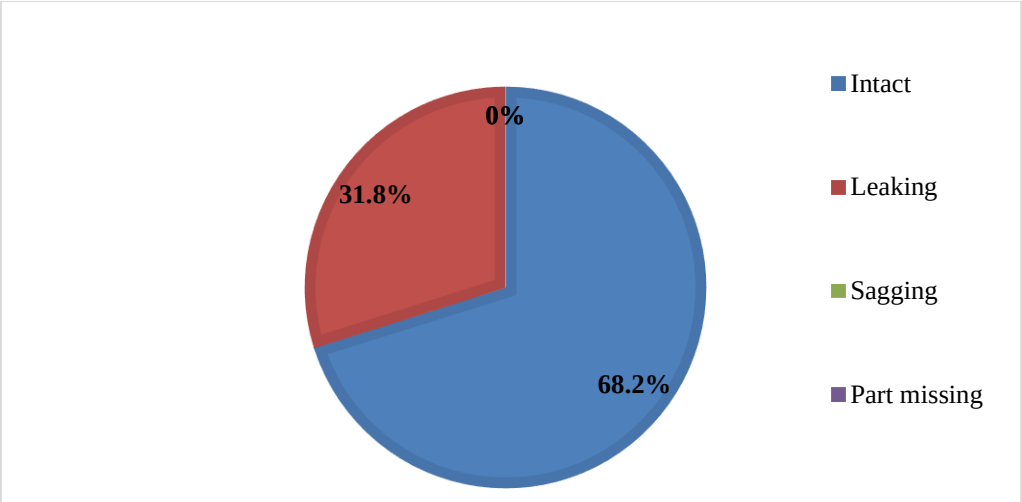

Figure 4.9: Roof condition

Source: Field survey, 2019

Plate III: Rusting and leaking roofing sheet at Phase II side II
Source: Field survey, 2019

Findings on ceiling materials as shown in Figure 4.10 revealed that 43.9% of the respondents made used of Asbestos ceiling board. Study also revealed that 30.9% of the respondents made used of polyvinyl chloride (PVC), 23.2% of the respondents made used of plaster of parish (POP) while 2.0% of the respondents made used of other ceiling finishes as cartons and plywood in the study area.

Results of analysis of ceiling materials condition as shown in Figure 4.11 revealed that 60.2% of the respondents' buildings are intact while 24.7% of the respondents' dwelling units are leaking. Finally, 5.6% of the respondents' dwelling units ceiling materials were sagging.

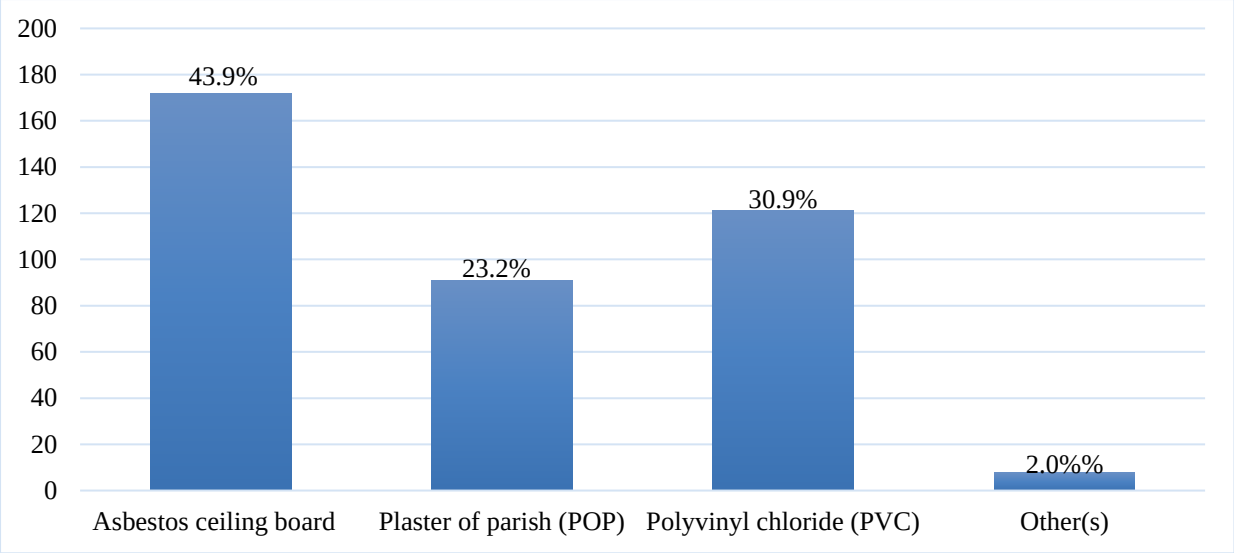

Figure 4.10: Ceiling materials

Source: Field survey, 2019

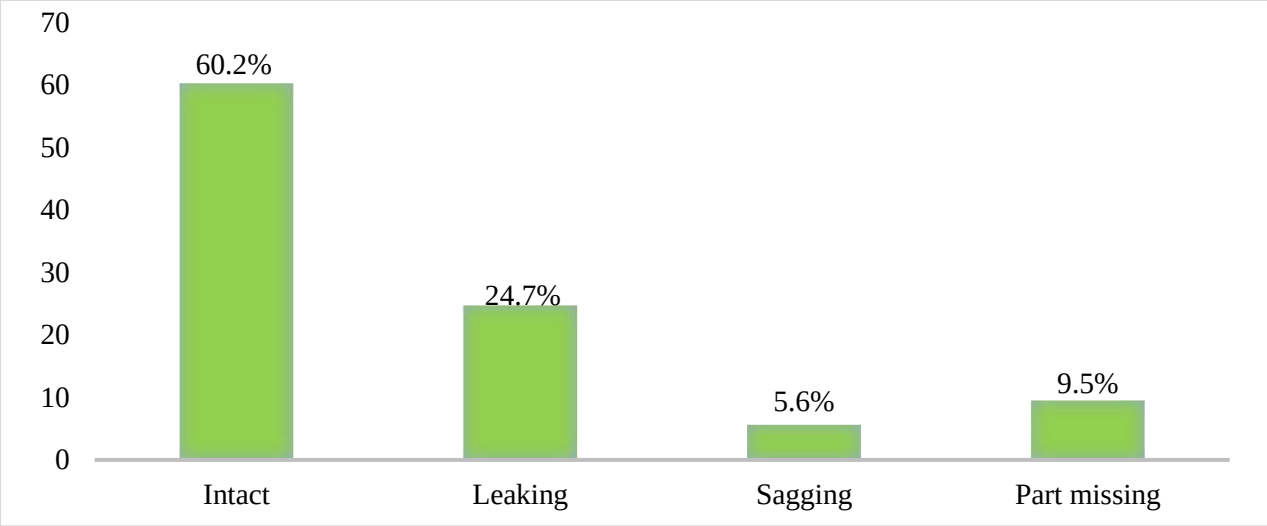

Figure 4.11: Ceiling conditions

Source: Field survey, 2019

4.2.2.4 Door/window materials and condition

Result in Figure 4.12 shows that 55.6% of the respondents made used of Flush / Panel / Wooden doors while 44.4% of the respondents made used of steel / iron doors.

Figure 4.13 revealed that 79.3% of the doors condition were intact, 18.5% of the respondents' dwelling unit door were broken while 2.2% of the respondents' doors were falling off.

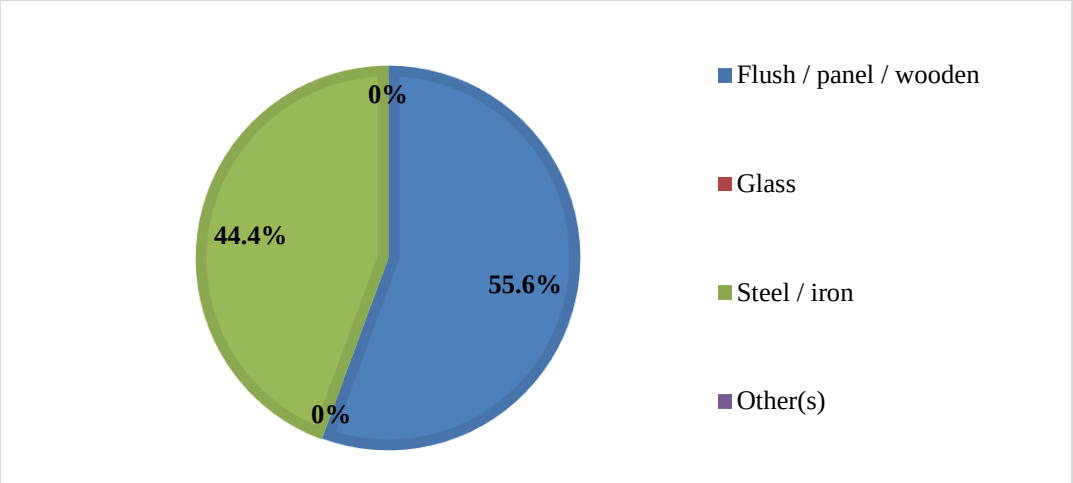

Figure 4.12: Doors materials

Source: Field survey, 2019

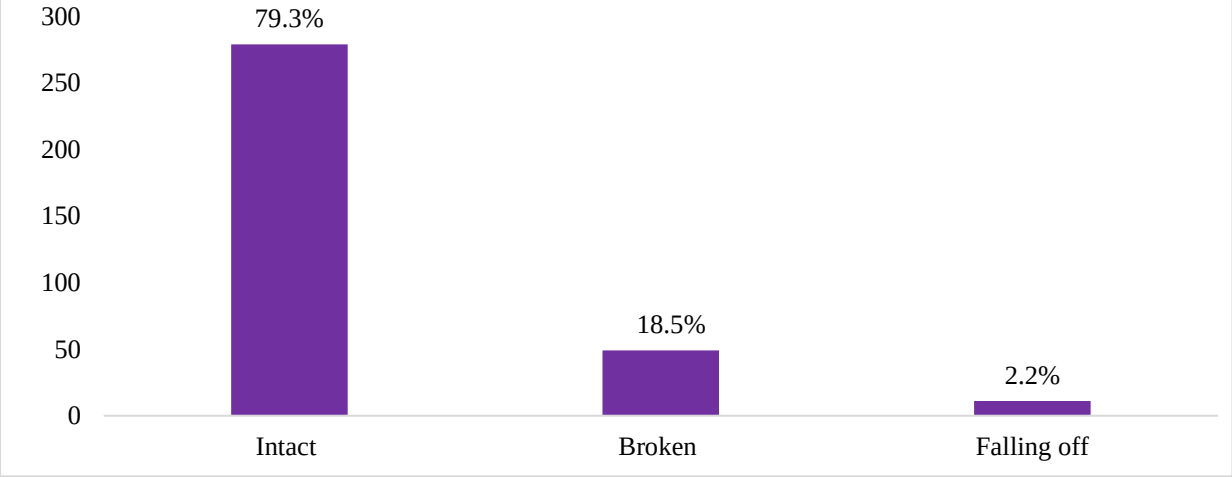

Figure 4.13: Doors condition

Source: Field survey, 2019

Result analysis of window materials as shown in Figure 4.14 revealed that 32.4% of the respondents made used of Aluminium, 38.0% of the respondents made used of wooden materials while 29.6% of the respondents used louvre blade as window materials.

Findings on condition of window materials as shown in Table 4.5 shows that 72.1% of the respondents' dwelling unit windows were intact. Findings also revealed that 24.6% of the respondents' windows were broken while 3.3% of the dwelling structures windows were falling off.

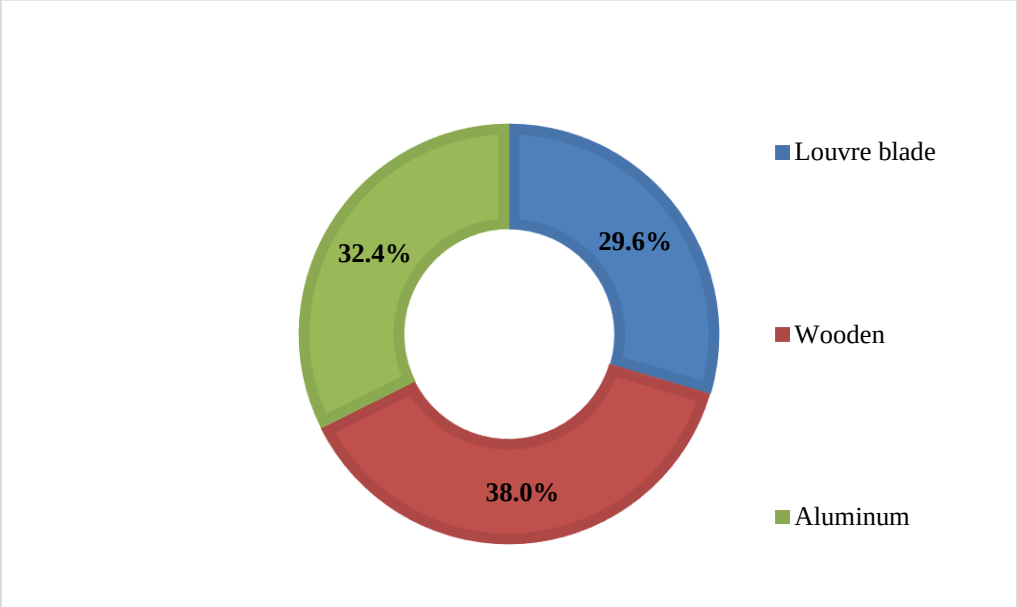

Figure 4.14: Windows material

Source: Field survey, 2019

Table 4.5: Window Condition

Window Condition	Frequency	Percentage
Intact	361	72.1
Broken	18	24.6
Falling off	13	3.3
Total	392	100

4.2.2.5 Toilet types

Findings on toilet types shows that 54.3% of the respondents used water closet in their residential apartments, 27.8% of the respondents had pit latrine with slab in their houses while 14.8% of the respondents used bucket system (short-put) and the remaining 3.1% of the respondents had no toilet in their residential apartment as indicated in Figure 4.15.

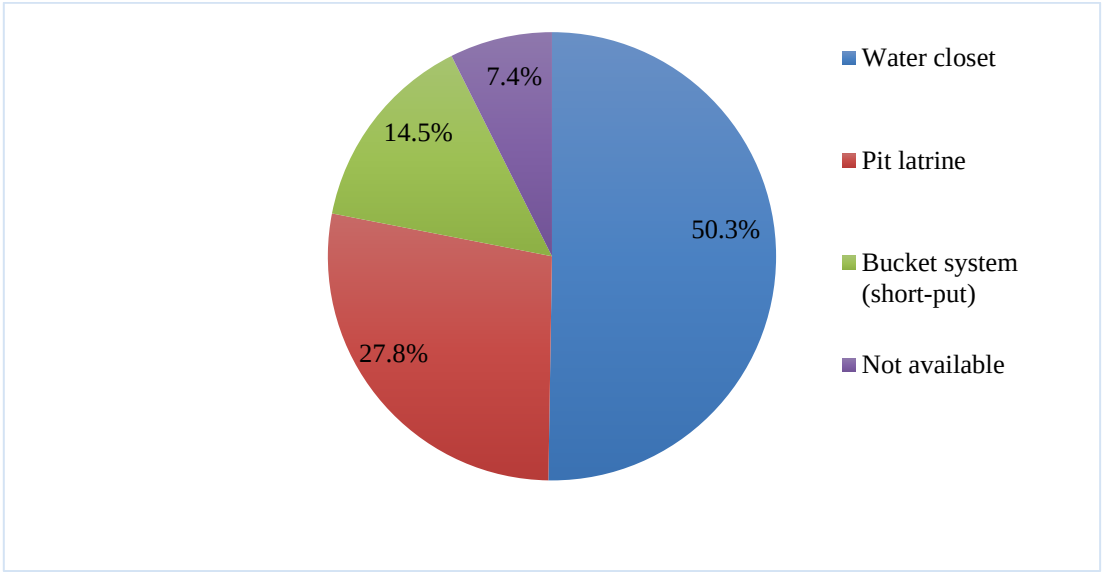

Figure 4.15: Toilet types

Source: Field survey, 2019

4.3 Provision and Quality of Infrastructure

This subsection analyses provision and quality of infrastructure in the study area. These analyses include road condition and accessibility, water supply, electricity supply, waste disposal and management, drainage types and condition.

4.3.1 Access types to houses and road condition

Findings on access types to houses as shown in Table 4.6 revealed that 6.6% of the respondents accessed their dwelling units through space between buildings, 20.2% of the respondents accessed their dwelling units through footpath while 73.2% of the respondents were of the view that access to their houses is through motorable road. Analysis on road as presented in Figure 4.16 revealed that 52.6% of the respondents agreed that large proportion of access roads in the neighbourhoods of Kubwa were untarred as shown in plate IV. 28.3% of the respondents indicated that the roads are tarred while 19.1% of the houses had no formal access roads. From the field survey, some dwelling units at Kukwaba, Maitama, Gbazango and Byazhin had no access formal roads and the streets were mainly laterite type with absence of drainage system.

Table 4.6: Access types to Houses

Access types to houses	Frequency	Percentage
Space between building	26	6.6
Footpath	79	20.2
Motorable road	287	73.2
Total	392	100

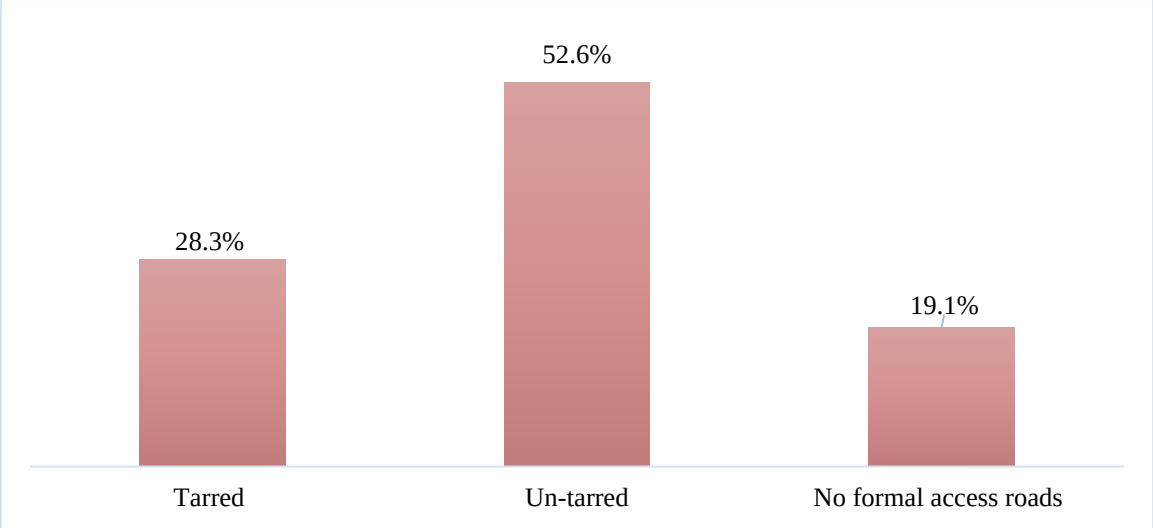

Figure 4.16: Roads condition

Source: Field survey, 2019

Plate IV.: Condition of access road at Kukwaba.

Source: Field survey, 2019

4.3.2 Water supply source

Figure 4.17 revealed that 43.1% of the respondents made used of pipe-borne water while 33.4% of the respondents made used of borehole as source of water supply, 14.0% of the respondents made used of well as source of water supply and 9.4% of the respondents made

used of vendors as a source of water supply. From field observation, pipe-borne water lines were not connected to some dwelling units in areas like Kukwaba, Byazhin, and Gbazango. Areas that pipe-borne water lines were connected water is supplied for maximum of 3 to 4 hours daily.

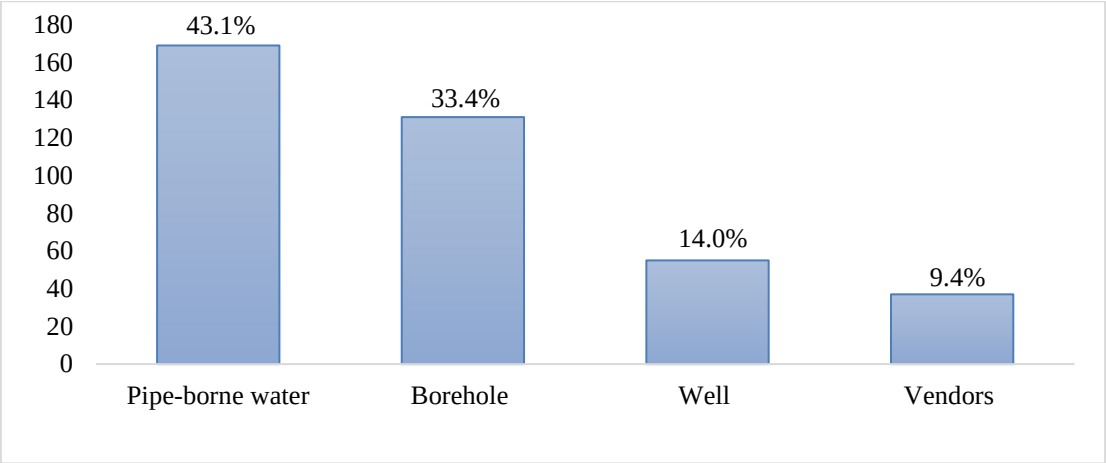

Figure 4.17: Water supply source

Source: Field survey, 2019

4.3.3 Power supply source

Findings on power supply source revealed that 50.5% of the respondents made use of electricity while 34.4% of the respondents made use of generators 6.6% of the respondents made use of solar and 8.4% of the respondents made use of lantern and candle as alternative source of power as shown in Figure 4.18. From field interaction with the residents, the study area is faced with inconsistency of power supply in neighbourhoods like Kukwaba, Gbazango, Maitama, Byazhin, and Phase IV. Electricity is the main source of power supply in the study area as revealed in Figure 4.19. Interaction with the respondents revealed that they are not satisfied with the electricity supply due to load shedding amongst the neighbourhoods where a neighbourhood experiences six hours of electricity supply daily and

sometimes Power Holding Company of Nigeria may not supply power to some neighbourhoods due to technical hitch issues. The implication is that power supply is not adequate.

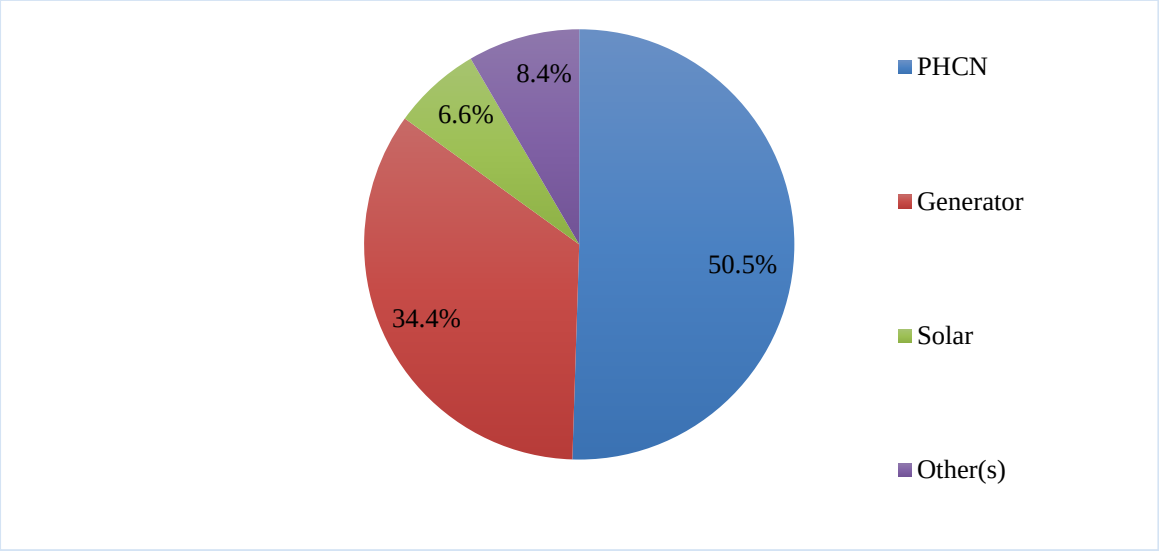

Figure 4.18: Power supply sources

Source: Field survey, 2019

4.3.4 Waste disposal facility and management

While carrying out the study, the researcher identified some refuse disposal facilities in the study area. Among these are, incinerator, waste bin collector and garbage truck owned by private enterprise. As shown in Figure 4.19 revealed that 62.0% of the respondents disposed their refuse through refuse vendor, 16.1% of the respondents disposed refuse through refuse dump site, 14.4% of the respondents disposed their waste through incineration while 7.4% of the respondents disposed refuse through public collection point (Plate V and VI).

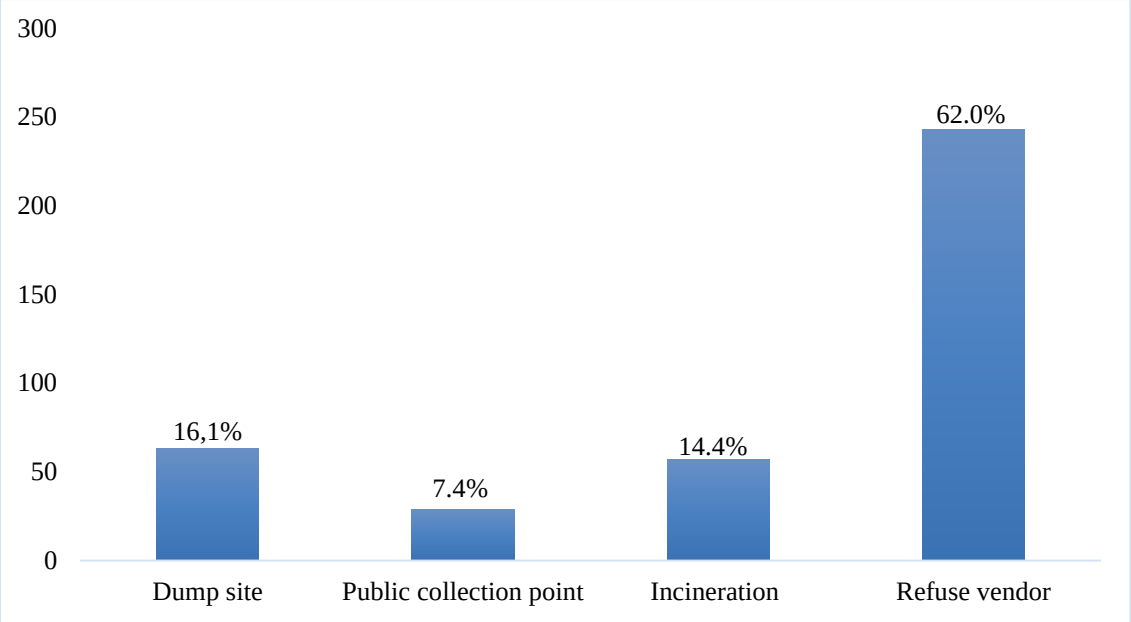

Figure 4.19: Waste disposal methods

Source: Field survey, 2019

Plate V: Indiscriminate solid wastes disposal along Byazhin road

Source: Field survey, 2019

Plate VI: Sewage disposal from houses into the street at Kukwaba

Source: Field survey, 2019

4.3.5 Drainage types and condition

Findings on drainage types revealed that 33.9% of the respondents agreed that there is open drainage system in their housing environment, 66.1% of the respondents had no accessed to drainage system while there is no cover/buried drainage system in the study area as indicated in Figure 4.20. This implies that majority of the respondents in the study area had no drainage in their housing environment and the few available open drainage ways were blocked as shown in plate VII and VIII.

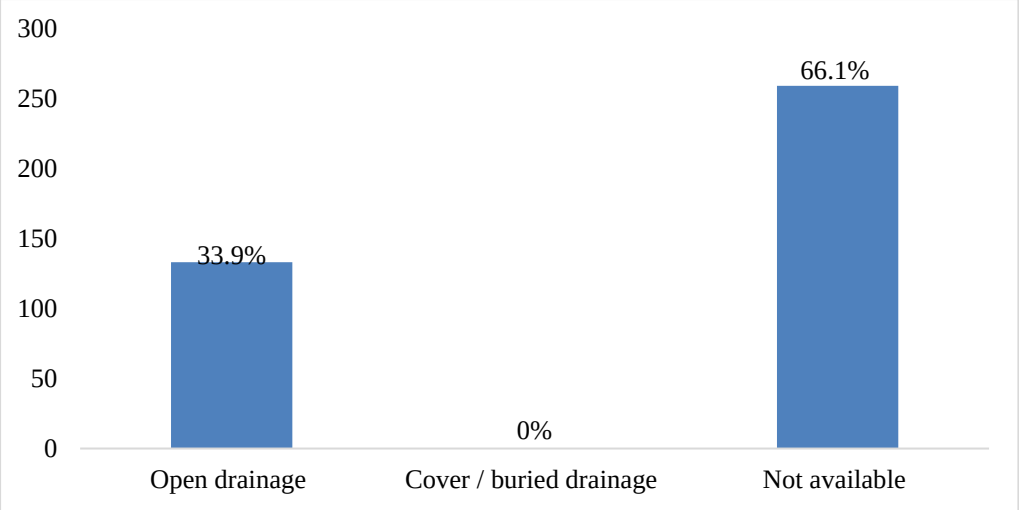

Figure 4.20: Drainage types

Source: Field survey, 2019

Plate VII: Access road without drainage at Byazhin

Source: Field survey, 2019

Plate VIII: Blocked drainage along Byazhin road

Source: Field survey,2019

4.4 Quality Rating of Housing and Infrastructure

This subsection analyses rating of housing and infrastructure quality in the study area. For this research analyses includes two parameters (housing and infrastructure) comprising 2 variables were adopted.

4.4.1 Ratings of housing quality

Building elements in the study area comprises of 7 variables includes; roof, walls, painting(s), floors, doors, Windows and ceiling. The rating quality of building elements variables were analysed in 5-likert scale. The result shows that, Walls ranked 3.41 (fair), Doors rank 3.26 (fair), Windows ranked 2.96 (bad) and Floors ranked 2.98 (bad). Ceiling ranked 2.36 (bad), Roof ranked 3.08 (fair) and Painting(s) ranked 2.99 (bad) respectively. The overall building

elements were rated to be fair with an index of 3.01 as measured on a 5-point scale as indicated in Table 4.7

4.4.2 Ratings of infrastructure quality

Infrastructure in the study area comprises of 15 variables including roads, drainages, waste disposal/management, sewage management, security, water supply, electricity supply, recreational facilities, public schools, private schools, public health facilities, private health facilities, public toilet, public transportation and parking space/lots. The ratings quality of infrastructure were analysed in 5-likert scale.

As indicated in Table 4.7, it was established that private schools ranked 3.04 (fair), Private health facilities ranked 2.78 (bad), Public health facilities ranked 2.18 (bad) while Public toilet ranked 1.04 (very bad). Water supply ranked 1.28 (very bad), Electricity supply ranked 1.35 (very bad), Sewage management ranked 1.50 (very bad), Security ranked 1.51 (very bad), Drainages ranked 1.54 (very bad), Waste disposal/management ranked 1.57 (very bad), Public transportation ranked 1.57 (very bad), Roads ranked 1.66 (very bad). Recreational facilities ranked 1.75 (very bad), Parking space/lots ranked 1.81 (very bad) and Public schools 1.92 ranked least (very bad) respectively. The result shows that a large proportion of infrastructure are in deplorable condition with an index of 1.77 (very bad).

Table 4.7: Respondents Rating Condition of Infrastructure

S/N	Infrastructure	Rating and weighted value					SWV	MWV
		1 VB	2 B	3 F	4 G	5 VG		
1	Roads	197	142	44	7	2	651	1.66
2	Drainages	229	121	29	9	2	604	1.54
3	Waste disposal/management	232	103	51	6	0	615	1.57
4	Sewage management	249	96	41	6	0	588	1.50
5	Security	255	91	29	17	0	592	1.51
6	Water supply	301	72	19	0	0	502	1.28
7	Electricity supply	277	94	21	0	0	528	1.35
8	Recreational facilities	193	106	91	2	0	686	1.75
9	Public schools	157	122	102	11	0	751	1.92
10	Private schools	21	121	107	109	34	1190	3.04
11	Public health facilities	109	124	137	22	0	856	2.18
12	Private health facilities	55	72	188	59	18	1089	2.78
13	Public toilet	375	17	0	0	0	409	1.04
14	Public transportation	229	101	62	0	0	617	1.57
15	Parking space/lots	173	127	86	6	0	709	1.81
Total								
26.50								
Mean of ΣMWV= 1.77								

Notes on Likert Scale rankings: very bad=1, bad=2, fair=3, good=4 and very good=5.

4.5 Spatial Variation in Housing and Environmental Quality

This subsection analyses spatial variation of housing environment based on two parameters (infrastructure and building elements) comprising of 11 variables which include; roads, drainages, waste disposal/management, water supply, recreational facilities, public toilet, parking space/lots, roof, wall, painting(s) and commercial facilities. The infrastructure and building elements variables were analysed in 5-likert scale as indicated in Table 4.8

The ranking of buildings elements and infrastructure condition in each of the neighbourhood as indicated in Table 4.8 was established. Byazhin ranked 1.89 (very bad), Gbazango ranked 2.61 (bad), Kukwaba ranked 2.52 (bad), Phase II side I ranked 3.15 (fair), phase II side II ranked 3.24 (fair) and PW ranked 3.24 (fair) respectively. The spatial quality of the neighbourhoods is as shown in Figure 4.21

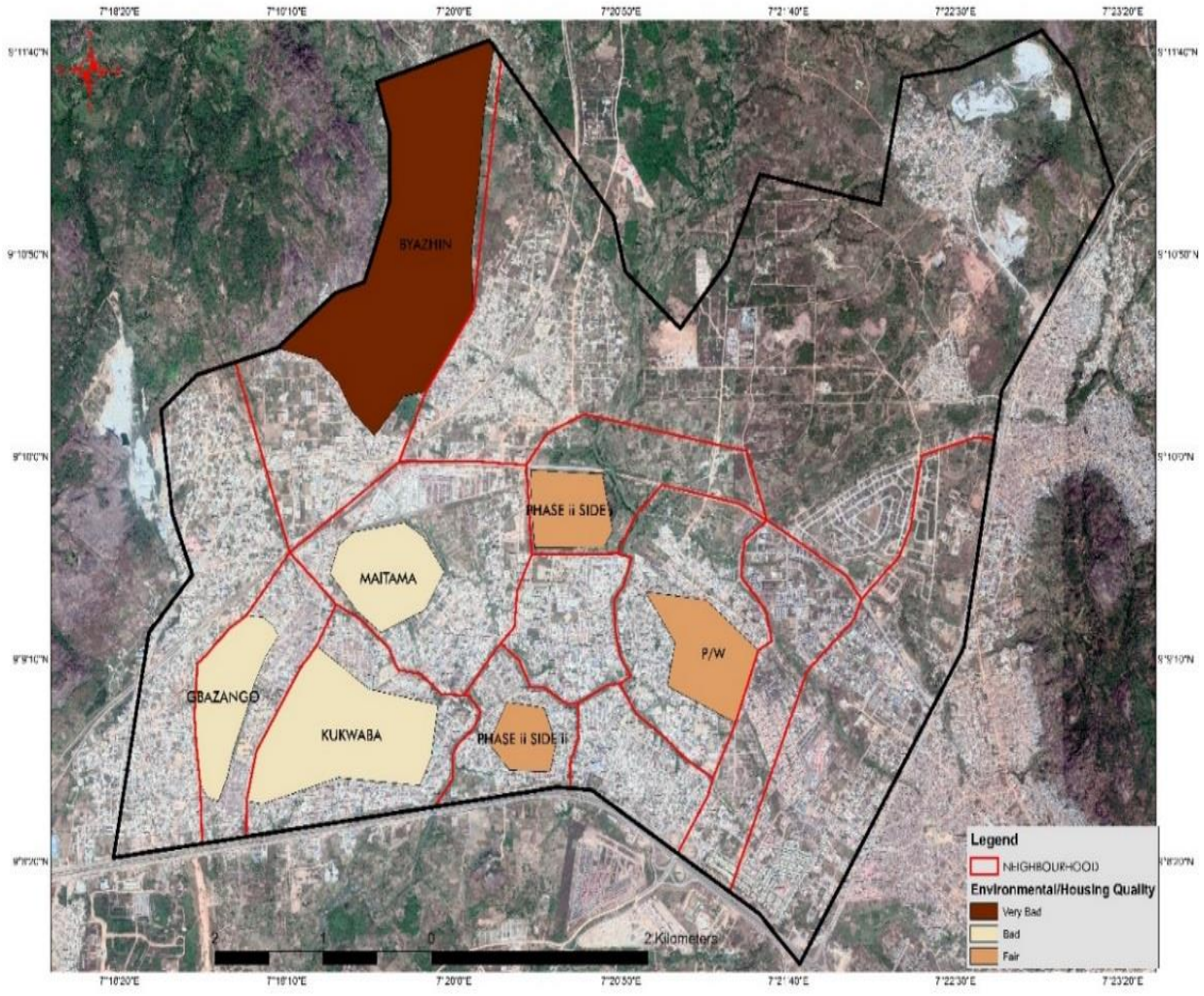

Figure 4.21: Classification of housing and environmental quality

Source: Digitized from Google Earth, 2018

Table 4.8: Spatial variation of housing and environmental quality

Variables	Byazhin							Gbazango							Kukwaba							Phase II side I							Phase II side II							PW						
	Rating and weighted value																																									
	1	2	3	4	5	SWV	MWV	1	2	3	4	5	SWV	MWV	1	2	3	4	5	SWV	MWV	1	2	3	4	5	SWV	MWV	1	2	3	4	5	SWV	MWV	1	2	3	4	5	SWV	MWV
Roads	✓					1	0.09			✓			3	0.27			✓			3	0.27				✓			4	0.36				✓			4	0.36				✓		4	0.36
Drainages	✓					1	0.09			✓			3	0.27			✓			3	0.27			✓			3	0.27			✓			3	0.27				✓		4	0.36
Waste disposal	✓					1	0.09			✓			3	0.27		✓				2	0.18			✓			3	0.27				✓			4	0.36				✓		4	0.36
Water supply			✓			3	0.27			✓			3	0.27			✓			3	0.27			✓			3	0.27			✓			4	0.36				✓		3	0.27
Parking space/lots	✓					1	0.09		✓				2	0.18		✓				2	0.18		✓				2	0.18			✓				2	0.18			✓			2	0.18
Public toilet	✓					1	0.09	✓					1	0.09	✓					1	0.09	✓					1	0.09						1	0.09	✓					1	0.09
Recreational facilities		✓				2	0.18		✓				2	0.18		✓				2	0.18				✓		4	0.36				✓		4	0.36					✓	4	0.36
Roof			✓			3	0.27			✓			3	0.27			✓			3	0.27				✓		4	0.36				✓		4	0.36					✓	4	0.36
Wall			✓			3	0.27			✓			3	0.27			✓			3	0.27				✓		4	0.36				✓		4	0.36					✓	4	0.36
Painting(s)		✓				2	0.18			✓			3	0.27			✓			3	0.27				✓		4	0.36				✓		3	0.27				✓		3	0.27
Commercial facilities			✓			3	0.27			✓			3	0.27			✓			3	0.27			✓			3	0.27				✓		3	0.27				✓		3	0.27
ΣMWV=							1.89							2.61							2.52							3.15							3.24							3.24

Notes on Likert Scale rankings: very bad=1, bad=2, fair=3, good=4 and very good=5

4.5.1 Description of neighbourhood quality in Kubwa

Field observations in conjunction with the findings in Table 4.9 revealed that Byazhin's housing environment ranked 1.89 (very bad). Most of the buildings in area lacked modern facilities, unstandardized building materials and collapsing of structures which were not properly erected over time. The study also found out that there exists lack of drainage system in the area, deteriorating building condition (see plates IX and X), poor access to buildings, lack of adequate social and physical amenities as well insufficient building maintenance, overcrowding, indiscriminate waste disposal.

Plate IX: Sewage disposal from houses at Byazhin.
Source: Field survey, 2019

Plate X: Dilapidated septic tank at Byazhin
Source: Field survey, 2019

Field observations also revealed that Gbazango and Kukwaba housing environment ranked 2.61 (bad) and 2.52 (bad) respectively. The access roads in the neighbourhoods were untarred with insufficient drainage system and as well as blockage of available drainage channels. The

neighourhoods were also characterised by insufficient social and physical amenities, insufficient building maintenance and overcrowding as shown in plates XI

Plate XI: Untarred access road at Kukwaba

Source: Field survey, 2019

The findings also revealed that Phase II side I, Phase II side II and PW ranked 3.15 (fair), 3.24 (fair) and 3.24 (fair) respectively. The housing environment of the neighbourhoods is fair. Field observation shows that the areas lacked access to sufficient social and physical amenities. They were also characterised by insufficient building maintenance, blockage of drainage channels and overcrowding.

4.6 Testing of Hypothesis

This section deals with a tentative assumption made in order to draw out and test empirical situation to establish the influence of income and education status on housing/environmental quality at Kubwa. The results are presented in sections 4.6.1 and 4.6.2

4.6.1 Relationship among housing/environmental quality, income and educational status of the residents

The findings on housing and environmental quality index provide the basis for further analysis on the relationship between the income and educational status in the study area. Analysis of correlation between each mean weighted value of components of building and infrastructure conditions at Kubwa determined the nature of relationship that exist amongst housing/environmental quality and socio-economic attributes of the residents as shown in Table 4.9.

The influence of income and education status of the residents on housing/environmental quality was real and significant because income and education correlates negatively with housing and environmental quality with significance level at ($r = -.676^{**}$ $p < .001$) as indicated in Table 4.10. From the study, income and education are the main socio-economic attributes that influence the quality of housing environment. Thus, low income correlates with low quality of housing environment and low literacy level also correlates with low quality of housing environment. This connotes that the lower the respondents' income and low literacy status, the lower the quality of housing environment they can assessed. This signifies that there exists negative relationship between housing/environmental quality attributes and respondents' socio- economic attributes.

The result in Figure 4.10 and 4.11 shows model summary and coefficients of regression results. From these tables, the multiple correlation coefficients which measures the strength and nature of the relationship among the income, education and housing quality of residents in the study area is 0.880 giving a multiple R-square as 0.774. As shown in table 4.12 there was a positive and direct relationship between income, education and housing quality tested variables. Thus, high significance among them are the relationships that income has with education (p=.000), wall materials ((p=.082), accessibility ((p=.000), waste disposal ((p=.000) sewage ((p=.000) and drainage ((p=.000). What this implies is that income influenced the type of house they live. Since income has great impact on dwelling units they live, those with higher income tends to live in better housing environment than their counterpart with lower income. Consequently, the null hypothesis was rejected. This therefore means that there is a significant relationship among income, education and housing quality in Kubwa.

Table 4.9: Results of Multiple Correlations of Relationship among Housing/Environmental Quality, Income and Education in the study area

		Correlations					
		Roof materials	**Wall materials**	**Drainage**	**Waste disposal**	**Income**	**Education**
Roof materials	Pearson Correlation	1	.618**	.866**	.174**	.843**	-.605**
	Sig. (2-tailed)		.000	.000	.001	.000	.000
Wall materials	Pearson Correlation	.618**	1	.730**	.239**	.562**	-.611**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
Drainage	Pearson Correlation	.866**	.730**	1	.233**	.761**	-.649**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
Waste disposal	Pearson Correlation	.174**	.239**	.233**	1	.269**	-.119*
	Sig. (2-tailed)	.001	.000	.000		.000	.018
Income	Pearson Correlation	.843**	.562**	.761**	.269**	1	-.676**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
Education	Pearson Correlation	-.605**	-.611**	-.649**	-.119*	-.676**	1
	Sig. (2-tailed)	.000	.000	.000	.018	.000	

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

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

Listwise N=392

Table 4.10: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.880[a]	.774	.771	.692

a. Predictors: (Constant), Drainage, Waste disposal, Education, Wall materials, Sewage, Accessibility

Table 4.11: Coefficients

		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	2.280	.251		9.086	.000
	Education	-.439	.050	-.297	-8.828	.000
	Wall materials	-.137	.078	-.065	-1.743	.082
	Accessibility	.758	.053	.696	14.244	.000
	Waste disposal	.153	.030	.129	5.122	.000
	Sewage	-.142	.059	-.092	-2.412	.016
	Drainage	.056	.066	.053	.856	.393

a. Dependent Variable: Income

4.6.2 Test of variation in housing and environmental quality in Kubwa

The study also analysed spatial variations in housing and environmental quality in Kubwa with the aid of Chi-square for testing of hypothesis and drawing inferences. The variations in the quality of housing environment as established in Table 4.9 across the neighbourhoods of Kubwa. Thus, the variables compared includes; access roads, drainages, waste disposal, water supply, public toilet, recreational facilities, roof, wall and commercial facilities were computed. The findings revealed that Byazhin was rated with an index of 1.89 (very bad), Gbazango was rated with an index of 2.61 (bad), Kukwaba was rated with an index of 2.52 (bad), Phase II side I was rated with an index of 3.15 (fair), Phase II side II was rated with an index of 3.24 (fair) while PW was rated with an index of 3.24 (fair) respectively. This finding meant that real differences exist in the quality of housing environment amongst the neighbourhoods of the study area.

Analysis of chi-square on spatial variations in housing and environmental quality with $P<0.05$ significant level as shown in Table 4.12. From the table, the chi-square which measures the magnitude of differences among the housing and environmental quality attributes. Accessibility ($X^2= 95.245$; $p=0.001$), waste disposal ($X^2= 94.658$; $p=0.000$), wall materials ($X^2= 68.837$; $p=0.001$), water supply ($X^2= 51.189$; $p=0.000$), drainage ($X^2= 68.153$; $p=0.000$), sewage ($X^2= 167.204$; $p=0.000$), parking space/lots ($X^2= 216.510$; $p=0.000$), public schools ($X^2= 137.408$; $p=0.000$), public health facilities ($X^2= 163.898$; $p=0.000$) and recreational facilities ($X^2= 98.714$; $p=0.000$). Hence, the alternative hypothesis (H_1) is accepted and reject null hypothesis (H_0). Thus, there is a statistically significant spatial variation in housing and environmental quality in Kubwa.

Table 4.12: Test of Chi-square of Spatial Variations in Housing and Environmental Quality in Kubwa

Test Statistics										
	Accessibility	Waste disposal	Wall materials	Water supply	Drainage	Sewage	Parking space/lots	Public schools	Public health facilities	Recreational facilities
Chi-square	95.245[a]	94.658[a]	68.837[b]	51.189[b]	68.153[a]	167.204[c]	216.510[c]	137.408[c]	163.898[c]	98.714[c]
df	4	4	2	2	4	3	3	3	3	3
Asymp.sig	.001	.000	.001	.000	.000	.000	.000	.000	.000	.000

a. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 78.4

b. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 130.7

c. 0 cells (0.0%) have expected frequencies less than 5. The minimum expected cell frequency is 98.0

4.7 Summary of Findings

From the analysis, a number of findings were made that include: firstly, existing dwelling units that were built about two decades ago are deteriorating due to aging as 49.6% of the respondents made used of Zinc / corrugated iron sheet were noted with substantial rusting and leaking in the study area.

The facilities and services that were made available by the government for public interest are no longer functioning appropriately. For example, (electricity supply, water supply, public schools) were found to be in poor conditions while residents have resolved to private alternatives. Analysis of the facts revealed that an enormous extent of infrastructure are in deplorable condition with an index of 1.77 and building elements rated to be fair with an index of 3.01, estimated on a 5-point scale.

From field observations in conjunction with Table 4.8 revealed that Byazhin's housing and environmental quality ranked 1.89 (very bad). Most of the buildings in the area lacked modern facilities, unstandardized building materials and collapsing of structures which were not properly erected over time, lack of drainage system in the area, poor accessibility to buildings in the area and as well insufficient building maintenance, overcrowding, indiscriminate waste disposal.

The study also uncovered that waste dumping site is another noticeable challenge faced by the residents of the study area as some occupants in the neighbourhood areas dumped their waste indiscriminately as this hinders the free flow of surface water and creates comfortable

breeding grounds for mosquitoes and different pathogens that could add to the spreading of infections.

Finally, statistical validation of data was done using statistical tool of multiple correlation. The test revealed that among housing and environmental quality, income and education shows that income and education correlates negatively with housing and environmental quality with significance level at ($r = -.676^{**}$ $p < .001$). This signifies that there exists negative relationship between housing/environmental quality attributes and respondents' socio-economic attributes.

CHAPTER FIVE

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The research assessed housing and environmental quality in Kubwa, Bwari Area Council of Abuja, Nigeria. The study concludes that there exists poor drainage system, poor accessibility, poor social facilities such as water supply, energy among others. Indiscriminate refuse disposal and poor waste management affect environmental quality consequently result to spread air borne diseases and outbreak of different forms of illnesses such as typhoid, lassa fever, malaria, cholera among others) which affect human health and poor-quality environments affect the water quality, visual aesthetics property and the city.

The study further concludes that most of the dwelling structures were in fair condition with an index of 3.01 and large proportion of infrastructure were in deplorable condition with an index of 1.77 for absence of proper planning of these elementary services might lead to a clustered pattern of development which will, in turn, leads to further deterioration in the living environment of Kubwa. Finally, the study concludes that the test of multiple correlation among housing and environmental quality, income and education revealed that income and education correlates negatively with housing and environmental quality. The implication of this is that the less the income and education, less the quality and standard of housing quality that can be assessed in the study area.

5.2 Recommendations

The following recommendations are made to improve the quality of housing and the environment of the study area:

(i) Planning authority should coordinate redevelopment of Byazhin neighbourhood that involve activities such as partial clearance of dilapidated structures and integrate the use of decision-making process at all phases of physical improvement of the built environment by upgrading of accessibility, electricity supply, primary school, health centre, water supply and as well as provision of neighbourhood park, public toilet, drainage system and refuse dump site.

(ii) Blighted residential areas at Gbazango and Kukwaba should be upgraded and also roads, water supply, electricity supply should be upgraded. Primary school, children play ground, neighbourhood park, drainage system, public toilet, health centre and refuse dump site should be provided with combine efforts from government, private sector and individual(s).

(iii) Upgrade infrastructure and blighted dwelling units at Phase II side I, Phase II side II and PW. Also, Public toilet and refuse dump site should be provided in order to enhance sustainability of housing environment.

(iv) Abuja Environmental Protection Agency (AEPA) should improve and ensure continuous monitoring of refuse collection by providing more refuse collection sites required at strategic locations, waste bin collectors and garbage trucks so as to minimize the rate of

indiscriminate refuse disposal that will enhance the effectiveness and sustainability of economic capacity and physical health of the residents of Kubwa.

(v) There is need to increase community sensitization and capacity building on regarding the construction of quality housing environment and building defects to help the dwellers to understand the risks related to building safety and maintenance.

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APPENDICES

Appendix A

Respondents Ratings Condition of Building Elements

Variables	Parameter	Weighted value	Frequency	SMV	MWV
Roof	Intact	5	183	915	
	Leaking	1	76	76	
	Sagging	2	84	168	
	Falling off	1	49	49	
				1208	3.08
Wall	Cracking	2	72	144	
	Intact	5	127	635	
	Dilapidated	1	11	11	
	Signs of crack	3	182	546	
				1336	3.41
Painting(s)	Not painted	1	91	91	
	Fading	3	94	282	
	Peeling	2	78	156	
	Shining	5	129	645	
				1174	2.99
Floor	Cracking	2	104	208	
	Intact	5	119	595	
	Dilapidated	1	61	61	

	Broken	2	19	38	
	Signs of crack	3	89	267	
				1169	2.98
Doors	Intact	5	194	970	
	Falling off	1	89	89	
	Broken	2	109	218	
	Intact	5	194	970	
				1277	3.26
Windows	Intact	5	162	810	
	Falling off	1	111	111	
	Broken	2	119	238	
				1159	2.96
Ceiling	Intact	5	84	420	
	Falling off	1	35	35	
	Broken	2	89	178	
	Leaking	1	76	76	
	Sagging	2	108	216	
				925	2.36
Total					21.04
			Mean of ΣMWV= 3.01		

Notes on Likert Scale rankings: very bad=1, bad=2, fair=3, good=4 and very good=5.

Appendix B

FEDERAL UNIVERSITY OF TECHNOLOGY MINNA
SCHOOL OF ENVIRONMENTAL TECHNOLOGY
DEPARTMENT OF URBAN AND REGIONAL PLANNING

QUESTIONNAIRE

Dear Sir/Madam,

This questionnaire is basically designed in respect of a research title Assessment of Housing and Environmental Quality in Kubwa, Bwari Area Council of Abuja, Nigeria that would enable the researcher to undertake a comprehensive research. This is for academic purposes and you are guaranteed absolute confidence to all your responses. Thank you for your anticipated cooperation.

INSTRUCTION: Please you are to tick or write the appropriate answer

Section A: Socio-Economic Characteristics of Respondents

1. Gender (a) Male ( ) (b) Female ( )
2. Occupation (a) Civil servant ( ) (b) Self-employed ( ) (c) Artisans ( )
   (d) Farming ( ) (e) Other(s) please specify ……
3. Literacy level (a)Postgraduate ( ) (b)First degree/Higher national diploma ( )
   (c)Nigeria Certificate in Education/National diploma ( ) (d)Secondary ( )
   (e) Primary/Below ( )
4. Monthly income (a) Less than N30,000 ( ) (b) N31,000 – N60,000 ( )
   (c) N61,000-N120,000 ( ) (d) N121,0000-N250,000 (e) N251,000 and above ( )
5. Household size (a)1-3 persons ( ) (b) 4-6 persons ( ) (c) 7-10 persons ( )
   (d)11-above persons ( )

Section B: **Infrastructural facilities**

6. Name of neighbourhood……

7. Roads (a) tarred ( ) (b) un-tarred ( ) (C) No formal access road ( )
8. Water supply source (a) Pipe-borne-water ( ) (b) Borehole ( ) (c) Well ( ) (d) Water vendors ( ) (e) Other(s) please specify……
9. Power supply source (a**)** Electricity ( ) (b) Generator( ) (c) Solar ( ) (d) Other(s) please specify……
10. Waste disposal (a) Dumpsite ( ) (b) Public collection point ( ) (c) Incinerator ( ) (d) Refuse vendors ( ) (e) Other(s) please specify…….
11. Type of drainage (a) Open drainage ( ) (b) Covered/buried drainage ( ) (c) Not available ( )

Section C: Building Characteristics and Materials.

12. Age Structure of dwelling units (a) Less than 5 years ( ) (b) 5 – 10 years ( ) (c) 11 – 20 years ( ) (d) 21 – above years ( )
13. Housing type (a) Rooming house ( ) (b) Detached Bungalow ( ) (c) Semi-Detached Bungalow ( ) (d) Duplex ( )
14. Type of Toilet (a) Water closet ( ) (b) Pit latrine ( ) (c) Bucket system (short-put) ( ) (d) Not available ( )
15. Wall material (a) Mud blocks ( ) (b) Cement blocks ( ) (c) Brick blocks ( ) (d) Wood/Planks ( ) (e) Other(s) please specify……
16. Floor (a) Screed floor ( ) (b) Tiles ( ) (c) Marbles ( ) (d)Terrazzo ( )
17. Roofing (a) Zinc/corrugated iron sheet ( ) (b) Asbesto's materials ( ) (c) Long span Aluminum ( )
18. Windows (a) Louvre blade ( ) (b) wooden ( ) (c) Aluminum ( )
19. Door (a) Flush/Panel/Wooden ( ) (b) Glass ( ) (c) Steel/Iron ( ) (d) Other(s) please specify ……
20. Ceiling Finishes (a) Asbestos Ceiling Board ( ) (b) Plaster of Parish (PoP) ( ) (c) Polyvinyl Chloride (PVC) ( ) (d) Other(s) please specify…….
21. Wall Finishes (a) Emulsion Paint ( ) (b) Gloss ( ) (c) Texcote ( ) (d) Fair Finishes ( )

Section D: Infrastructure Condition and Environmental Quality

22. Security (a) Very bad ( ) (b) Bad ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )
23. Roads (a) Very bad ( ) (b) Bad ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )
24. Drainages (a) Very bad ( ) (b) Bad ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )
25. Refuse management (a) Very bad ( ) (b) Bad ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )
26. Water supply (a) Very bad ( ) (b) Bad ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )
27. Power supply (PHCN) (a) Very bad ( ) (b) Bad ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )
28. General environmental sanitation (a) Very poor ( ) (b) Poor ( ) (c) Fair ( ) (d) Good ( ) (e) Very good ( )

Section E: Condition of Building Components

29. Roof (a) Intact ( ) (b) Leaking ( ) (c) Sagging ( ) (d) Part missing ( )
30. Walls. (a) Intact ( ) (b) Cracking ( ) (c) Dilapidated ( ) (d) Dilapidating ( )
31. Floors (a) Intact ( ) (b) Broken ( ) (c) Eroded ( )
32. Doors (a) Intact ( ) (b) Broken ( ) (c) Falling off ( )
33. Windows (a)Intact ( ) (b) Broken ( ) (c) Falling off ( )
34. Ceiling (a) Intact ( ) (b) Leaking ( ) (c) Sagging ( ) (d) Part missing( )